



J D COLLEGE OF ENGINEERING AND MANAGEMENT, NAGPUR
REMEDIAL CLASSES TIME TABLE(2018-19)

Department of First Year(consolidated)

W.e.f. 15/04/2019

| Date | Day | 2.30-4.30 | |
|------------|-----------|-----------|------|
| | | A | B |
| 15/04/2019 | Monday | M-I | M-I |
| 16/04/2019 | Tuesday | PHY | CHEM |
| 17/04/2019 | Wednesday | EEE | CPC |
| 18/04/2019 | Thursday | CMS | EM |

Dr. N. J. Gawande
Time Table Incharge

Prof. M. V. Takarkhede
Academic Incharge

Dr. Amit Gupta
HOD, DOFY



Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



JAIDEV EDUCATION SOCIETY'S
J D COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
Department of Civil Engineering
"Building Better Development"
Session : 2018-19 (Odd Sem)



Notice

The Student of 3rd semester are hereby informed that Remedial classes are scheduled to commence from 29/10/2018 to 3/11/2018. These sessions aim to provide additional support and assistance to enhance your understanding of course materials. Please make sure to attend these classes promptly to make the most out of this opportunity. Your participation is crucial for your academic success.

Remedial Classes Time Table

Year/Sem- II Year/III Sem

| Date | Day | Time | Subject |
|------------|-----------|----------------------|---------|
| 29/10/2018 | Monday | 10.30 am to 12.30 pm | M-III |
| 30/10/2018 | Tuesday | 10.30 am to 12.30 pm | MOS |
| 31/10/2018 | Wednesday | 10.30 am to 12.30 pm | HYD-I |
| 1/11/2018 | Thursday | 10.30 am to 12.30 pm | SUR-I |
| 2/11/2018 | Friday | 10.30 am to 12.30 pm | BC |
| 3/11/2018 | Saturday | 10.30 am to 12.30 pm | EG |

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Academic Incharge

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Session : 2018-19 (Even Sem)



Date: 27/04/2019

Notice

The Student of 4th semester are hereby informed that Remedial classes are scheduled to commence from 29/04/2019 to 04/05/2019. These sessions aim to provide additional support and assistance to enhance your understanding of course materials. Please make sure to attend these classes promptly to make the most out of this opportunity. Your participation is crucial for your academic success.

Remedial Classes Time Table

Year/Sem- II Year/IV Sem

| Date | Day | Time | Subject |
|------------|-----------|----------------------|---------|
| 29/04/2019 | Monday | 10.30 am to 12.30 pm | HYD-II |
| 30/04/2019 | Tuesday | 10.30 am to 12.30 pm | SUR-II |
| 1/5/2019 | Wednesday | 10.30 am to 12.30 pm | SM-I |
| 2/5/2019 | Thursday | 10.30 am to 12.30 pm | PDE |
| 3/5/2019 | Friday | 10.30 am to 12.30 pm | ELE-I |
| 4/5/2019 | Saturday | 10.30 am to 12.30 pm | EM |

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Session : 2018-19 (Odd Sem)



Date: 06/10/2018

Notice

The Student of 5th semester are hereby informed that Remedial classes are scheduled to commence from 08/10/2018 to 13/10/2018. These sessions aim to provide additional support and assistance to enhance your understanding of course materials. Please make sure to attend these classes promptly to make the most out of this opportunity. Your participation is crucial for your academic success.

Remedial Classes Time Table

Year/Sem- III Year/V Sem

| Date | Day | Time | Subject |
|------------|-----------|----------------------|---------|
| 8/10/2018 | Monday | 10.30 am to 12.30 pm | SS |
| 9/10/2018 | Tuesday | 10.30 am to 12.30 pm | SUR-II |
| 10/10/2018 | Wednesday | 10.30 am to 12.30 pm | FM-II |
| 11/10/2018 | Thursday | 10.30 am to 12.30 pm | BDD |
| 12/10/2018 | Friday | 10.30 am to 12.30 pm | EE-II |
| 13/10/2018 | Saturday | 10.30 am to 12.30 pm | SS |

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"Building Better Development"
Session : 2018-19 (Even Sem)



Date: 02/03/2019

Notice

The Student of 6th semester are hereby informed that Remedial classes are scheduled to commence from 04/03/2019 to 09/03/2019. These sessions aim to provide additional support and assistance to enhance your understanding of course materials. Please make sure to attend these classes promptly to make the most out of this opportunity. Your participation is crucial for your academic success.

Remedial Classes Time Table

Year/Sem- III Year/VI Sem

| Date | Day | Time | Subject |
|----------|-----------|----------------------|---------|
| 4/3/2019 | Monday | 10.30 am to 12.30 pm | SS |
| 5/3/2019 | Tuesday | 10.30 am to 12.30 pm | SUR-II |
| 6/3/2019 | Wednesday | 10.30 am to 12.30 pm | FM-II |
| 7/3/2019 | Thursday | 10.30 am to 12.30 pm | EE-II |
| 8/3/2019 | Friday | 10.30 am to 12.30 pm | BDD |
| 9/3/2019 | Saturday | 10.30 am to 12.30 pm | SS |

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Session 2018-19 (ODD SEM)



REMEDIAL CLASSES NOTICE

Date: 27/09/2018

All the students of B. Tech III Semester (Computer Science & Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and MSE.

Classes will commence from 01/10/2018 to 15/10/2018 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|--------------|
| Monday | 4.00 Pm to 5.00 Pm | M-III |
| Tuesday | 4.00 Pm to 5.00 Pm | DEM |
| Wednesday | 4.00 Pm to 5.00 Pm | PP |
| Thursday | 4.00 Pm to 5.00 Pm | DS |
| Friday | 4.00 Pm to 5.00 Pm | CAO |
| Saturday | 4.00 Pm to 5.00 Pm | DM |

A. P. Nanotkar
TimeTable In-charge

Prof. R. B. Kokate
Academic In-charge

Prof. Prasanna Lohre
Head, CSE-IT Dept.

H.O.D.
Department of CSE-IT
JDCEM, Nagpur

Principal
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REMEDIAL CLASSES NOTICE

Date: 27/09/2018


All the students of B. Tech V Semester (Computer Science & Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and Sessional.

Classes will commence from 01/10/2018 to 15/10/2018 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|--------------|
| Monday | 4.00 Pm to 5.00 Pm | DAA |
| Tuesday | 4.00 Pm to 5.00 Pm | CG |
| Wednesday | 4.00 Pm to 5.00 Pm | OOP |
| Thursday | 4.00 Pm to 5.00 Pm | DBMS |
| Friday | 4.00 Pm to 5.00 Pm | DC |
| Saturday | 4.00 Pm to 5.00 Pm | DAA |


A. P. Nanotkar
TimeTable In-charge


Prof. R. B. Kokate
Academic In-charge


Prof. Prasanna Lohe
Head, CSE-IT Dept.
H.O.D.
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REMEDIAL CLASSES NOTICE

Date: 10/04/2019


All the students of B. Tech IV Semester (Computer Science & Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and MSE.

Classes will commence from 15/04/2019 to 30/04/2019 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|--------------|
| Monday | 4.00 Pm to 5.00 Pm | DAA |
| Tuesday | 4.00 Pm to 5.00 Pm | PD |
| Wednesday | 4.00 Pm to 5.00 Pm | NM |
| Thursday | 4.00 Pm to 5.00 Pm | OS |
| Friday | 4.00 Pm to 5.00 Pm | OOP |
| Saturday | 4.00 Pm to 5.00 Pm | IDS |


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Academic In-charge


Prof. Prasanna Lohar
Head, CSE-IT Dept.
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REMEDIAL CLASSES NOTICE

Date: 10/04/2019

All the students of B. Tech VI Semester (Computer Science & Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and Sessional.

Classes will commence from 15/04/2019 to 30/04/2019 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|--------------|
| Monday | 4.00 Pm to 5.00 Pm | AI |
| Tuesday | 4.00 Pm to 5.00 Pm | DP |
| Wednesday | 4.00 Pm to 5.00 Pm | SEPM |
| Thursday | 4.00 Pm to 5.00 Pm | CN |
| Friday | 4.00 Pm to 5.00 Pm | AI |
| Saturday | 4.00 Pm to 5.00 Pm | SEPM |


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Department Of Electrical Engineering
"Igniting minds to illuminate the world"
2018-19 (Odd Sem)

Date- 10/11/2018

Remedial Classes Notice

All the students of B.Tech 3rd Sem are hereby informed that the department is going to arrange remedial classes for students who has scored less than 40 marks in aggregate from class test and MSE. Classes schedule is given below.

| Sr.No | Day | Time | Subject |
|-------|------------|-------------|-----------------|
| 1 | 11/11/2018 | 4pm to 5 pm | EM-III |
| 2 | 12/11/2018 | 4pm to 5 pm | NA |
| 3 | 13/11/2018 | 4pm to 5 pm | M&I |
| 4 | 14/11/2018 | 4pm to 5 pm | S&S |
| 5 | 15/11/2018 | 4pm to 5 pm | Engineering Eco |

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2018-19 (Odd Sem)

Date- 10/11/2018

Remedial Classes Notice

All the students of B.Tech 5th Sem are hereby informed that the department is going to arrange remedial classes for students who has scored less than 40 marks in aggregate from class test and MSE. Classes schedule is given below.

| Sr.No | Day | Time | Subject |
|-------|------------|-------------|--------------------------------|
| 1 | 11/11/2018 | 4pm to 5 pm | Electrical Power Syst - I |
| 2 | 12/11/2018 | 4pm to 5 pm | Electrical Machine Design |
| 3 | 13/11/2018 | 4pm to 5 pm | Microprocessor & Interfacing |
| 4 | 14/11/2018 | 4pm to 5 pm | Utilization Of Electric Energy |
| 5 | 15/11/2018 | 4pm to 5 pm | Electrical Machines-Ii |

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2018-19 (Even Sem)

Date- 23/06/2019

Remedial Classes Notice

All the students of B.Tech 4th Sem are hereby informed that the department is going to arrange remedial classes for students who has scored less than 40 marks in aggregate from class test and MSE. Classes schedule is given below.

| Sr.No | Day | Time | Subject |
|-------|------------|-------------|--|
| 1 | 25/03/2019 | 4pm to 5 pm | Electrical Machine-I |
| 2 | 26/03/2019 | 4pm to 5 pm | Power System-I |
| 3 | 27/04/2019 | 4pm to 5 pm | Electrical Installation and Estimation |
| 4 | 28/04/2019 | 4pm to 5 pm | Numerical Methods and Programming |
| 5 | 29/04/2019 | 4pm to 5 pm | Analog and Digital electronics |

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2018-19 (Even Sem)

Date-25/06/2021

Remedial Classes Notice

All the students of B.Tech 6th Sem are hereby informed that the department is going to arrange remedial classes for students who has scored less than 40 marks in aggregate from class test and MSE. Classes schedule is given below.

| Sr.No | Day | Time | Subject |
|-------|------------|-------------|-----------------------------------|
| 1 | 25/03/2019 | 4pm to 5 pm | Electrical Drives & Their Control |
| 2 | 26/03/2019 | 4pm to 5 pm | Power Electronics |
| 3 | 27/04/2019 | 4pm to 5 pm | Control System-I |
| 4 | 28/04/2019 | 4pm to 5 pm | Power Station Practice |

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Department of Electronics Engineering
"Rectifying Ideas, Amplifying Knowledge"
2018-19 (Odd Sem)



| VISION | MISSION |
|--|---|
| "To be a Department providing high quality & globally competent knowledge of concurrent technologies in the field of Electronics and Telecommunication." | <ol style="list-style-type: none">1. To provide quality teaching learning process through well-developed educational environment and dedicated faculties.2. To produce competent technocrats of high standards satisfying the needs of all stakeholders. |

REMEDIAL CLASSES NOTICE

w.e.f: 11/11/18

All the students of B.Tech 3rd Semester (Electronics& Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from 11/11/18 to 17/11/18 as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Saturday | 4.00 Pm to 5.00 Pm | AC |
| 2 | Monday | 4.00 Pm to 5.00 Pm | DLD |
| 3 | Wednesday | 4.00 Pm to 5.00 Pm | NA |
| 4 | Thursday | 4.00 Pm to 5.00 Pm | EDC |
| 5 | Friday | 4.00 Pm to 5.00 Pm | M3 |
| 6 | Saturday | 4.00 Pm to 5.00 Pm | M3 |

Prof. Firoz Akhtar
Time-Table Incharge

Prof. A.K.Ikhar
Academic Incharge

Dr. P. R. Kshirsagar
HOD, ETC

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REMEDIAL CLASSES NOTICE

w.e.f: 11/11/18

All the students of B.Tech 5thSemester (Electronics& Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from 11/11/18 to 17/11/18 as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Saturday | 4.00 Pm to 4.30 Pm | DSP |
| 2 | Monday | 4.00 Pm to 4.30 Pm | DSP |
| 3 | Wednesday | 4.00 Pm to 4.30 Pm | CSE |
| 4 | Thursday | 4.00 Pm to 4.30 Pm | EMF |
| 5 | Friday | 4.00 Pm to 4.30 Pm | CA |
| 6 | Saturday | 4.00 Pm to 4.30 Pm | EMF |

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REMEDIAL CLASSES NOTICE

w.e.f:11/11/18

All the students of B.Tech 7thSemester (Electronics& Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from 11/11/18 to 17/11/18 as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Saturday | 4.00 Pm to 5.00 Pm | OC |
| 2 | Monday | 4.00 Pm to 5.00 Pm | DSPA |
| 3 | Wednesday | 4.00 Pm to 5.00 Pm | ADSD |
| 4 | Thursday | 4.00 Pm to 5.00 Pm | TVE |
| 5 | Friday | 4.00 Pm to 5.00 Pm | DSPA |
| 6 | Saturday | 4.00 Pm to 5.00 Pm | ADSP |

Prof. Firoz Akhtar
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REMEDIAL CLASSES NOTICE

w.e.f:25/03/19

All the students of B.Tech 4th Semester (Electronics & Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from **25/03/19** to **30/03/19** as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Monday | 4.00 Pm to 5.00 Pm | SS |
| 2 | Tuesday | 4.00 Pm to 5.00 Pm | ACE |
| 3 | Wednesday | 4.00 Pm to 5.00 Pm | MP |
| 4 | Friday | 4.00 Pm to 5.00 Pm | NMCP |
| 5 | Saturday | 4.00 Pm to 5.00 Pm | EMI |
| 6 | Monday | 4.00 Pm to 5.00 Pm | NMCP |

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REMEDIAL CLASSES NOTICE_{w.e.f:25/03/19}

All the students of B.Tech 6th Semester (Electronics& Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from 25/03/19 to 30/03/19 as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Monday | 4.00 Pm to 4.30 Pm | PP |
| 2 | Tuesday | 4.00 Pm to 4.30 Pm | AWP |
| 3 | Wednesday | 4.00 Pm to 4.30 Pm | DIP |
| 4 | Friday | 4.00 Pm to 4.30 Pm | E&SD |
| 5 | Saturday | 4.00 Pm to 4.30 Pm | CNCC |
| 6 | Monday | 4.00 Pm to 4.30 Pm | CNCC |

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REMEDIAL CLASSES NOTICE w.e.f: 25/03/19

All the students of B.Tech 8th Semester (Electronics & Telecommunication Engineering) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the class test and MSE. Classes will commence from 25/03/19 to 30/03/19 as per the following schedule.

| S.N | Day | Time | Subject |
|-----|-----------|--------------------|---------|
| 1 | Monday | 4.00 Pm to 5.00 Pm | MEMS |
| 2 | Tuesday | 4.00 Pm to 5.00 Pm | MRE |
| 3 | Wednesday | 4.00 Pm to 5.00 Pm | SATCOM |
| 4 | Friday | 4.00 Pm to 5.00 Pm | CMOS |
| 5 | Saturday | 4.00 Pm to 5.00 Pm | DCS |
| 6 | Monday | 4.00 Pm to 5.00 Pm | MEMS |

Prof. Firoz Akhtar
Time-Table Incharge

Prof. A.K.Ikhar
Academic Incharge

Dr. P. R. Kshirsagar
HOD, ETC

HOD, Dept. of EN/ETC
J D College of Engineering
& Management, Nagpur



Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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J D COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR

An Autonomous Institute, with NAAC "A" Grade
Department of Information Technology
"A Place to Learn, A Chance to Grow"
Session 2018-19 (ODD SEM)



REMEDIAL CLASSES NOTICE

Date: 27/09/2018


All the students of B. Tech III Semester (Information Technology) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and MSE.

Classes will commence from 01/10/2018 to 15/10/2018 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|--------------|
| Monday | 4.00 Pm to 5.00 Pm | M-III |
| Tuesday | 4.00 Pm to 5.00 Pm | OOPS |
| Wednesday | 4.00 Pm to 5.00 Pm | ST&LD |
| Thursday | 4.00 Pm to 5.00 Pm | M-III |
| Friday | 4.00 Pm to 5.00 Pm | CAO |
| Saturday | 4.00 Pm to 5.00 Pm | ST&LD |


A. P. Nanotkar
Timetable In-charge


Prof. R. B. Kokate
Academic In-charge


HOD IT
H.O.D.
Department of CSE-IT
JDCEM, Nagpur




Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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Session 2018-19 (ODD SEM)**



REMEDIAL CLASSES NOTICE

Date: 27/09/2018


All the students of B. Tech V Semester (Information Technology) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and Sessional.

Classes will commence from 01/10/2018 to 15/10/2018 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------------|--------------------|---------------------|
| Monday | 4.00 Pm to 5.00 Pm | SP |
| Tuesday | 4.00 Pm to 5.00 Pm | CG |
| Wednesday | 4.00 Pm to 5.00 Pm | SE |
| Thursday | 4.00 Pm to 5.00 Pm | CG |
| Friday | 4.00 Pm to 5.00 Pm | JP |
| Saturday | 4.00 Pm to 5.00 Pm | DAA |


A. P. Nanotkar
TimeTable In-charge


Prof. R. B. Kokate
Academic In-charge


HOD IT
H.O.D.
Department of CSE-IT
JDCOEM, Nagpur




Principal
J D College of Engineering & Management
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Nagpur-441501



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Session 2018-19 (EVEN SEM)



REMEDIAL CLASSES NOTICE

Date: 10/04/2019


All the students of B. Tech IV Semester (Information Technology) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and MSE.

Classes will commence from 15/04/2019 to 30/04/2019 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------|--------------------|------------------------------------|
| Monday | 4.00 Pm to 5.00 Pm | MICROPROCESSOR & MICROCONTROLLERS |
| Tuesday | 4.00 Pm to 5.00 Pm | DATA STRUCTURES & APPLICATIONS |
| Wednesday | 4.00 Pm to 5.00 Pm | DISCRETE STRUCTURES & APPLICATIONS |
| Thursday | 4.00 Pm to 5.00 Pm | ELECTIVE 2 |
| Friday | 4.00 Pm to 5.00 Pm | MICROPROCESSOR & MICROCONTROLLERS |
| Saturday | 4.00 Pm to 5.00 Pm | DATA STRUCTURES & APPLICATIONS |


A. P. Nanotkar
Timetable In-charge


Prof. R. B. Kokate
Academic In-charge


HOD IT
H.O.D.
Department of CSE-IT
JDCOEM, Nagpur





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Session 2018-19 (EVEN SEM)**



REMEDIAL CLASSES NOTICE

Date: 10/04/2019


All the students of B. Tech VI Semester (Information Technology) are hereby informed that the department is going to arrange remedial classes for students who have scored less than 40 Marks in aggregate from the Class Test and Sessional.

Classes will commence from 15/04/2019 to 30/04/2019 as per the following schedule.

| Day/Time | Time | Subject Name |
|-----------------|--------------------|---------------------|
| Monday | 4.00 Pm to 5.00 Pm | DBMS |
| Tuesday | 4.00 Pm to 5.00 Pm | OS |
| Wednesday | 4.00 Pm to 5.00 Pm | IP |
| Thursday | 4.00 Pm to 5.00 Pm | CN |
| Friday | 4.00 Pm to 5.00 Pm | OS |
| Saturday | 4.00 Pm to 5.00 Pm | DBMS |


A. P. Nanotkar
Timetable In-charge


Prof. R. B. Kokate
Academic In-charge


HOD IT
H.O.D.
Department of CSE-IT
JDCOEM, Nagpur




Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR

Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in

An Autonomous Institute, with NAAC "A" Grade
Department of Mechanical Engineering





w.e.f: 11/11/2018


REMEDIAL CLASSES NOTICE

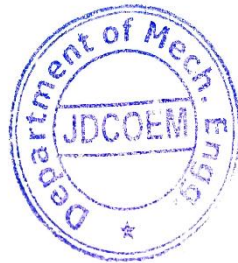
All The students of B. TECH 3rd semester (Mechanical Engineering) are hereby informed that the Department is going to arrange remedial classes for students who have scored less than 40 marks in aggregate from the class test and MSE. Classes will commence from 25/03/2019 to 30/03/2019 as per the following schedule.

| Sr. No | Day | Time | Subject |
|--------|-----------|----------------------|-------------|
| 1 | Monday | 04:00 pm to 05:00 pm | M-III (LMP) |
| 2 | Tuesday | 04:00 pm to 05:00 pm | TOM-I (ARS) |
| 3 | Wednesday | 04:00 pm to 05:00 pm | FM (JSP) |
| 4 | Friday | 04:00 pm to 05:00 pm | M-III (LMP) |
| 5 | Saturday | 04:00 pm to 05:00 pm | TOM-I (ARS) |
| 6 | Monday | 04:00 pm to 05:00 pm | ET (RBS) |


Time Table In-charge
DOME, JDCOEM


Academic In-Charge
DOME, JDCOEM


Head of Department
Mechanical Engineering
HOD
DOME, JDCOEM




Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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An Autonomous Institute, with NAAC "A" Grade
Department of Mechanical Engineering



w.e.f: 11/11/2018

REMEDIAL CLASSES NOTICE

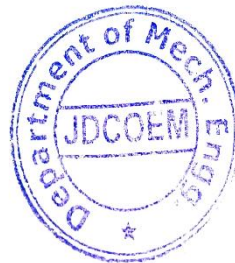
All The students of B. TECH 5th semester (Mechanical Engineering) are hereby informed that the Department is going to arrange remedial classes for students who have scored less than 40 marks in aggregate from the class test and MSE. Classes will commence from 11/11/2018 to 17/11/2018 as per the following schedule.

| Sr. No | Day | Time | Subject |
|--------|-----------|----------------------|---------|
| 1 | Monday | 04:00 pm to 05:00 pm | HT |
| 2 | Tuesday | 04:00 pm to 05:00 pm | TOM II |
| 3 | Wednesday | 04:00 pm to 05:00 pm | AT |
| 4 | Friday | 04:00 pm to 05:00 pm | HT |
| 5 | Saturday | 04:00 pm to 05:00 pm | TOM II |
| 6 | Monday | 04:00 pm to 05:00 pm | AT |

Time Table In-charge
DOME, JDCOEM

Academic In-Charge
DOME, JDCOEM

Head of Department
Mechanical Engineering
HOD
College of Engineering & Management
DOME, JDCOEM



Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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Department of Mechanical Engineering





w.e.f: 25/03/2019


REMEDIAL CLASSES NOTICE

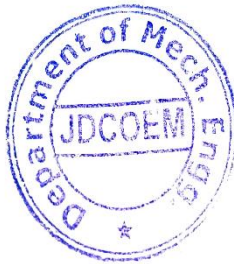
All The students of B. TECH 4th semester (Mechanical Engineering) are hereby informed that the Department is going to arrange remedial classes for students who have scored less than 40 marks in aggregate from the class test and MSE. Classes will commence form 25/03/2019 to 30/03/2019 as per the following schedule.

| Sr. No | Day | Time | Subject |
|--------|-----------|----------------------|---------|
| 1 | Monday | 04:00 pm to 05:00 pm | SOM |
| 2 | Tuesday | 04:00 pm to 05:00 pm | FM |
| 3 | Wednesday | 04:00 pm to 05:00 pm | ME-II |
| 4 | Friday | 04:00 pm to 05:00 pm | SOM |
| 5 | Saturday | 04:00 pm to 05:00 pm | FM |
| 6 | Monday | 04:00 pm to 05:00 pm | ME-II |


Time Table In-charge
DOME, JDCOEM


Academic In-Charge
DOME, JDCOEM


Head of Department
Mechanical Engineering
HOD
College of Engineering & Management
DOME, JDCOEM




Principal
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w.e.f: 25/03/2019

REMEDIAL CLASSES NOTICE

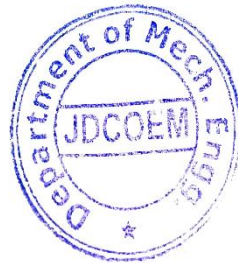
All The students of B. TECH 6th semester (Mechanical Engineering) are hereby informed that the Department is going to arrange remedial classes for students who have scored less than 40 marks in aggregate from the class test and MSE. Classes will commence from 25/03/2019 to 30/03/2019 as per the following schedule.

| Sr. No | Day | Time | Subject |
|--------|-----------|----------------------|---------|
| 1 | Monday | 04:00 pm to 05:00 pm | DOM |
| 2 | Tuesday | 04:00 pm to 05:00 pm | OR |
| 3 | Wednesday | 04:00 pm to 05:00 pm | AT |
| 4 | Friday | 04:00 pm to 05:00 pm | DOM |
| 5 | Saturday | 04:00 pm to 05:00 pm | OR |
| 6 | Monday | 04:00 pm to 05:00 pm | AT |


Time Table In-charge
DOME, JDCOEM


Academic In-charge
DOME, JDCOEM


Head of Department
Mechanical Engineering
HOD
DOME, JDCOEM




Principal
J D College of Engineering & Management
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Nagpur-441501



To be a center of excellence imparting professional education satisfying societal and global needs.

1. Transforming students into lifelong learners through, quality teaching, training and exposure to concurrent technologies.
2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.

NOTICE

**REMEDIAL CLASSES
ACADEMIC YEAR 2018-19**

All the students of **Semester-I** of the Department of Management are hereby informed to attend the remedial classes as per the below Time Table. The list of students who have to attend the remedial classes is attached herewith. Kindly refer the same.

| Sr. No. | Date | Day | Name of Course | Timing |
|---------|------------|----------|----------------------|--------------------|
| 1 | 02/12/2018 | Friday | Financial Accounting | 09:30 am- 10:30 am |
| 2 | 02/12/2018 | Friday | Business Law | 10:30 am- 11:30 am |
| 3 | 02/12/2018 | Friday | Financial Accounting | 11:30 am- 12:20 pm |
| 4 | 02/12/2018 | Friday | Financial Accounting | 01:00 pm- 02:00 pm |
| 5 | 03/12/2018 | Saturday | Business Economics | 09:30 am- 10:30 am |
| 6 | 03/12/2018 | Saturday | Business Statistics | 10:30 am- 11:30 am |
| 7 | 03/12/2018 | Saturday | Business Economics | 11:30 am- 12:20 pm |
| 8 | 03/12/2018 | Saturday | Business Statistics | 01:00 pm- 02:00 pm |

Time Table Incharge

Academic Coordinator

HOD- MBA

Principal

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Education to Eternity

VISION

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CIRCULAR
REMEDIAL CLASSES
ACADEMIC YEAR 2018-19

All the faculty members of the Department of Management Studies are hereby requested to engage the remedial classes as per the below Time Table. The Attendance record of the remedial classes must be maintained by respective course in charge.

| Sr. No. | Date | Day | Name of Course | Timing |
|---------|------------|----------|----------------------|--------------------|
| 1 | 02/12/2018 | Friday | Financial Accounting | 09:30 am- 10:30 am |
| 2 | 02/12/2018 | Friday | Business Law | 10:30 am- 11:30 am |
| 3 | 02/12/2018 | Friday | Financial Accounting | 11:30 am- 12:20 pm |
| 4 | 02/12/2018 | Friday | Financial Accounting | 01:00 pm- 02:00 pm |
| 5 | 03/12/2018 | Saturday | Business Economics | 09:30 am- 10:30 am |
| 6 | 03/12/2018 | Saturday | Business Statistics | 10:30 am- 11:30 am |
| 7 | 03/12/2018 | Saturday | Business Economics | 11:30 am- 12:20 pm |
| 8 | 03/12/2018 | Saturday | Business Statistics | 01:00 pm- 02:00 pm |


 Time Table Incharge


 Academic Coordinator


 HOD- MBA





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NOTICE


REMEDIAL CLASSES ACADEMIC YEAR 2018-19

The students of **Semester-II** of the Department of Management are hereby informed to attend the remedial classes as per the below Time Table. The list of students who have to attend the remedial classes is attached herewith. Kindly refer the same.

| Sr. No. | Date | Day | Name of Course | Timing |
|---------|------------|---------|---------------------------|--------------------|
| 1 | 01/04/2019 | Monday | Financial Management | 09:30 am- 10:30 am |
| 2 | 01/04/2019 | Monday | Financial Management | 10:30 am- 11:30 am |
| 3 | 01/04/2019 | Monday | Human Resource Management | 11:30 am- 12:20 pm |
| 4 | 01/04/2019 | Monday | Operations Management | 01:00 pm- 02:00 pm |
| 5 | 02/04/2019 | Tuesday | Strategic Management | 09:30 am- 10:30 am |
| 6 | 02/04/2019 | Tuesday | Marketing Management | 10:30 am- 11:30 am |
| 7 | 02/04/2019 | Tuesday | Cost Accounting | 11:30 am- 12:20 pm |
| 8 | 02/04/2019 | Tuesday | Cost Accounting | 01:00 pm- 02:00 pm |


Time Table Incharge


Academic Coordinator


HOD- MBA





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1. Transforming students into lifelong learners through, quality teaching, training and exposure to concurrent technologies.
2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.


CIRCULAR
REMEDIAL CLASSES
ACADEMIC YEAR 2018-19

All the faculty members of the Department of Management Studies are hereby requested to engage the remedial classes as per the below Time Table. The Attendance record of the remedial classes must be maintained by respective course in charge.

| Sr. No. | Date | Day | Name of Course | Timing |
|---------|------------|---------|---------------------------|--------------------|
| 1 | 01/04/2019 | Monday | Financial Management | 09:30 am- 10:30 am |
| 2 | 01/04/2019 | Monday | Financial Management | 10:30 am- 11:30 am |
| 3 | 01/04/2019 | Monday | Human Resource Management | 11:30 am- 12:20 pm |
| 4 | 01/04/2019 | Monday | Operations Management | 01:00 pm- 02:00 pm |
| 5 | 02/04/2019 | Tuesday | Strategic Management | 09:30 am- 10:30 am |
| 6 | 02/04/2019 | Tuesday | Marketing Management | 10:30 am- 11:30 am |
| 7 | 02/04/2019 | Tuesday | Cost Accounting | 11:30 am- 12:20 pm |
| 8 | 02/04/2019 | Tuesday | Cost Accounting | 01:00 pm- 02:00 pm |


Time Table Incharge


Academic Coordinator


HOD, MRA




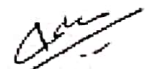
Principal
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Khandala, Katol Road
Nagpur-441501



Super 18 of CSE-IT Department

| Sr.No | Name of Students | Branch |
|-------|-------------------------|--------|
| 1 | Ankita Bhandarkar | CSE |
| 2 | Shrishti Thakur | CSE |
| 3 | Aniket Gosawi | CSE |
| 4 | Shivali Singh | CSE |
| 5 | Aishwarya Narnawre | CSE |
| 6 | Payal Patel | CSE |
| 7 | Ankita Bambole | CSE |
| 8 | Diksha Ingte | CSE |
| 9 | Suvidha Ramteke | CSE |
| 10 | Yash Telang | CSE |
| 11 | Riya Agarwal | CSE |
| 12 | Aufreen Khan | IT |
| 13 | Snehal Sudhakar Helonde | IT |
| 14 | Payal Ramteke | IT |
| 15 | Shanon Paul | IT |
| 16 | Sneha Wakde | IT |
| 17 | Rupesh Rajesh Sharma | IT |
| 18 | Purwa Shankar Chandekar | IT |


Prof. M.M. Baig
T&P Incharge
IT-CSE


Prof. P.A. Lohe
HOD IT-CSE

H.O.D.
Department of CSE-IT
JDCEM, Nagpur




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Nagpur-441501



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Affiliated to DBATU & RTMNU
Department of Civil Engineering
"Building Better Development"
Session 2018-2019



VISION

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MISSION

- Provide quality education and excellent learning Environment for overall development of students.
- Making Sustainable efforts for integrating academics with Industry.

CE Student NPTEL Certificate- 2018-19

Elite

NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
SNEHAL KEWALE
for successfully completing the course
Geotechnical Engineering Laboratory
with a consolidated score of **63 %**

| | | | |
|--------------------|----------|----------------|-------|
| Online Assignments | 20.75/25 | Proctored Exam | 42/75 |
|--------------------|----------|----------------|-------|

Total number of candidates certified in this course: **690**

Prof. Sridhar Iyer
Head CDEEP & NPTEL Coordinator
IIT Bombay

Aug-Sep 2018
(4 week course)

Indian Institute of Technology Bombay

swayam

Ref No: NPTEL/2018/2521700400

To validate and check scores: <http://nptel.ac.in/nc>

CE- 2018-19

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HOD, (CE)





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- Making Sustainable efforts for integrating academics with Industry.

CE Student NPTEL Certificate- 2018-19



CE- 2018-19

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HOD, (CE)

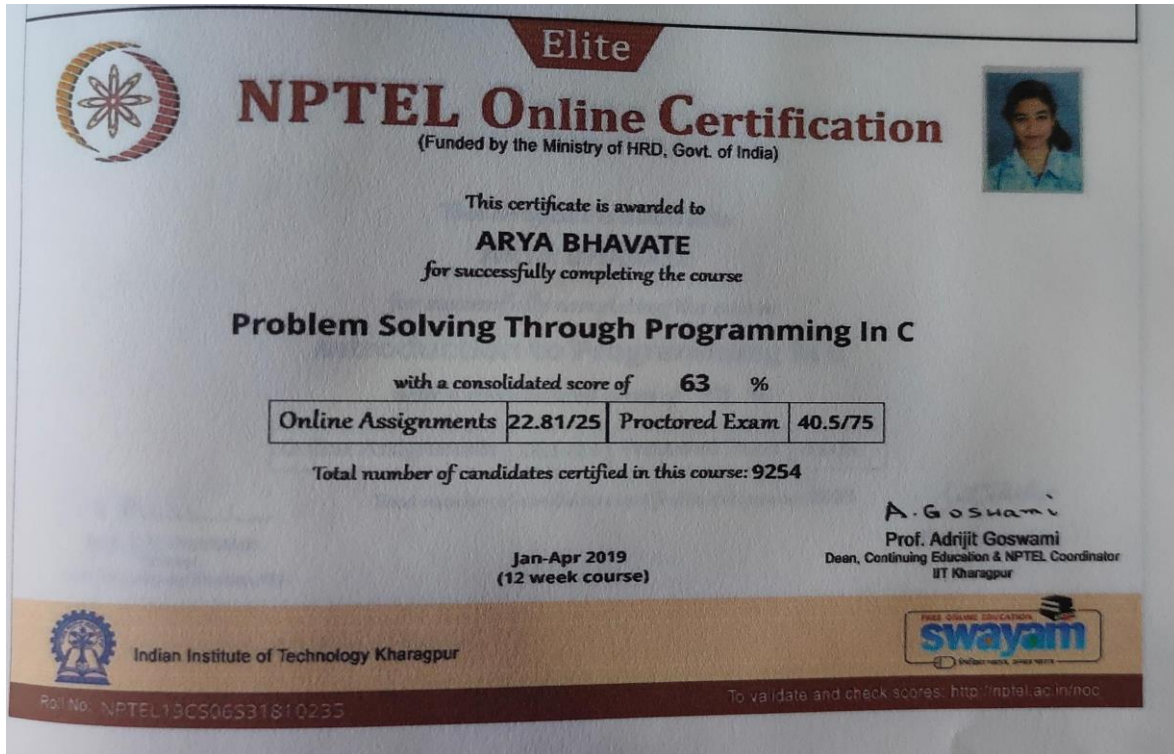




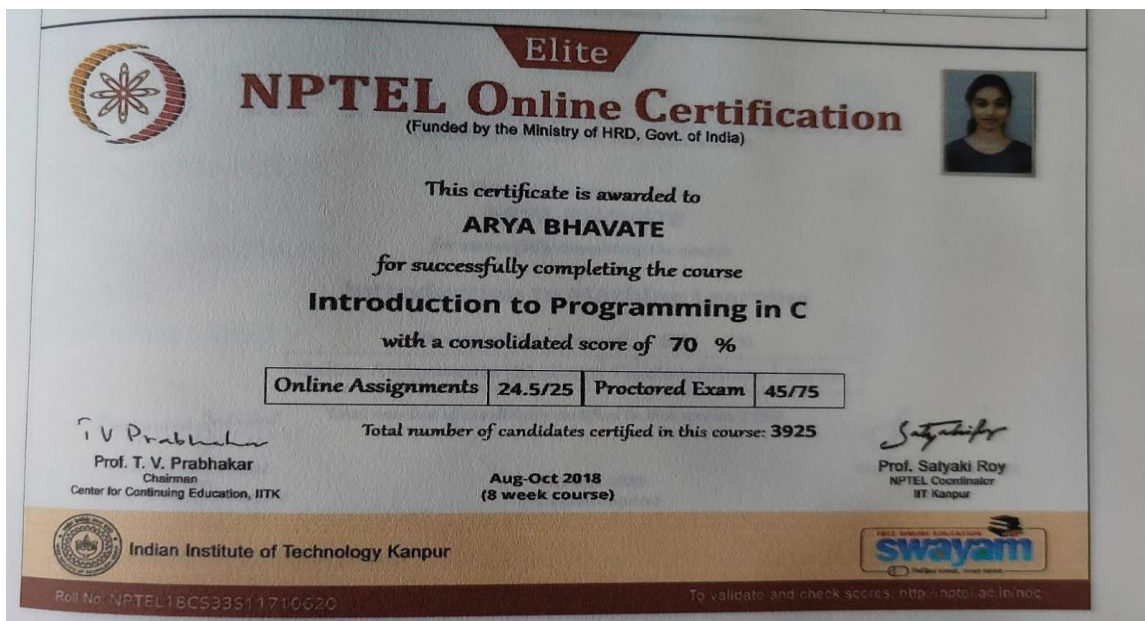
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KATOL ROAD, NAGPUR
Department of Computer Science & Engineering
"A Place to Learn, A Chance to Grow"
Session 2018-19



CSE Student NPTEL Certificate 2018-19



2018-19 CSE NPTEL Certificate



2018-19 CSE NPTEL Certificate


Prof. P.A. Lohe
Head CSE/IT

HOD
Computer Science & Engineering
JD COEM, Nagpur




Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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Department Of Electrical Engineering
"Igniting minds to illuminate the world"
2018-19

EE Student NPTEL Certificate 2018-19



NPTEL Certificate 2018-19 EE Department

H.O.D

PRINCIPAL

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(An Autonomous Institute, with NAAC "A" Grade)
Department Of Electrical Engineering
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EE Student NPTEL Certificate 2018-19



NPTEL Certificate 2018-19 EE Department

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Education to Eternity

JAIDEV EDUCATION SOCIETY'S
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Department of Electronics and Telecommunication Engineering
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Affiliated to DBATU & RTMNU
"Rectifying Ideas, Amplifying Knowledge"
2018-19



।। ज्ञानम् सर्वार्थ साधनम् ।।

ETC Student NPTEL Certificate 2018-19



NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
NIKITA MANWATKAR
for successfully completing the course
Problem Solving Through Programming in C
with a consolidated score of **42 %**

| | | | |
|--------------------|---------|----------------|----------|
| Online Assignments | 9.38/25 | Proctored Exam | 32.25/75 |
|--------------------|---------|----------------|----------|

Total number of candidates certified in this course: **4083**

Prof. Anupam Basu
NPTEL Coordinator
IIT Kharagpur

Jul-Oct 2018
(12 week course)

Prof. Adrijit Goswami
Dean
Continuing Education, IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL18CS31511710399

To validate and check scores: <http://npTEL.ac.in/noc>

2018 ETC NPTEL Certificate



NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to
PUNAM SAMANLAL PATEL
for successfully completing the course
Problem Solving Through Programming in C
with a consolidated score of **41 %**

| | | | |
|--------------------|---------|----------------|----------|
| Online Assignments | 7.13/25 | Proctored Exam | 33.75/75 |
|--------------------|---------|----------------|----------|

Total number of candidates certified in this course: **4083**

Prof. Anupam Basu
NPTEL Coordinator
IIT Kharagpur

Jul-Oct 2018
(12 week course)

Prof. Adrijit Goswami
Dean
Continuing Education, IIT Kharagpur


Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL18CS31521700289

To validate and check scores: <http://npTEL.ac.in/noc>

2018 ETC NPTEL Certificate


HOD, Dept. of EN/ETC
JD College of Engineering
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JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR

Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere
Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
Affiliated to DBATU, RTMNU
Department of Information Technology
Session: 2018-19



IT Student NPTEL Certificate 2018-19



Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to

ADESH JAMNIK
for successfully completing the course

The Joy of Computing Using Python

with a consolidated score of **72** %

| | | | | | |
|--------------------|---------|------------------|-------|----------------|-------|
| Online Assignments | 23.5/25 | Programming Exam | 25/25 | Proctored Exam | 23/50 |
|--------------------|---------|------------------|-------|----------------|-------|

Total number of candidates certified in this course: **8505**



Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Jul-Oct 2019
(12 week course)



Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras



Indian Institute of Technology Madras



Roll No: NPTEL19CS41S61850080

To validate and check scores: <https://nptel.ac.in/noc>

Image 1-NPTEL_IT_2018-19


HOD IT
H.O.D.
Department of CSE-IT
JD COEM, Nagpur




Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



JAIDEV EDUCATION SOCIETY'S
JD COLLEGE OF ENGINEERING AND MANAGEMENT
 KATOL ROAD, NAGPUR
 Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
 (An Autonomous Institute, with NAAC "A" Grade)
 Department of Mechanical Engineering
 Session: 2018-19



ME Student NPTEL Certificate 2018-19



NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to
HIMANSHU NARENDRARAO BHISIKAR
 for successfully completing the course

Advance Aircraft Maintenance

with a consolidated score of **40** %

| | | | |
|--------------------|----------|----------------|----------|
| Online Assignments | 15.71/25 | Proctored Exam | 24.75/75 |
|--------------------|----------|----------------|----------|

Total number of candidates certified in this course: **380**

T. V. Prabhakar
 Prof. T. V. Prabhakar
 Chairman
 Centre for Continuing Education, IITK

Feb-Apr 2019
 (8 week course)

Satyaki Roy
 Prof. Satyaki Roy
 NPTEL Coordinator
 IIT Kanpur



Indian Institute of Technology Kanpur



Roll No: NPTEL19AE02S41810116

To validate and check scores: <http://nptel.ac.in/noc>

NPTEL CERTIFICATE 2018-19



NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to
JAYESH KHOBRADE
 for successfully completing the course

Engineering Thermodynamics

with a consolidated score of **43** %


| | | | |
|--------------------|----------|----------------|---------|
| Online Assignments | 23.50/25 | Proctored Exam | 19.5/75 |
|--------------------|----------|----------------|---------|

Total number of candidates certified in this course: **31**

T. V. Prabhakar
 Prof. T. V. Prabhakar
 Chairman
 Centre for Continuing Education, IITK

Jan-Mar 2019
 (8 week course)

Satyaki Roy
 Prof. Satyaki Roy
 NPTEL Coordinator
 IIT Kanpur



Indian Institute of Technology Kanpur



Roll No: NPTEL19CH01S11620063

To validate and check scores: <http://nptel.ac.in/noc>

NPTEL CERTIFICATE 2018-19



Bhushan R. Mahajan
 Bhushan R. Mahajan
 Head of Department,
 DOME
 JD COEM Department
 Mechanical Engineering
 JD College of Engineering & Management
 Nagpur



[Signature]
 Principal
 JD College of Engineering & Management
 Khandala, Katol Road
 Nagpur-441501



To be a center of excellence imparting professional education satisfying societal and global needs.

1. Transforming students into lifelong learners through, quality teaching, training and exposure to concurrent technologies.
2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.

MBA Student NPTEL Certificate 2018-19


Roll No:NPTEL18MG28S11710667

To
JD COLLEGE OF ENGINEERING & MANAGEMENT
NAGPUR

60/804



No. of credits recommended by NPTEL:3

| Score | Type of Certificate |
|-------|-----------------------------------|
| >=90 | Elite + Gold Medal |
| 60-89 | Elite |
| 40-59 | Successfully Completed the course |
| <40 | No Certificate |



NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to
MOHD MIFTAHUDDIN KHATIB

for successfully completing the course

Project Management for Managers

with a consolidated score of **43 %**

| | | | |
|--------------------|----------|----------------|----------|
| Online Assignments | 25.00/25 | Proctored Exam | 18.16/75 |
|--------------------|----------|----------------|----------|

Total number of candidates certified in this course: **546**

Prof. B. K. Gandhi
Coordinator, Continuing Education Center
NPTEL Coordinator, IIT Roorkee

Jul-Oct 2018
(12 week course)



Indian Institute of Technology Roorkee



Roll No: NPTEL18MG28S11710667

To validate and check scores: <http://nptel.ac.in/noc>

1. MBA: 2018-19




Principal
JD College of Engineering & Management
Khandata, Katol Road
Nagpur-441501



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2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.


Roll No:NPTEL18MG28S21700253

To
JD COLLEGE OF ENGINEERING & MANAGEMENT
NAGPUR



| Score | Type of Certificate |
|-------|-----------------------------------|
| >=90 | Elite + Gold Medal |
| 60-89 | Elite |
| 40-59 | Successfully Completed the course |
| <40 | No Certificate |

No. of credits recommended by NPTEL:3



NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to
ASHISH RAJENDRA THAKARE

for successfully completing the course

Project Management for Managers

with a consolidated score of **54 %**

| | | | |
|--------------------|----------|----------------|----------|
| Online Assignments | 25.00/25 | Proctored Exam | 29.21/75 |
|--------------------|----------|----------------|----------|

B. K. Gandhi

Prof. B. K. Gandhi
Coordinator, Continuing Education Center
NPTEL Coordinator, IIT Roorkee

Total number of candidates certified in this course: **546**

Jul-Oct 2018
(12 week course)



Indian Institute of Technology Roorkee



Roll No: NPTEL18MG28S21700253

To validate and check scores: <http://nptel.ac.in/noc>

2. MBA: 2018-19

[Signature]

Principal

JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501

[Signature]

HOD- MBA

Head of Management Studies (MBA)
JD College of Engineering & Management
Nagpur

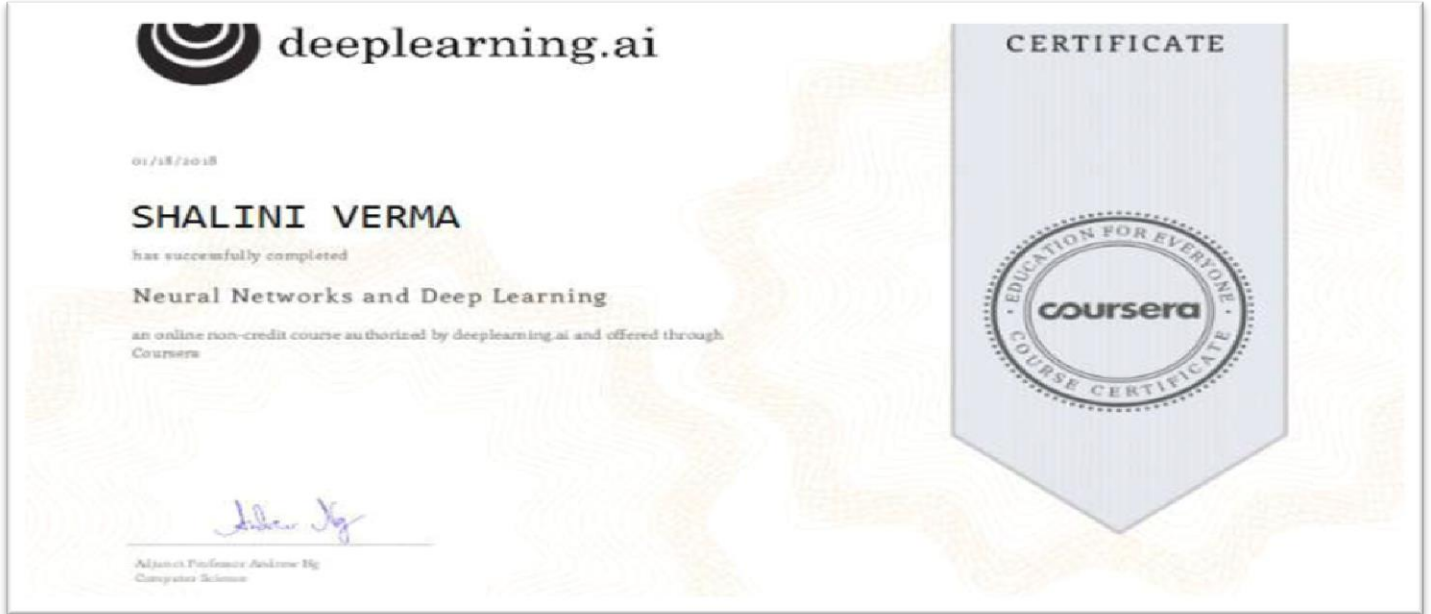




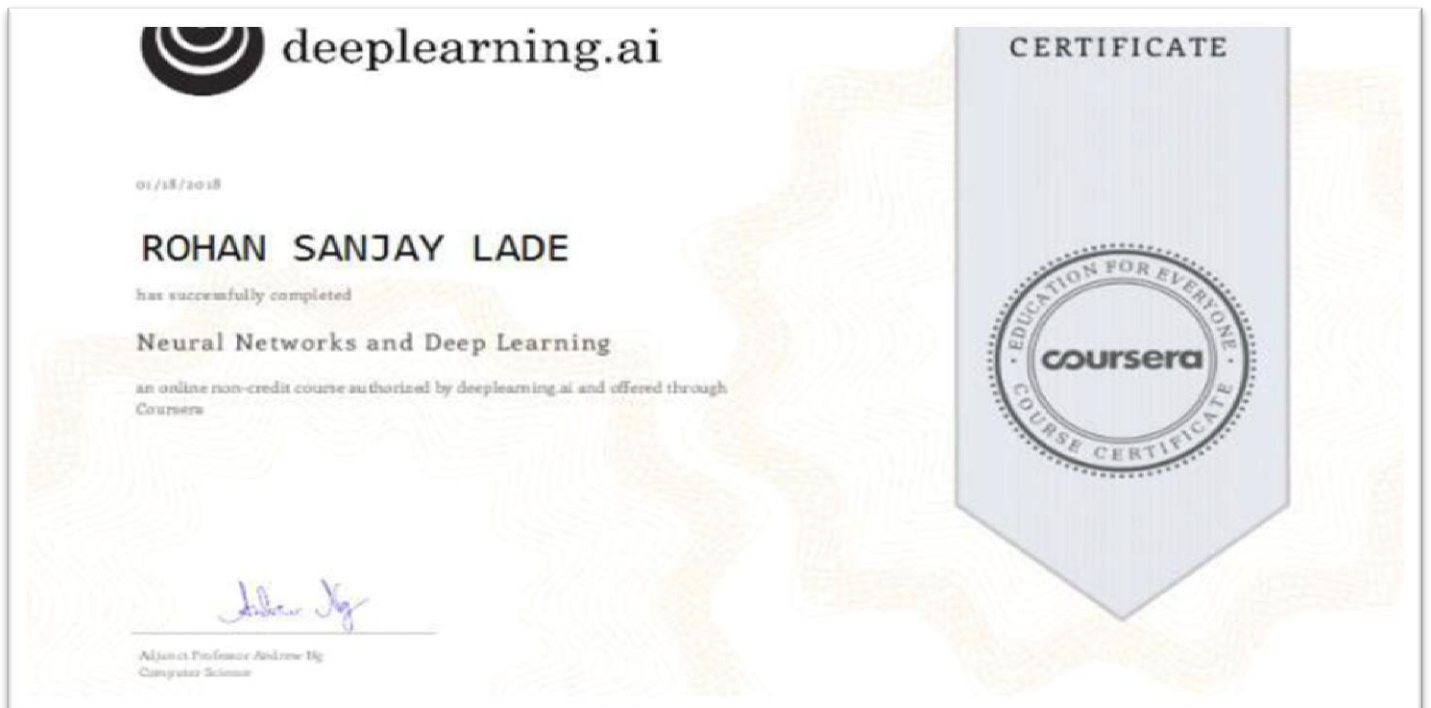
JAIDEV EDUCATION SOCIETY'S
JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Department of Computer Science & Engineering
"A Place to Learn, A Chance to Grow"
Session 2018-19



CSE Student Coursera Certificate 2018-19



2018-19 CSE Coursera Certificate



2018-19 CSE Coursera Certificate

Prof. P. A. Lohe
Head CSE/IT

HOD
Computer Science & Engineering
JDCEM, Nagpur

Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501





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JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
Department of Civil Engineering
"Building Better Development"
Session 2018-19




VISION

To be a well-known center for shaping professional leaders of Global Standards in Civil Engineering

MISSION


- Provide quality education and excellent learning Environment for overall development of students.
- Making Sustainable efforts for integrating academics with Industry.

**M/s. Bhagwati Builders**
ENGINEERS & CONTRACTORS
Off : AMGAON ROAD, DEORI - 441901 DISTT. GONDIA (M.S.)
PH. 07199-225166, 225068, CELL : 9422130966

Ref. No. _____ Date 15/06/2018

CERTIFICATE OF TRAINING

This is to certify that Mr. RAKESH G. THALAI, Student of 2nd year B. E. (Civil) J. D. College of Engineering & Management Nagpur has been working in my office , M/s Bhagwati Builders Deori as Trainee from 01.06.2018. to 15.06.2018 (15 Days) during training he has been exposed to the details of Building construction for flexible pavement , site visit etc. he is sincere and hard working person. I wish every success for his future.


Authorized Signature

Student Internship Completion Certificate (CE)- 2018-19




Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



HOD, (CE)



JAIDEV EDUCATION SOCIETY'S
JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
Department of Civil Engineering
"Building Better Development"
Session 2018-19



VISION

To be a well-known center for shaping professional leaders of Global Standards in Civil Engineering

MISSION

- Provide quality education and excellent learning Environment for overall development of students.
- Making Sustainable efforts for integrating academics with Industry.



BABLU MADAVI

(Civil Work Contractor)

Dev Nagar, Nagpur. Mob: 08975570013

Ref No.

Civil/2018

Date: 10/06/18

TO WHOMSOEVER IT MAY CONCERN

This is to inform that Mr. Prashik Dongre Student of and J.D. College of Engineering Management has completed his Internship Training at Nagpur Pardi Residential Building Project From 26th May 2018 to 10th June 2018

During his Internship he, Exposed to various Activities in Residential construction Project .

We Found him Extremely inquisitive and Hardworking, He was much Interested to Learn Function of core division and also willing to put his own Effort and get in to the Depth of the subject to understand it better

We wish him all the best for future endeavours.

B. Madavi
B. MADAVI
Contractor

Student Internship Completion Certificate (CE)- 2018-19

Arund

HOD, (CE)

[Signature]

Principal
Principal

J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



CSE Internship Certificate 2018-19



4-158
slm

Vasa e-comp pvt. Ltd.

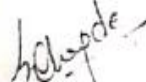
Mental Maths Improvement Program

dt. 3.1.19

To whom It may Concern

Mr. Sagar Shrikant Kadwe was doing internship in our company
from 14/12/18 to 27/12/18 .He was handling web designing project.
He is honest and hard worker .We wish him good luck for rest of future .
Thanking you.

As Regards


H s chopde

Director

Vasa ecomp ,Pvt.ltd



JAIDEV EDUCATION SOCIETY'S
JD COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Department of Computer Science & Engineering
"A Place to Learn, A Chance to Grow"
Session 2018-19



Ref: HR/2019/0332

Date: January 6, 2019

Internship Certificate

This is to certify that **Mr. Harshal K. Meshram** has successfully completed 15 (Fifteen) days (From 21st Dec, 2018 to 5th January, 2019) internship programmed of Website Design and Web Development at **Walletdreams Digital**. During the period of his internship with us he was found punctual, hardworking and inquisitive.

He worked with our organization as Technical Intern and got exposure to following skills during internship:

- Developed WORDPRESS Website (whatsapp.walletdreams.com) & Introduction to HTML, CSS.
- Developed Magento2 Website (www.smyraa.com)

We wish him every success in life.

Signatory Authority

Mr. Abhay Kalmegh

Co-Founder and CTO

2018-19 CSE Internship Certificate

Prof. P.A. Lohe
Head CSE/IT

HOD
Computer Science & Engineering
JDCOEM, Nagpur



Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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J D COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR

Website: www.jdcoem.ac.in E-mail: info@jdcoem.ac.in
(An Autonomous Institute, with NAAC "A" Grade)
Department Of Electrical Engineering
"Igniting minds to illuminate the world"
2018-19

Works : Plot No. D-76/1, MIDC Hingna Road, Nagpur-440028
Tel.: 07104 - 236776, 236375, Fax : 07104 - 232045

ICON
ENGINEERS

EE 18-19

Ref.No.IE/Personal/18-19

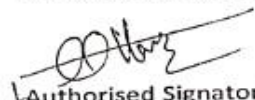
Date: 05/01/2019

TO WHOM IT MAY CONCERN

This is to certify that Shri. Hemant D. Nande, BE 3rd year student of J.D.College of Engineering, has taken 15 days training from 15th December 18 to 30th December, 18 with us as a trainee in electric motor winding & testing.

He is sincere and hardworking student.

FOR ICON ENGINEERS


Authorized Signatory

Internship Certificate 2018-19 EE Department



H.O.D



PRINCIPAL

Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501





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J D COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR

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(An Autonomous Institute, with NAAC "A" Grade)
Department Of Electrical Engineering
"Igniting minds to illuminate the world"

2018-19

SDS SDS LED LIGHTS & SOLAR POWER PVT. LTD.
Reg. Office : C/o. Shelke Engineers & Consultant Rayli Jin, Chikhali, Buldhana, Pin-443201
Branch Office : Plot No. 32, Navdura Appi, Nike Nagar Nagpur - 440027
M. : +91 9890699784, + 91 8983735334 W : sdsledlights.com, E : sdsledcorporation@gmail.com

DATE:-05/01/2019

CERTIFICATE

This is to certify that Ms. Mansi Mhalsakant Kulkarni, A Student of J D College of Engineering & Management Nagpur, Batch 2018-2019 Has duly completed his in plant internship of 2 weeks from 22/12/2018 to 05/01/2019. She has submitted satisfactory Report To SDS LED LIGHTS & SOLAR POWER Pvt.Ltd, MIDC, JALNA ROAD, CHIKHLI. Pin code.443201. In partial fulfillment of B.Tec Electrical Engineering Course. During the period of internship programmed with us she was found punctual, hardworking and inquisitive.

We wish her all the success for his future career.

For SDS LED LIGHTS & SOLAR POWER
Pvt.Ltd.MIDC, JALNA ROAD,
CHIKHLI. Pin.code.443201



- EXPERTISE

Internship Certificate 2018-19 EE Department

H.O.D

PRINCIPAL

Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501

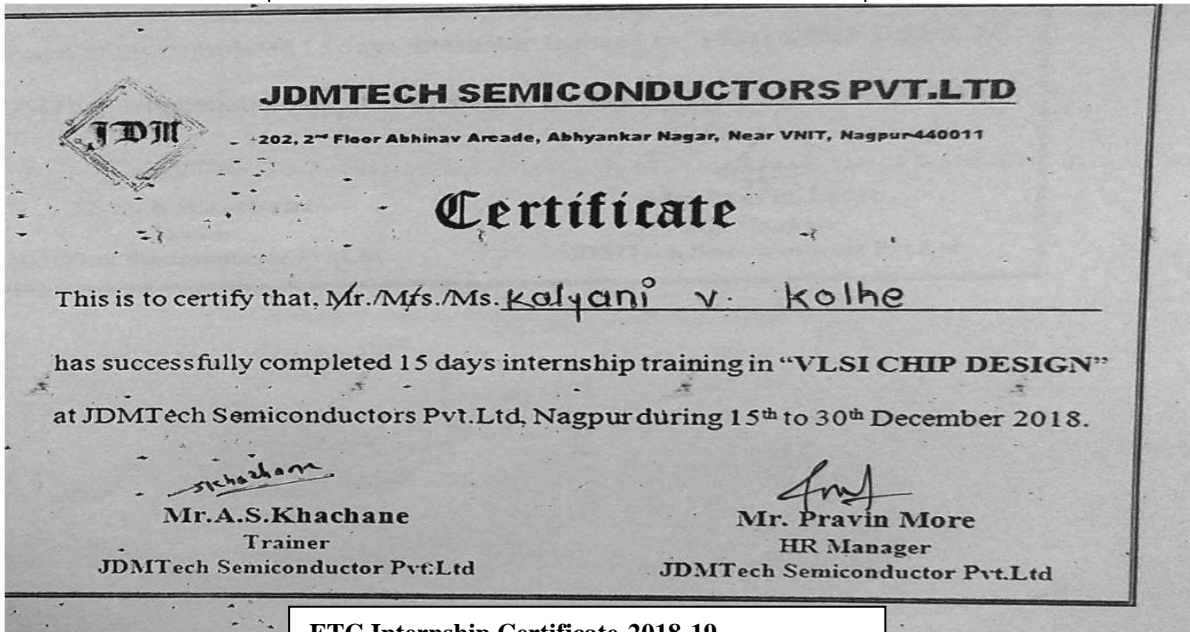


| VISION | MISSION |
|---|--|
| <p>"To be a Department providing high quality & globally competent knowledge of concurrent technologies in the field of Electronics and Telecommunication."</p> | <ol style="list-style-type: none"> 1. To provide quality teaching learning process through well-developed educational environment and dedicated faculties. 2. To produce competent technocrats of high standards satisfying the needs of all stakeholders. |

ETC Internship Certificate-2018-19



ETC Internship Certificate-2018-19



ETC Internship Certificate-2018-19


Dr. P. R. Kshirsagar

HOD, ETC
 HOD, Dept. of EN/ETC
 JD College of Engineering
 & Management, Nagpur




Principal
 JD College of Engineering & Management
 Khandala, Katol Road
 Nagpur-441501

ME Internship Certificate-2018-19



TO WHOM IT MAY COCERN

We hereby certify that Mr. Amit Patel from J D Collage of Engineering & Management (Branch-Mechanical, 3rd year) has been interned in our Industry from 14-DEC-2018 to 20-DEC-2018.

During his industrial internship we found that he is having good theoretical knowledge, good learning power and gain knowledge of lathe machine, grinding, and Plasma CNC machine.

We take this opportunity to thank him and wish him all the best for his future.



Authorized signatory

DAGOBA
Engineering Works

DAGOBA ENGINEERING WORKS, 8, Shastri Nagar
Bhandara Road, Nagpur - 440 008 Maharashtra (India)
0712-2709070 0712-2779070
Info@dagoba.in, dagobango@gmail.com

Mfg of : Agricultural Implements, Machinery, Thrashers & Pulverizers

MECH 18-19

TO WHOM IT MAY CONCERN


We hereby certify that Mr. Pranjal Raut from J D Collage of Engineering & Management (Branch-Mechanical, 3rd year) has been interned in our Industry from 14-DEC-2018 to 20-DEC-2018.

During his industrial internship we found that he is having good theoretical knowledge, good learning power and gain knowledge of lathe machine, grinding, and Plasma CNC machine.

We take this opportunity to thank him and wish him all the best for his future.



ME Internship Certificate-2018-19



Bhushan R. Mahajan
Head of Department,
DOME
J D College of Engineering & Management
Department of Mechanical Engineering
J D College of Engineering & Management
Nagpur





Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



Education to Eternity

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2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.

MBA: 2018-19

INTERNSHIP CERTIFICATES



JASATHI
ASSOCIATES

Registered Office : Plot No. 303, Om Nagar, Near Sakkardara, Nagpur - 440024 Maharashtra, INDIA
Mob : +91 9420007222 | Email : navin.jasathi@gmail.com

Job Training Certificate

Issued On : 20/08/2018

This is to certify that Mr. Shubham Ravindra Mendhe S/o Ravindra Mendhe Successfully Completed On the job Training for Accounts Assistance From Jasathi Associates, For the period 01/04/2018 to 30/06/2018

Yours Sincerely ,

Jasathi Associates

Navin Jasathi



[Signature]

Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501



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M. D. Rajput & Co.

Chartered Accountants



6, Apurva Palace, Bargaon Chowk, Gorewada Road, Nagpur, Maharashtra - 440013
E-mail: camukeshrajput88@gmail.com Mo. No. 07709931319

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. Govind Singh Rajput son of Mr. Shambhu Singh Rajput worked as an Article Assistant in our company from 18-06-2018 to 31-07-2018. During his working period we found him a sincere, honest, hardworking and dedicated employee with a professional attitude. We have no objection to allow him in any better position and have no liabilities in our company.

We wish him every success in life.

For M. D. Rajput & Co.
Chartered Accountants



CA Mukesh D. Rajput
Partner
M. No. 163627.

Place: Nagpur

Date: 02th day of August, 2018.

Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501





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JD COLLEGE OF ENGINEERING AND MANAGEMENT**

KATOL ROAD, NAGPUR
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JK PAPER LTD.

Aikinson Palace, No.4, Jothi Venkatachalam Road, Vepery, Chennai -600 007.



July 23, 2018

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Miss. Bhavika Asera**, a student of **JD, college of Engineering and Management, Nagpur** was engaged in training in our organisation under the guidance of **Mr. S Seshendra kumar, Manager (sales-sz)** for the period of **June 13, 2018 to July 24, 2018**.

Further certified that she has successfully completed her training tenure and her performance was good.

We wish her good luck in her future endeavours.

Abhishek kumar
Abhishek kumar
Chief Manager (HRD)



Chennai Office : 044-25612910 / 25612911 / 42042552, Fax: 044-25612909, Email: papersz@jkmail.com
Regd. Office : P.O. Central Pulp Mills, Fort Songadh, Dist Tapi (Guj). 394660 Ph: 91-2624-220228 / 220278-80
Fax: 91-2624-220138, Cable: Cenpulp, Email: cpm@cpmjkmail.com
Admn. Office : Nehru House, 4, Bahadur Shah Zafar Marg, New Delhi - 110 002. Ph: 91-11-33001132 / 33001112
Fax: 91-11-23712680 Website: www.jkpaper.com
CIN L21010 GJ1960PLC018099

Rhad

Internship In-charge

Rhad

Academic Coordinator

SEM

HOD- MBA



[Signature]
Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501

**Head
Dept of Management Studies (MBA),
J.D. College of Engineering & Management
Nagpur**



JAIDEV EDUCATION SOCIETY'S
J D COLLEGE OF ENGINEERING & MANAGEMENT, NAGPUR
DEPARTMENT OF FIRST YEAR (2018-19)
Semester-I

Subject: Engineering Physics (BTBS102/202)

Assignment I

Date of Assignment: 8.09.2018

Date of Submission: 15.09.2018

Unit I: Oscillation and Ultrasonic's and Dielectric Materials

- Q.1** Define the term free oscillation, damped oscillation and forced oscillation also give suitable examples.
- Q.2** Derive the differential wave equation.
- Q.3** Derive the differential wave equation of damped oscillation
- Q.4** Derive the differential wave equation of forced oscillation
- Q.5** Explain Sharpness of resonance.
- Q.6** What are Ultrasonic waves? State any two properties of Ultra sonic waves.
- Q.7** What is Magnetostriction effect? Explain the principle of and production of ultrasonic wave using this effect.
- Q.8** What is Piezo electric effect? Explain the principle of and production of ultrasonic wave using this effect.
- Q.9** Write short notes on Quartz crystals
- Q.10** Explain the concept of flaw detection, and cavitations.
- Q.11** How one can use ultrasound for :
- (a) Drilling (b) Soldering (c) Welding (d) Cleaning
- Q.12** Explain medical application of Ultrasonic Waves.
- Q.13** Explain various types of polarization mechanism in a dielectric.
- Q.14** Discuss the effect of temperature and frequency on dielectric.
- Q.15** What do you mean by dielectric? Define Dielectric constant, Polarizability and Electric Susceptibility

Mr.U.V.Rathod,
Subject Teacher

Dr.A.N.Gupta,
HOD, BSHD,JDCEM

Principal
J D College of Engineering & Management
Khandala, Katol Road
Nagpur-441501





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JD COLLEGE OF ENGINEERING & MANAGEMENT, Nagpur
(An Autonomous Institute, with NAAC "A" Grade)
Affiliated to DBATU, RTMNU & MSBTE Mumbai
Basic Science & Humanities Department
Semester-I_SESSION: 2018-19



Year/Semester: 1st Semester (First Year)
Engineering Mathematics-I
Assignment-I

Date: 05.09.2018

Max Marks: 20

| Q.No. | Questions | CO's | Marks |
|-------|---|-------|-------|
| Q1 | Reduce the following matrix to its normal form and find its rank. $A = \begin{bmatrix} 4 & 2 & -1 & 2 \\ 1 & -1 & 2 & 1 \\ 2 & 2 & -2 & 0 \end{bmatrix}$ | CO2/2 | 4 |
| Q2 | Find non-singular matrices P and Q such that PAQ is in normal form hence find the rank. $A = \begin{bmatrix} 1 & 1 & 1 & 2 \\ 3 & -3 & 1 & 2 \\ 2 & 1 & -3 & -6 \end{bmatrix}$ | CO3/3 | 4 |
| Q3 | Using Gauss- Jordan method to find the inverse of the matrix $A = \begin{bmatrix} 8 & 4 & -3 \\ 2 & 1 & 1 \\ 1 & 2 & 1 \end{bmatrix}$ | CO4/4 | 4 |
| Q4 | Find $\frac{dy}{dx}$ if $(\cos x)^y = (\sin y)^x$ | CO3/3 | 4 |
| Q5 | Examine for functionally dependent, for $u = e^x \sin y$; $v = e^x \cos y$ | CO4/4 | 4 |

Last Date of Submission: 12/09/2018

Mr.Sagar S. Kathalkar
Subject Teacher

Dr.A.N.Gupta,
HOD, BSHD,JDCEM

Principal
JD College of Engineering & Management
Khandala, Katol Road
Nagpur-441501





JAIDEV EDUCATION SOCIETY'S
J D COLLEGE OF ENGINEERING & MANAGEMENT, NAGPUR
DEPARTMENT OF FIRST YEAR (2018-19)
Semester-II

Subject: Engineering Physics (BTBS102/202)

Assignment II

Date of Assignment: 10.02.2019

Date of Submission: 17.02.2019

Unit II: Optics, Fibre Optics and Laser

- Q.1** Derive the path difference formula for reflected light for thin film and hence give condition of maxima and minima.
- Q.2** Explain the change in conditions in transmitted light for the thin films.
- Q.3** Show that fringe width remains constant in case of wedge shaped thin films.
- Q.4** Derive theory of Newton's Ring.
- Q.5** Why Newton's Ring are circular and wedge shaped films are straight.
- Q.6** Distinguish between plane polarized and unpolarized light.
- Q.7** Explain polarization by reflection.
- Q.8** State Brewster's Law and use it to prove that when light is incident on a transparent substance at polarizing angle, the reflected and refracted rays are at right angles to each other.
- Q.9** What is double refraction and what are double refracting crystals?
- Q.10** Explain Huygens's theory of double reflection.
- Q.11** Explain spontaneous emission, stimulated emission population inversion and metastable state.
- Q.12** Explain the working of Ruby laser.
- Q.13** Explain the working of He-Ne Laser.
- Q.14** What are Optical Fibers?
- Q.15** Derive Numerical aperture and Acceptance angle for SI fiber.

Mr.U.V.Rathod,
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Affiliated to DBATU, RTMNU & MSBTE Mumbai
Basic Science & Humanities Department
Semester-II_SESSION: 2018-19




Year/Semester: 1st Semester (First Year)
Engineering Mathematics-II
Assignment-I

Date: 20.02.2019

Max Marks: 20

| Q.No. | Questions | CO's/Level | Marks |
|-------|--|------------|-------|
| Q1 | Solve the equation $x^{10} + 11x^5 + 10$ | CO4/4 | 4 |
| Q2 | To separate real and imaginary part of $\tan^{-1}(x + iy)$ | CO3/3 | 4 |
| Q3 | Solve $(1 + x^2)\frac{dy}{dx} + y = e^{\tan^{-1}x}$ | CO4/4 | 4 |
| Q4 | Solve $(1 + xy)ydx + (1 - xy)x dy = 0$ | CO4/4 | 4 |
| Q5 | Solve $\frac{dy}{dx} = \frac{x^2 + y^2 + 1}{2xy}$ | CO4/4 | 4 |

Last Date of Submission: 27.02.2019


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Subject Teacher


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Department of Computer Science & Engineering
"A Place to Learn, A Chance to Grow"
Session 2018-19**



॥ ज्ञानम् सर्वार्थ साधनम् ॥

Assignment

Semester/ Branch: - V Sem/ CSE

Subject Name: -Database Management System

Subject In-charge: Prof. Swati Raut

List of Assignment Question's:-

| Que. No. | Questions |
|----------|---|
| 1 | Define DBMS with its advantages also explain Types of Databases. |
| 2 | Explain Entity-relationship model with an examples. |
| 3 | Explain the following terms. i) Data Independence ii) Relational Integrity Constraints iii) Data Abstraction iv) Data Manipulation Operations v) File processing system Limitations. |
| 4 | Differentiate between Open source and Commercial DBMS. |
| 5 | Explain the DDL and DML constructs. |
| 6 | Explain Tuple and domain relational calculus in detail. |
| 7 | Explain Relational algebra with its operation. |
| 8 | Explain the Domain and data dependency |
| 9 | Explain the Normalization of Database Tables with Normal Forms. Also explain its Need and Significance. |
| 10 | Explain Dependency preservation and Lossless design. |

Prof.Swati Raut ;
(Subject I/C)

Prof.Rohan Kokate
(DBATU Co-ordinator)

Prof.Swati Raut
(Academic I/C)

Prof.P.A.Lohe
(HOD CSE/IT)
HOD
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॥ ज्ञानम् सर्वार्थ साधनम् ॥

Assignment

Semester/ Branch: - IV Sem/ CSE

Subject Name: -Computer Architecture & Organization

Subject In-charge: Prof. Rohan Kokate


List of Assignment Question's:-

| Que. No. | Questions |
|----------|--|
| 1 | What are the types of instruction set? |
| 2 | What is Von Neumann computer architecture? |
| 3 | Differentiate RAM and ROM. |
| 4 | What is meant by processing unit? |
| 5 | What is Half Adder? |
| 6 | Explain Micro-programmed Control in detail. |
| 7 | Illustrate Addressing Modes with its operation. |
| 8 | Discuss the Static & Dynamic RAMs. |
| 9 | Describe the Input-Output Devices. Also explain its Need and Significance. |
| 10 | Explain Online storage devices. |


Prof. Rohan Kokate
(Subject I/C)


Prof. Rohan Kokate
(DBATU Co-ordinator)


Prof. Swati Raut
(Academic I/C)


Prof. P.A. Lohe
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Department Of Electrical Engineering
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2018-19 (Odd Sem)

Assignment

| | |
|--------------------|----------------------------------|
| Subject | Electrical Installation & Design |
| Subject code | EE5TE02(D) |
| Semester/Year | 7 th sem |
| Unit No. I | I & II |
| Date of display | 31/07/2018 |
| Date of submission | 05/08/2018 |

| Sr. No. | Question | Mapped Co |
|----------------|--|------------------|
| 1 | State different types of tariff ? | CO1/ CO2 |
| 2 | Explain the concept of electrical load ? | CO1/CO3/CO4 |
| 3 | Write in short note on SF6 Circuit breaker ? | CO3 |
| 4 | Use of series reactor ? | CO3/CO4 |

Subject teacher-EID

Academic incharge

HOD EE

PRINCIPAL



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Department of Electronics / Electronics & Telecommunication
"Rectifying Ideas, Amplifying Knowledge"
2018-19 (Even Semester)

Assignment

Course: B. Tech in Electronics & Telecommunication

Date : 21/04/2019

Sem: VI

Subject Name: Computer Network & Cloud Computing

Subject Code: BTETC602

Date of Submission: 26/04/2019

- Q.1** Compare the architecture of wired and wireless LANs. Also discuss the characteristics of wireless LANs
- Q.2** Discuss in detail about IEEE 802.11 project.
- Q.3** Discuss the different types of networks defined by Bluetooth with the help of its architecture and layers.
- Q.4** Explain Zigbee in detail.
- Q.5** Discuss in detail about virtual local area network (VLAN).

Prof. Avinash K. Ikhari

**Course Coordinator /
Academic Incharge**

Dr. Pravin Kshirsagar

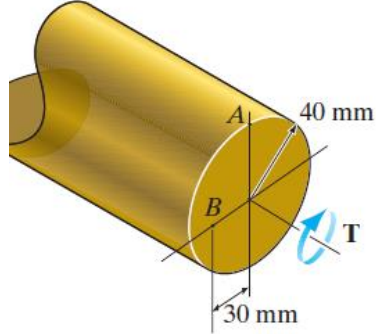
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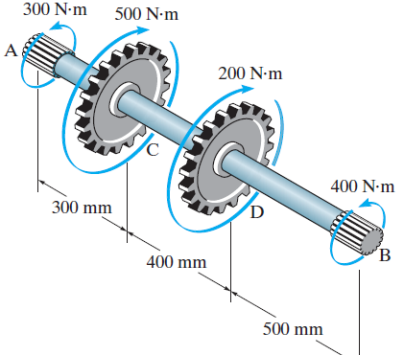
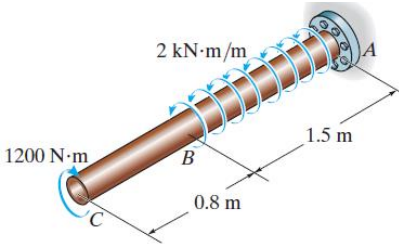
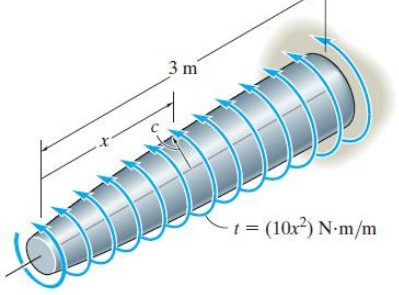


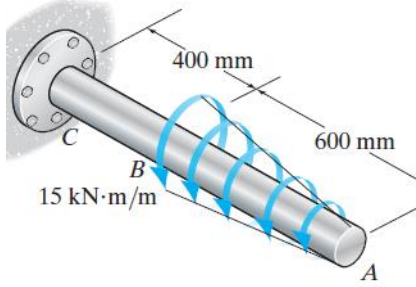
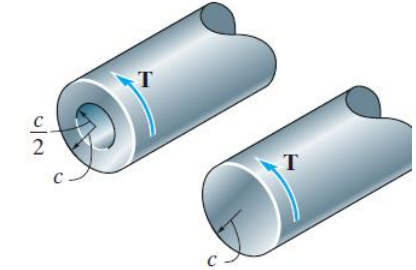
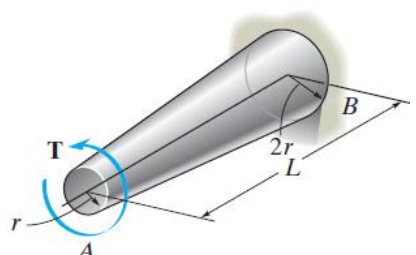
Assignment no- 02

Due date 03/05/2019

| Sr No | Description | Image | Level | C | P | Ref |
|-------|---|---|---------------|---|---|----------------|
| | | | | O | O | |
| 1 | Write the expression for shear stress distribution for a circular prismatic shaft subjected to pure torsion | | Knowledge | | | |
| 2 | Write the expression for shear strain distribution for a circular prismatic shaft subjected to pure torsion | | Knowledge | | | |
| 3 | Write the expression for polar moment of inertia of solid and hollow shaft | | Knowledge | | | |
| 4 | Derive torsional formula. | | Comprehension | | | |
| 5 | The solid circular shaft is subjected to an internal torque of $T = 5 \text{ kN m}$. Determine the shear stress developed at points A and B. Represent each state of stress on a volume element. |  | Application | | | RC 192 F5.1 |

| | | | | | |
|---|--|--|-------------|----------------|--|
| | | | | | |
| 6 | Determine the maximum shear stress developed in the 40-mm diameter shaft. | | Application | RC 192 F5.4 | |
| 7 | The shaft is hollow from A to B and solid from B to C. Determine the maximum shear stress developed in the shaft. The shaft has an outer diameter of 80 mm, and the thickness of the wall of the hollow segment is 10 mm | | Application | RC 192 F5.3 | |
| 8 | Determine the shear stress developed at point A on the surface of the shaft. Represent the state of stress on a volume element at this point. The shaft has a radius of 40 mm. | | Application | RC 192 F5.6 | |

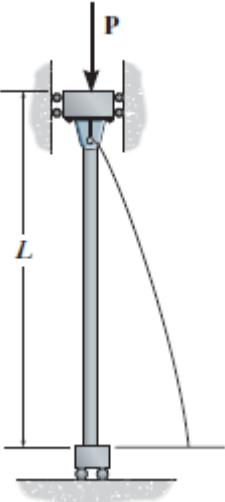
| | | | | | |
|----|--|--|---------------|--|------------------|
| 9 | <p>The solid 30-mm-diameter shaft is used to transmit the torques applied to the gears. Determine the absolute maximum shear stress on the shaft.</p> |  | Application | | RC 194 P5.8 |
| 10 | <p>The solid shaft is subjected to the distributed and concentrated torsional loadings shown. Determine the required diameter d of the shaft to the nearest mm if the allowable shear stress for the material is $\tau_{allow} = 50$ MPa.</p> |  | Analysis | | RC P196 P5.22 |
| 11 | <p>5–30. The shaft is subjected to a distributed torque along its length of $t = (10x^2)$ N·m/m, where x is in meters. If the maximum stress in the shaft is to remain constant at 80 MPa, determine the required variation of the radius c of the shaft for $0 \leq x \leq 3$ m.</p> |  | Analysis | | RC 197 P 5.30 |
| 12 | <p>Write the general expression for angle of twist for a bar subjected to torsion</p> | | Comprehension | | |

| | | | | | | |
|----|---|--|----------|--|--|-----------------|
| 13 | <p>The 80-mm-diameter shaft is made of A-36 steel. If it is subjected to the triangular distributed load, determine the angle of twist of end A with respect to C.</p> |  | Analysis | | | RC 208 F12 |
| 14 | <p>A shaft is subjected to a torque T. Compare the effectiveness of using the tube shown in the figure with that of a solid section of radius c. To do this, compute the percent increase in torsional stress and angle of twist per unit length for the tube versus the solid section.</p> |  | Analysis | | | RC 209 P5.48 |
| 15 | <p>The tapered shaft has a length L and a radius r at end A and 2r at end B. If it is fixed at end B and is subjected to a torque T, determine the angle of twist of end A. The shear modulus is G</p> |  | Analysis | | | RC 213 5.73 |



| | | | | | | |
|----|---|--|-----------|--|--|-----------------|
| 16 | An A-36 steel column has a length of 4 m and is pinned at both ends. If the cross sectional area has the dimensions shown, determine the critical load. | | Analysis | | | RC 672 F13.5 |
| 17 | Write the limitations of euler's formula. | | Knowledge | | | |
| 18 | Write down the various critical loads for different end conditions of columns | | Knowledge | | | |
| 19 | Define slenderness ratio | | Knowledge | | | |
| 20 | Define radius of gyration and effective length | | Knowledge | | | |



| | | | | | | |
|----|--|--|-------------|--|--|------------------|
| 21 | A steel pipe is fixed supported at its ends. If it is 5m long and has an outer diameter of 50 mm and a thickness of 10 mm, determine the maximum axial load P that it can carry without buckling. $E_{st} = 200 \text{ GPa}, \sigma_Y = 250 \text{ MPa}$. | | Application | | | |
| 22 | Design a solid circular prismatic bar of length 500mm to transmit 20 kW of power at 1200 rpm. | | Synthesis | | | |
| 23 | The column with constant EI has the end constraints shown. Determine the critical load for the column. |  | Evaluation | | | RC 677 P13.43 |



Dr. M.P. Nimkar
Subject Teacher



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Semester: - MBA I Sem

Subject Code:-1T1

Subject Name: - Principle Of Management

Assignment: 2018-19

Q1. Discuss the Importance of Management in today's Business. Elaborate the overview of Planning, Controlling & Organizing.

Q2. Write notes on:

- i. Contingency Approach
- ii. Indian Heritage in Production & Consumption.
- iii. Contribution of Taylor
- iv. Contribution of Hawthorne Experiment

Q3. What types of skill required for Indian Manager?

Q4. What is management planning? Explain the various stage involve in management planning.

Q5. Write note on:

- i. Committee Decision Making
- ii. Method of Decision Making


Q6. Define the importance of Organization. What are the types of good organization structure?


Q7. What do you understand by Authority & Responsibility?

Q8. State the various barriers to effective delegation of authority.

Q9. Elaborate the Method of Skill Development.

Q10. State the limitations & measures of Management Planning.


Subject In charge


Dept. Academic Incharge


Dept. Head MBA


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Semester: - MBA II Sem

Subject Code:-2T1

**Subject Name: - Human Resource Management
& Organization Behaviour**

Assignment: 2018-19

Q1.A. Explain significance & functions HRM

Or

Q.1.B. Discuss the Process and methods of collecting data for job analysis

Q2.A. Explain Recruitment Process in details.

Or

Q2.B. Discuss the steps in Training process

Q3.A. Write the key elements and Foundations of OB

OR

Q3.B. Explain the Factors affecting individual behavior (biographical, psychological, organizational and Environmental).

Q4.A. Discuss the Maslow Theories with suitable example.

Or

Q4.B. State the Domino effect with suitable example.

Q5.A. Write short notes on

- i. Resistance to change
- ii. managing resistance to change.

Subject In charge

Dept. Academic Incharge

Dept. Head MBA

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Semester: - MBA III Sem

Subject Code:-3T2

Subject Name: - Human Resource Management & Organization Behaviour

Assignment: 2018-19

All Questions are Compulsory:

Q.1. What is your understanding about unsustainable to sustainable development ? Write the role of any four institutions involved in environment protection with suitable examples.


Q.2. What is your understanding about aesthetic and optional value of diversity ? Write a detailed note on India as a mega diversity nation.

Q.3. What do you mean by Ozone Layer Depletion ? Discuss the role of ministry of environment and forest in control of pollution

Q.4. What are environmental ethics ? Discuss in detail resource consumption patterns and need for equitable utilization with suitable examples.

Q.5. Write short notes on :

- A. Importance of environmental calendar of activities
- B. Ecological pyramids
- C. Global Warming and its effects.
- D. Ethical Issue In Environment


Subject In charge


Dept. Academic Incharge


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DEPARTMENT OF FIRST YEAR
Session 2018-19

1. If every minor order r of a matrix A is zero then the rank of A is
(i) Greater than r (ii) Equal to r (iii) Less than r (iv) None of these.
2. The sum of two Eigen values and trace of a 3×3 matrix are equal, then the value of $|A|$ is
(i) Zero (ii) 1 (iii) 2 (iv) None of these
3. If $A = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$, then the eigen values of A^{-1} are
(i) $1, \frac{1}{3}$ (ii) 0, 1 (iii) $2, \frac{2}{3}$ (iv) None of these
4. A system of linear non-homogeneous equations is consistent if the rank of coefficient matrix is equal to its
(i) Augmented matrix (ii) Unit matrix (iii) Triangular matrix (iv) None of these
5. If the rank of A is 2 and rank of B is 3, then the rank of AB is
(i) 2 (ii) 3 (iii) 6 (iv) Depends on matrix AB .
6. If $\lambda_1, \lambda_2, \lambda_3$ are the Eigen values of A , then the Eigen values of A^3 are
(i) $\lambda_1^3, \lambda_2^3, \lambda_3^3$ (ii) $\lambda_1^2, \lambda_2^2, \lambda_3^2$ (iii) $\lambda_1, \lambda_2, \lambda_3$ (iv) None of these
7. If λ is the eigen value of a non singular matrix A , then the eigen value of A^{-1} is
(i) λ (ii) λ^2 (iii) $\frac{1}{\lambda}$ (iv) None of these
8. If rank of A is 2, then the rank A^T is
(i) 2 (ii) 0 (iii) 4 (iv) None of these
9. The eigen values of a triangular matrix are
(i) The element of its principal diagonal (ii) The elements of non principal diagonal
(iii) 0 (iv) None of these
10. The statement "Matrix has a value" is
(i) is always true (ii) is false (iii) depends on matrices (iv) None of these
11. If $y = \sin x$, then the value of $y_2 + (\tan x)y_1 + y \cos^2 x$ is equal to
(i) 0 (ii) 1 (iii) $\sin x$ (iv) None of these
12. $D^n \left(\frac{1}{ax+b} \right)$ is equal to
(i) $\frac{(-1)^{n-1}(n-1)!a^n}{(ax+b)^n}$ (ii) $\frac{(-1)^{n-1}(n-1)!a^n}{(ax+b)^{n+1}}$ (iii) $\frac{(-1)^{n-1}(n-1)!a^{n-1}}{(ax+b)^n}$ (iv) None of these
13. $D^n \log(ax + b)$ is equal to
(i) $\frac{(-1)^{n-1}n!a^n}{(ax+b)^n}$ (ii) $\frac{(-1)^{n-1}(n-1)!a^n}{(ax+b)^{n+1}}$ (iii) $\frac{(-1)^n n! a^n}{(ax+b)^{n-1}}$ (iv) None of these
14. $D^n (a^{mx})$ is equal to
(i) $m^n (\log a)^n a^{mx}$ (ii) $m^n \log a a^{mx}$ (iii) $m^n a^{mx}$ (iv) None of these
15. If $y = e^{\sin^{-1} x}$, then the value of $(1 - x^2)y_2 - xy_1 - a^2 y$ is equal to
(i) 1 (ii) 0 (iii) $\sin^{-1} x$ (iv) None of these
16. If $y = e^{\cos^{-1} x}$, then the value of $(1 - x^2)y_2 - xy_1$ is equal to
(i) $m^2 y$ (ii) y (iii) $m^2 y$ (iv) None of these
17. If $I_n = \frac{d^n}{dx^n} (x^n \log x)$, then I_n is equal to
(i) $nI_{n-1} + (n-1)!$ (ii) $nI_{n-1} + n!$ (iii) $(n-1)I_{n-1} + (n+1)!$ (iv) None of these
18. If $y = x^n \log x$, then the value of y_{n+1} is equal to
(i) $\frac{(n-1)!}{x}$ (ii) $\frac{n!}{x}$ (iii) $\frac{n}{x}$ (iv) None of these
19. The expansion of the function $\log(1+x)$ in Maclaurin's series is



- (i) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots$ (ii) $x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + \dots$
 (iii) $-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - \dots$ (iv) None of these

20. The expansion of the function $\cos^{-1}x$ in Maclaurin's series is

- (i) $1 + \frac{x^2}{2!} + \frac{5x^4}{4!} + \dots$ (ii) $1 - \frac{x^2}{2!} + \frac{5x^4}{4!} - \dots$
 (iii) $-1 - \frac{x^2}{2!} - \frac{5x^4}{4!} - \dots$ (iv) None of these

21. If $u = f\left(\frac{y}{z}\right)$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ is equal to

- (i) $2u$ (ii) u (iii) 0 (iv) none

22. If $u = x^y$ then $\frac{\partial u}{\partial x}$ is equal to

- (i) 0 (ii) yx^{y-1} (iii) $x^y \log x$ (iv) none

23. If $u = \log \frac{x^2}{y}$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ is equal to

- (i) u (ii) $2u$ (iii) 1 (iv) none

24. If $u = f(x + ay) + g(x - ay)$ then $\frac{\partial^2 u}{\partial y^2}$ is equal to

- (i) $\frac{\partial^2 u}{\partial x^2}$ (ii) $a^2 \frac{\partial^2 f}{\partial y^2}$ (iii) $\frac{\partial^2 u}{\partial x \partial y}$ (iv) none

25. $f(x, y, z) = 0$ then $\frac{\partial x}{\partial y} \frac{\partial y}{\partial z} \frac{\partial z}{\partial x}$ is equal to

- (i) -1 (ii) 1 (iii) 0 (iv) none

26. If $u = uv$, $y = \frac{u}{v}$, then $\frac{\partial(x,y)}{\partial(u,v)}$ is equal to

- (i) $\frac{-2u}{v}$ (ii) $\frac{-2v}{u}$ (iii) 0 (iv) 1

27. If $J_1 = \frac{\partial(u,v)}{\partial(x,y)}$ and $J_2 = \frac{\partial(x,y)}{\partial(u,v)}$, then $J_1 J_2$ is equal to

- (i) 1 (ii) -1 (iii) 0 (iv) None

28. If $A = f_{xx}(a, b)$, $B = f_{xy}(a, b)$, $C = f_{yy}(a, b)$,

then $f(x, y)$ will have a maximum at (a, b) if

- (i) $f_x = 0$, $f_y = 0$, $AC < B^2$ and $A < 0$ (ii) $f_x = 0$, $f_y = 0$, $AC = B^2$ and $A > 0$
 (iii) $f_x = 0$, $f_y = 0$, $AC - B^2 > 0$ and $A > 0$ (iv) None

29. If an error of 1% is made in measuring its length and breadth, the percentage error in the area of rectangle is

- (i) 0.2% (ii) 0.02% (iii) 2% (iv) None

30. If $r = \frac{\partial^2 f}{\partial x^2}$, $s = \frac{\partial^2 f}{\partial x \partial y}$ and $t = \frac{\partial^2 f}{\partial y^2}$ then the condition for saddle point is

- (i) $rt - s^2 < 0$ (ii) $rt - s^2 > 0$ (iii) $rt - s^2 = 0$ (iv) None

31. If the sum of three numbers is constant, then product will be maximum when the numbers are

- (i) Unequal (ii) Equal (iii) Not defined (iv) None

32. The necessary conditions for a function $f(x, y)$ to have extremum at (a, b) is

- (i) $f_x(a, b) = 0$, $f_y(a, b) = 0$. (ii) $f_x(a, b) > 0$, $f_y(a, b) < 0$
 (iii) $f_x(a, b) < 0$, $f_y(a, b) > 0$ (iv) None

33. If u, v are functions of r, s , where r, s are functions of x, y then $\frac{\partial(u,v)}{\partial(r,s)} \cdot \frac{\partial(r,s)}{\partial(u,v)}$ is equal to

- (i) 1 (ii) -1 (iii) 0 (iv) None

34. $\int_{-1}^2 \int_{x^2}^{x+2} dy dx =$

- I. $\frac{1}{2}$ II. $\frac{9}{2}$ III. $\frac{-9}{4}$ IV. $\frac{5}{2}$

35. The polar form of the integral $\int_0^a \int_y^a dx dy$ is.....



- I. $\int_0^{\frac{\pi}{4}} \int_0^{a \cos \theta} r dr d\theta$ II. $\int_0^{\frac{\pi}{4}} \int_0^{a \sec \theta} r dr d\theta$ III. $\int_0^{\frac{\pi}{2}} \int_0^{a \cos \theta} r dr d\theta$ IV. $\int_0^{\frac{\pi}{2}} \int_0^{a \sec \theta} r dr d\theta$.
36. The polar form of the integral $\int_0^a \int_0^{\sqrt{a^2-x^2}} f(x,y) dx dy$ is
- I. $\int_0^a \int_0^a f(r,\theta) dr d\theta$ II. $\int_0^{\frac{\pi}{2}} \int_0^a f(r,\theta) r dr d\theta$ III. $\int_0^{\frac{\pi}{2}} \int_0^r f(r,\theta) dr d\theta$ IV. None of these
37. Changing the order of integration $\int_0^{4a} \int_x^{2\sqrt{ax}} f(x,y) dy dx$ leads to $I = \int_r^s \int_p^q f(x,y) dx dy$ then p must be
- I. $\frac{y}{4a}$ II. $\frac{y^2}{a}$ III. $\frac{y^2}{4a}$ IV. $\frac{y}{a}$
38. $\iint dx dy$ gives
- I. area of region II. Perimeter of region III. Volume of a region IV. None of these
39. $\iint r dr d\theta$ gives
- I. area of region II. Perimeter of region III. Volume of a region IV. None of these
40. The order of $\int_0^1 \int_0^y \int_0^{x^2y} f(x,y,z) dx dy dz$ is
- I. $dx dy dz$ II. $dz dx dy$ III. $dy dx dz$ IV. $dy dz dx$
41. For $\int_0^a \int_0^y f(x,y) dx dy$, the change of the order is
- I. $\int_0^y \int_0^a f(x,y) dx dy$ II. $\int_0^a \int_x^a f(x,y) dx dy$
 III. $\int_0^a \int_a^x f(x,y) dx dy$ IV. $\int_0^a \int_a^y f(x,y) dx dy$
- 42.. Which of the following relations is true?
- I. $\iint_A f(x,y) dx dy = \iint_A f(r \cos \theta, r \sin \theta) d\theta dr$ II. $\iint_A f(x,y) dx dy = \iint_A f(r \sin \theta, r \cos \theta) d\theta dr$
 III. $\iint_A f(x,y) dx dy = \iint_A f(r \cos \theta, r \sin \theta) r dr d\theta$ IV. $\iint_A f(x,y) dx dy = \iint_A f(r \cos \theta, r \sin \theta) r^2 d\theta dr$
43. If the density at any point varies as the distance of the point from the X-axis, then ρ is equal to
- I. kxy II. kx III. ky IV. None of these.
- 44.. Area bounded by two plane $y = f_1(\theta)$ and $y = f_2(\theta)$ intersecting in $A(r_1, \alpha), B(r_2, \beta)$ is given by
- I. $\int_{\alpha}^{\beta} \int_{r_1}^{r_2} r d\theta dr$ II. $\int_{r_1}^{r_2} \int_{\alpha}^{\beta} r dr d\theta$ III. $\int_{\alpha}^{\beta} \int_{f_1(\theta)}^{f_2(\theta)} r d\theta dr$ IV. $\int_{\alpha}^{\beta} \int_{r_1}^{r_2} f_1(\theta) f_2(\theta) d\theta dr$
45. The series $\frac{1}{1^p} + \frac{1}{2^p} + \frac{1}{3^p} + \dots$ converges if
- I. $p > 0$ II. $p < 1$ III. $p > 1$ IV. None
46. The series $\frac{2}{1^2} - \frac{3}{2^2} + \frac{4}{3^2} - \frac{5}{4^2} + \dots$ is
- I. Conditionally convergent II. Absolutely convergent III. Divergent IV. None
47. If $\lim_{n \rightarrow \infty} n \left\{ \frac{u_n}{u_{n+1}} - 1 \right\} = K$, then $\sum u_n$ diverges for
- I. $K < 1$ II. $K > 1$ III. $K = 1$ IV. None
48. If $\lim_{n \rightarrow \infty} \frac{u_n}{u_{n+1}} = K$, then $\sum u_n$ diverges for
- I. $K > 1$ II. $K < 1$ III. $K = 1$ IV. None
49. If $\sum u_n$ is a convergent series of positive terms, then $\lim_{n \rightarrow \infty} u_n$ is
- I. 1 II. ± 1 III. 0 IV. None
50. The series $2 - 5 + 3 + 2 - 5 + 3 + 2 - 5 + 3 + \dots \infty$ is
- I. Convergent II. Divergent III. Oscillatory IV. None
51. Every absolutely convergent series is necessarily
- I. Divergent II. Convergent III. Oscillatory IV. None
52. $\sum \frac{x^n}{(n+1)^n}$ $x > 0$ is
- I. Divergent II. Convergent III. Oscillatory IV. None
53. $\sum \sin \frac{1}{n}$ is
- I. Convergent II. Divergent III. Oscillatory IV. None
54. The series $\sum_{n=2}^{\infty} \frac{1}{(\log n)^n}$ is convergent is



I. True II. False

55. If $u = e^x(x\cos y - y\sin y)$, then the value of $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$ is

- (i) 0 (ii) 2 (iii) xye^x (iv) None

56. If $u = x^3 + 2xy + y^2 + x + y$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ is equal to

- (i) u (ii) 2u (iii) 0 (iv) None of These

57. If $z = \sin^{-1} \frac{\sqrt{x^2+y^2}}{x+y}$ then $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y}$ is equal to

- (i) u (ii) u (iii) 2u (iv) None of These

58. $u = \frac{\sqrt{x}-\sqrt{y}}{\sqrt{x}+\sqrt{y}}$ is homogeneous function of degree

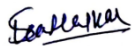
- (i) 0 (ii) u1 (iii) $\frac{1}{2}$ (iv) None of These

59. If $u = x^4 + y^4 + 3x^2y^2$ then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ is equal to

- (i) 4u (ii) 2u (iii) 0 (iv) None of These

60. If $u = (x - y)^4 + (y - z)^4 + (z - x)^4$ then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z}$ is equal to

- (i) 4u (ii) 2u (iii) u (iv) None of These



Mr.Sagar S. Kathalkar
Subject Teacher



Dr.A.N.Gupta,
HOD, BSHD, JDCOEM





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2018-19



Question Bank

Semester/ Year: -V Sem/ 3 Year

Name: - Database Management System

In-charge: Prof. Swati Raut

| | | | |
|----|---|--------|---|
| 1 | What is Concurrency control? | Unit-6 | 2 |
| 2 | Define Data Independence. | Unit-1 | 2 |
| 3 | Give the levels of data abstraction? | Unit-1 | 2 |
| 4 | State Data Manipulation Operations. | Unit-1 | 2 |
| 5 | Define Transaction processing. | Unit-6 | 2 |
| 6 | What is Data Definition Language? | Unit-1 | 2 |
| 7 | State Relational algebra operation. | Unit-2 | 2 |
| 8 | Define Database recovery. | Unit-6 | 2 |
| 9 | Explain Select operation with Example. | Unit-1 | 2 |
| 10 | Enlist steps for fetching data from Database. | Unit-5 | 2 |
| 11 | Write short note on Merge join & Product join | Unit-4 | 2 |
| 12 | State File processing system Limitations. | Unit-1 | 2 |
| 13 | Define Database Systems. | Unit-1 | 2 |
| 14 | Define Data models. | Unit-1 | 2 |
| 15 | What is Data Abstraction? | Unit-1 | 2 |
| 16 | Define Entity-Relationship Model. | Unit-1 | 2 |
| 17 | Define Transaction Processing. | Unit-6 | 2 |
| 18 | Describe Relational Query Languages? | Unit-2 | 2 |
| 19 | List any two advantages of DBMS. | Unit-1 | 2 |
| 20 | What is a File Processing System? | Unit-1 | 2 |
| 21 | Write a short note on SQL server. | Unit-2 | 2 |
| 22 | Define Query Processing. | Unit-4 | 2 |
| 23 | Define the Term file. | Unit-5 | 2 |
| 24 | Define B-trees. | Unit-5 | 2 |
| 25 | Enlist the different types of Databases. | Unit-1 | 2 |
| 26 | What is a Database? | Unit-1 | 2 |
| 27 | Define Tuple Variable. | Unit-2 | 2 |
| 28 | Write a query to select all records from the tables called as EMPLOYEE. | Unit-1 | 2 |
| 29 | Explain the Importance of MYSQL in DBMS. | Unit-2 | 2 |
| 30 | Write a query to Illustrate the "where" clause. | Unit-1 | 2 |
| 31 | Describe the properties of relation. | Unit-2 | 2 |
| 32 | List different models of database management systems. | Unit-1 | 2 |
| 33 | State the syntax of basic relational algebra query. | Unit-4 | 2 |
| 34 | Illustrate the create table command in SQL | Unit-1 | 2 |
| 35 | State the need of Normalization in DBMS | Unit-3 | 2 |





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| | | | |
|----|--|--------|---|
| 36 | Explain the Evolution of Data Models. | Unit-1 | 2 |
| 37 | Explain functions of DBMS? | Unit-1 | 2 |
| 38 | Define Primary Key & Foreign Key. | Unit-1 | 2 |
| 39 | Explain Tuple and domain relational calculus. | Unit-2 | 4 |
| 40 | Explain different types of joins. | Unit-4 | 4 |
| 41 | Give explanation for Query equivalence. | Unit-4 | 4 |
| 42 | Explain Data Manipulation Language with its operation. | Unit-1 | 4 |
| 43 | Differentiate between Open source and Commercial DBMS. | Unit-2 | 4 |
| 44 | Explain Evolution of Data Models. | Unit-1 | 4 |
| 45 | Describe Relational Integrity Constraints with suitable examples. | Unit-1 | 4 |
| 46 | Describe DDL and DML constructs. | Unit-1 | 4 |
| 47 | Write short note on ORACLE & DB2 | Unit-2 | 4 |
| 48 | Illustrate the evolution of Data Models. | Unit-1 | 4 |
| 49 | Write a query to create a table called EMPLOYEE with column name as "EMP_ID", "EMP_Name", "EMP_PH" and insert any two records in it. | Unit-1 | 4 |
| 50 | What is Constraint? enlist any 4 Constraints with examples. | Unit-1 | 4 |
| 51 | Explain BCNF with examples. | Unit-3 | 4 |
| 52 | Mention the data manipulation operations in DBMS with examples. | Unit-1 | 4 |
| 53 | Explain the different types of database keys? | Unit-1 | 4 |
| 54 | Explain two methods for evaluation of expressions. | Unit-4 | 4 |
| 55 | What are the different types of Relationships in DBMS? | Unit-1 | 4 |
| 56 | What are the different types of Entities? | Unit-1 | 4 |
| 57 | Explain database normal forms in detail. | Unit-3 | 7 |
| 58 | Explain types of hashing in detail. | Unit-5 | 7 |
| 59 | Explain E-R model in detail with examples. | Unit-1 | 7 |
| 60 | Explain Multi-version and optimistic Concurrency Control schemes. | Unit-6 | 7 |
| 61 | Explain the Locking and timestamp based schedulers. | Unit-6 | 7 |
| 62 | Give explanation for Relational algebra with its types | Unit-2 | 7 |
| 63 | Give Significance and advantages of DBMS. | Unit-1 | 7 |
| 64 | Explain Types of Databases. | Unit-1 | 7 |
| 65 | Explain Data Definition Language & Data Manipulation Language. | Unit-1 | 7 |
| 66 | Give explanation for data manipulation operations | Unit-1 | 7 |
| 67 | What is Normalization? explain 1NF & 2NF with examples. | Unit-3 | 7 |
| 68 | Enlist and explain all DDL Commands and also write a query as an example for the same. | Unit-1 | 7 |
| 69 | Illustrate ER Model in DBMS. | Unit-1 | 7 |
| 70 | Explain Hashing in DBMS with example. | Unit-5 | 7 |
| 71 | Draw and explain detailed System architecture of DBMS. | Unit-1 | 7 |
| 72 | Give explanation for Relational algebra with its types. | Unit-2 | 7 |
| 73 | Discuss Normalization. Explain its advantages. | Unit-3 | 7 |
| 74 | Explain data manipulation commands with syntax and give examples. | Unit-2 | 7 |





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॥ ज्ञानम् सर्वार्थं साधनम् ॥

| | | | |
|----|---|--------|----|
| 75 | Examine transactions and explain ACID properties in details. | Unit-6 | 7 |
| 76 | Construct an E-R model for a college management system. Associate student , Teacher, Course and grades with it | Unit-1 | 7 |
| 77 | State and explain the drawbacks of file processing System | Unit-1 | 7 |
| 78 | Explain the following with examples a) Primary key b) Candidate key c) Super key d) Foreign key e) Composite key | Unit-1 | 7 |
| 79 | Describe File Organization and Indexing with types in details | Unit-5 | 7 |
| 80 | Explain Serializability of scheduling, Locking and timestamp based Schedulers. | Unit-6 | 12 |
| 81 | Describe the functional components of a DBMS with a suitable diagram of its architecture. | Unit-3 | 12 |
| 82 | What are different types of formal relational query languages? Explain with examples. | Unit-2 | 12 |
| 83 | What are the different types of Joins? Explain all with examples. | Unit-4 | 12 |
| 84 | Illustrate built functions in DBMS with examples. Explain ACID property. | Unit-6 | 12 |
| 85 | State Evaluation of relational algebra expressions also Explain Join strategies. | Unit-3 | 12 |
| 86 | Explain Query processing with Evaluation of relational algebra expressions in detail. | Unit-4 | 12 |
| 87 | Describe database management system with its advantages also explains Types of Databases. | Unit-1 | 12 |
| 88 | Describe the File Organization and Indexing with its types in details | Unit-5 | 12 |
| 89 | Explain 1NF, 2NF, 3NF and BCNF in detail with suitable example | Unit-4 | 12 |
| 90 | Explain the following in detail with suitable example a) Natural join b) Self-join c) Cross join d) Full outer join | Unit-4 | 12 |


Prof. Swati Raut ,
(Subject I/C)


Prof. Rohan Kokate
(DBATU Co-ordinator)


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Education to Eternity



VISION

To be a center of excellence imparting professional education satisfying societal and global needs.

MISSION

1. Transforming students into lifelong learners through, quality teaching, training and exposure to concurrent technologies.
2. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.

MBA 1st Semester
Question Bank: Business Research

Academic Year 2018-19

1. Select a research problem, enlist the variables in the problem and formulate a theoretical framework to demonstrate the link between the variables under the study.
2. The Indian army wants to ascertain why young students do not select the armed forces as a career option in their graduation.
 - (a) How would you formulate a research problem to resolve the dilemma?
 - (b) What would be the variables under the study?
 - (c) How would you generate descriptive and relational hypothesis for your study?
3. There is a residential locality where the residents comprise Hindus, Sikhs, Muslims, Jains and Christians. A sample survey is conducted to understand the food habits of the residents. Every 7th house is selected as the sample. Critically examine the sampling techniques.
4. Develop a Likert Scale to measure the perception of bank customers towards the concept of Internet Banking.
5. "Essentials" a shopping mall in Nagpur has undertaken a research to ascertain the attitude of Nagpur shoppers towards mall shopping experience. For this study, the mall identified the following research objectives:
 - To understand the typical Nagpur's shopping behaviour
 - To understand the parameters that influence his/her selection of a mall
 - To understand the respondents' spending pattern in a mall
 - To understand consumer awareness about specific malls in Nagpur city
 - To understand the consumer's evaluation and satisfaction with respect to the malls that he/she has shopped in
 - To adequately profile the typical Nagpur shopper

Which method of data collection would you use for this study and why? Design a suitable questionnaire that can be used for this study?

6. What are the guidelines a researcher must follow for graphical and tabular representation of the research results?

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HOD MBA





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Department Of Electrical Engineering

"Igniting minds to illuminate the world"

2018-19 (Odd Sem)

Name of Subject – Electrical Installation & Design
Semester – 7th Sem EE

Topic - Illumination and Electrical Energy
Tariff

Electricity Rates Or Tariff

- Today's interconnected power systems supply a number of consumers. With such a big organization, management, economy and control come into account automatically. The supply companies (usually in the public sector) have to sell their electricity at such a rate that it covers the costs of generation, transmission, distribution, the salaries of the employees, the interest and depreciation and the profit targeted by the company. This rate at which electrical energy is sold to the consumers is termed as 'tariff'.
- The cost of generation of electricity will depend upon various factors such as Connected Load, Maximum Demand, Load factor, Demand Factor, Diversity Factor, Plant Capacity Factor and Use Factor. These, in turn, will depend upon the type of load and load conditions. Hence, the tariff is different for different type of loads (and hence different consumers).
-
- Therefore, while fixing the tariff, we have to consider various consumers (industrial, domestic, commercial, etc.) and their requirements. Due to this, the whole process becomes complicated.




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Factors Involved In Deciding An Electricity Tariff

- The tariff should be such that the total cost of generation, transmission, and distribution is recovered.
- It should earn a reasonable profit.
- It must be fair and at a reasonable to the consumers.
- It should be simple and easy to apply.
- It should be attractive than a competitor.
- Keeping in mind the above factors, various types of tariff have been designed. The most commonly used are given below.



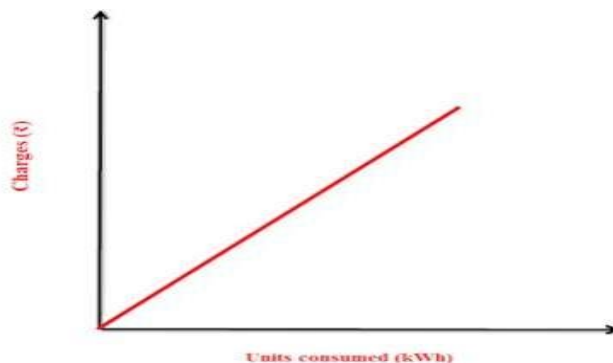
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Various Types Of Electricity Tariff

- **1. Simple Tariff**

In this type of tariff, a fixed rate is applied for each unit of the energy consumed. It is also known as a uniform tariff. The rate per unit of energy does not depend upon the quantity of energy used by a consumer. The price per unit (1 kWh) of energy is constant. This energy consumed by the consumer is recorded by




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Advantages:

Simplest method

Easily understandable and easy to apply

Each consumer has to pay according to his utilization

Disadvantages

There is no discrimination according to the different types of consumers.

The cost per unit is high.

There are no incentives (an attractive feature that makes the consumers use more electricity.)

If a consumer does not consume any energy in a particular month, the supplier cannot charge any money even though the connection provided to the consumer has its own costs.

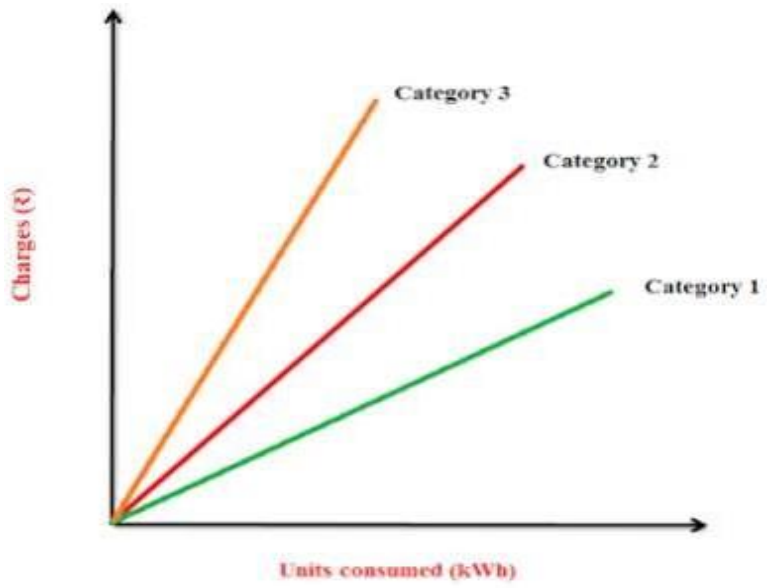
- **2. Flat Rate Tariff**

- In this tariff, different types of consumers are charged at different rates of cost per unit (1kWh) of electrical energy consumed. Different consumers are grouped under different categories. Then, each category is charged money at a fixed rate similar to Simple Tariff. The different rates are decided according to the consumers, their loads and load factors. Graphically, it can be represented as follows:



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- **Advantages**

More fair to different consumers.

- Simple calculations.

- **Disadvantages**

A particular consumer is charged at a particular rate. But there are no incentives for the consumer.

- Since different rates are decided according to different loads, separate meters need to be installed for different loads such as light loads, power loads, etc. This makes the whole arrangement complicated and expensive.
- All the consumers in a particular “category” are charged at the same rates. However, it is fairer if the consumers that utilize more energy be charged at lower fixed rates.
- **Application**
Generally applied to domestic consumers.



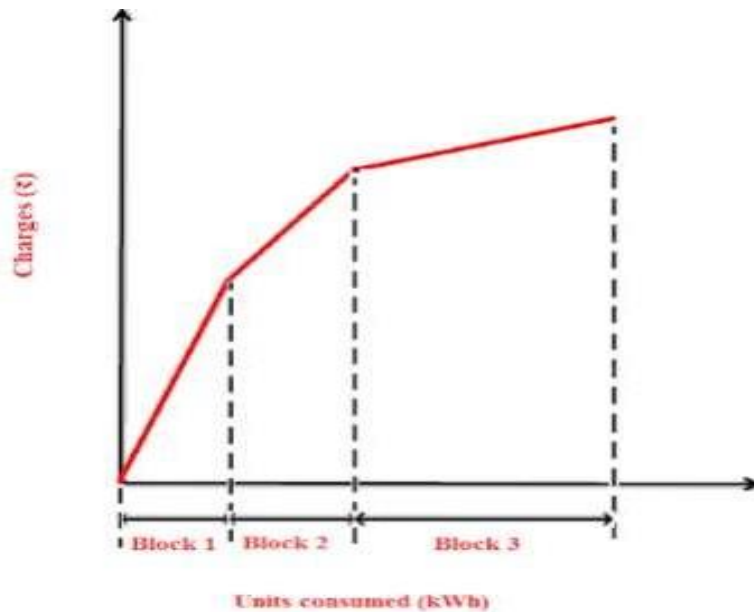
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- **3. Block Rate Tariff**

- In this tariff, the first block of the energy consumed (consisting of a fixed number of units) is charged at a given rate and the succeeding blocks of energy (each with a predetermined number of units) are charged at progressively reduced rates. The rate per unit in each block is fixed. For example, the first 50 units (1st block) may be charged at 3 rupees per unit; the next 30 units (2nd block) at 2.50 rupees per unit and the next 30 units (3rd block) at 2 rupees per unit.

- Graphically, it can be represented as follows:




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- **Advantages**

Only 1 energy meter is required.

- Incentives are provided for the consumers due to reduced rates. Hence consumers use more energy. This improves load factor and reduces cost of generation.

- **Disadvantages**

If a consumer does not consume any energy in a particular month, the supplier does not charge any money even though the connection provided to the consumer has its own costs.

- **Application**

Generally applied to residential and small commercial consumers.

- **4. Two Part Tariff**

- In this tariff scheme, the total costs charged to the consumers consist of two components: fixed charges and running charges. It when multiplied with max demand (kW) gives the total fixed

$B =$ charge per kWh of energy consumed (i.e. B is a constant which when multiplied with units consumed (kWh), gives total running charges.)

- The fixed charges will depend upon maximum demand of the consumer and the running charge will depend upon the energy (units) consumed. The fixed charges are due to the interest and depreciation on the capital cost of building and equipment, taxes and a part of operating cost which is independent of energy generated. On the other hand, the running charges are due to the operating cost which varies with variation in generated (or supplied) energy.

- **Advantages**

If a consumer does not consume any energy in a particular month, the supplier will get the return equal to the fixed charges.

- **Disadvantages**

Even if a consumer does not use any electricity, he has to pay the fixed charges regularly.

- The maximum demand of the consumer is not determined. Hence, there is error of assessment of max demand and hence conflict between the supplier and the consumer.

- **Application**

Generally applied to industrial consumers with appreciable max demand.

- **5. Maximum Demand Tariff**

- In this tariff, the energy consumed is charged on the basis of maximum demand. The units (energy) consumed by him is called maximum demand. The max demand is calculated by a maximum demand meter. This removes any conflict between the supplier and the consumer as it were the two part tariff. It is similar to two-part tariff.

Application

Generally applied to large industrial consumers.

- **6. Three Part Tariff**

- In this scheme, the total costs are divided into 3 sections: Fixed costs, semi-fixed costs and running costs.

Total Charges = $[A + B \text{ (kW)} + C \text{ (kWh)}]$ Where, A = fixed charges,

B = charge per kW of max demand (i.e. B is a constant which when multiplied with max demand (kW) gives the total fixed costs.)

C = charge per kWh of energy consumed (i.e. C is a constant which when multiplied with units consumed (gives total running charges.)



Application

This type of tariff is generally applied to big consumers.

• **7. Power Factor Tariff**

- In this tariff scheme, the power factor of the consumer's load is also considered. We know that power factor is an important parameter in power system. For optimal operation, the pf must be high. Low pf will cause more losses and imbalance on the system. Hence the consumers which have low pf loads will be charged more. It can be further divided into the following types:

(I) KVA Maximum Demand Tariff

- In this type of tariff, the fixed charges are made on the basis of maximum demand in kVA instead of having low power factor load will have to pay more fixed charges. This gives the incentive to the consumers to operate their load at high power factor. Generally, the suppliers ask the consumers to install power factor correction equipment.

(II) KW And KVAR Tariff

- In this tariff scheme, the active power (kW) consumption and the reactive power (kVAR) consumption is measured separately. Of course, a consumer having low power factor load will have to pay more fixed charges.



Subject Incharge



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Fluid Mechanics and thermal engineering lecture notes

1 Flow of viscous fluid through circular pipe

For the flow of viscous fluid through circular pipe, the velocity distribution across a section, the ratio of maximum velocity to average velocity, the shear stress distribution and drop of pressure for a given length is to be determined. The flow through the circular pipe will be viscous or laminar, if the Reynolds number (R_e^*) is less than 2000. The expression for Reynold number is given by

$$R_e = \frac{\rho V D}{\mu}$$

where ρ = Density of fluid flowing through pipe
 V = Average velocity of fluid
 D = Diameter of pipe and
 μ = Viscosity of fluid.

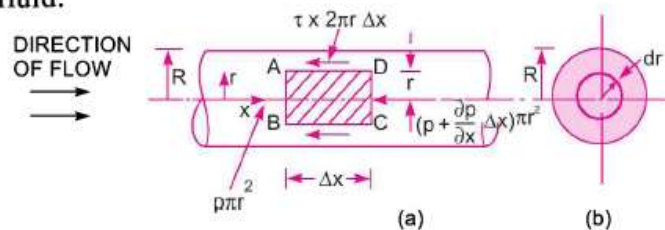


Fig. 9.1 Viscous flow through a pipe.

Consider a horizontal pipe of radius R . The viscous fluid is flowing from left to right in the pipe as shown in Fig. 9.1 (a). Consider a fluid element of radius r , sliding in a cylindrical fluid element of radius $(r + dr)$. Let the length of fluid element be Δx . If 'p' is the intensity of pressure on the face AB, then the intensity of pressure on face CD will be $\left(p + \frac{\partial p}{\partial x} \Delta x\right)$. Then the forces acting on the fluid element are :

1. The pressure force, $p \times \pi r^2$ on face AB.
2. The pressure force, $\left(p + \frac{\partial p}{\partial x} \Delta x\right) \pi r^2$ on face CD.
3. The shear force, $\tau \times 2\pi r \Delta x$ on the surface of fluid element. As there is no acceleration, hence the summation of all forces in the direction of flow must be zero i.e.,

$$p\pi r^2 - \left(p + \frac{\partial p}{\partial x} \Delta x\right) \pi r^2 - \tau \times 2\pi r \times \Delta x = 0$$

or
$$-\frac{\partial p}{\partial x} \Delta x \pi r^2 - \tau \times 2\pi r \times \Delta x = 0$$

$$-\frac{\partial p}{\partial x} \cdot r - 2\tau = 0$$

$$\tau = -\frac{\partial p}{\partial x} \frac{r}{2}$$

The shear stress τ across a section varies with 'r' as $\frac{\partial p}{\partial x}$ across a section is constant. Hence shear stress distribution across a section is linear as shown in Fig. 9.2 (a).

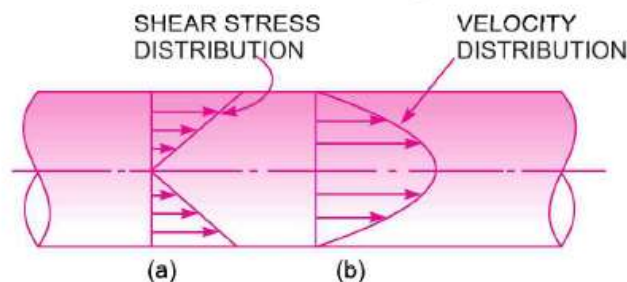


Figure Shear stress and velocity distribution along a section

2 Velocity Distribution.

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(i) **Velocity Distribution.** To obtain the velocity distribution across a section, the value of shear stress $\tau = \mu \frac{du}{dy}$ is substituted in equation (9.1).

But in the relation $\tau = \mu \frac{du}{dy}$, y is measured from the pipe wall. Hence

$$y = R - r \quad \text{and} \quad dy = -dr$$

$$\therefore \tau = \mu \frac{du}{-dr} = -\mu \frac{du}{dr}$$

Substituting this value in (9.1), we get

$$-\mu \frac{du}{dr} = -\frac{\partial p}{\partial x} \frac{r}{2} \quad \text{or} \quad \frac{du}{dr} = \frac{1}{2\mu} \frac{\partial p}{\partial x} r$$

Integrating this above equation w.r.t. 'r', we get

$$u = \frac{1}{4\mu} \frac{\partial p}{\partial x} r^2 + C$$

where C is the constant of integration and its value is obtained from the boundary condition that at $r = R$, $u = 0$.

$$\therefore 0 = \frac{1}{4\mu} \frac{\partial p}{\partial x} R^2 + C$$

$$\therefore C = -\frac{1}{4\mu} \frac{\partial p}{\partial x} R^2$$

Substituting this value of C in equation (9.2), we get

$$\begin{aligned} u &= \frac{1}{4\mu} \frac{\partial p}{\partial x} r^2 - \frac{1}{4\mu} \frac{\partial p}{\partial x} R^2 \\ &= -\frac{1}{4\mu} \frac{\partial p}{\partial x} [R^2 - r^2] \end{aligned}$$

In equation (9.3), values of μ , $\frac{\partial p}{\partial x}$ and R are constant, which means the velocity, u varies with the square of r . Thus equation (9.3) is a equation of parabola. This shows that the velocity distribution across the section of a pipe is parabolic. This velocity distribution is shown in Fig. 9.2 (b).

3 Ratio of maximum velocity to average velocity



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(ii) **Ratio of Maximum Velocity to Average Velocity.** The velocity is maximum, when $r = 0$ in equation (9.3). Thus maximum velocity, U_{\max} is obtained as

$$U_{\max} = -\frac{1}{4\mu} \frac{\partial p}{\partial x} R^2 \quad \dots(9.4)$$

The average velocity, \bar{u} , is obtained by dividing the discharge of the fluid across the section by the area of the pipe (πR^2). The discharge (Q) across the section is obtained by considering the flow through a circular ring element of radius r and thickness dr as shown in Fig. 9.1 (b). The fluid flowing per second through this elementary ring

$$dQ = \text{velocity at a radius } r \times \text{area of ring element} \\ = u \times 2\pi r dr$$

$$= -\frac{1}{4\mu} \frac{\partial p}{\partial x} [R^2 - r^2] \times 2\pi r dr$$

$$\begin{aligned} \therefore Q &= \int_0^R dQ = \int_0^R -\frac{1}{4\mu} \frac{\partial p}{\partial x} (R^2 - r^2) \times 2\pi r dr \\ &= \frac{1}{4\mu} \left(\frac{-\partial p}{\partial x} \right) \times 2\pi \int_0^R (R^2 - r^2) r dr \\ &= \frac{1}{4\mu} \left(\frac{-\partial p}{\partial x} \right) \times 2\pi \int_0^R (R^2 r - r^3) dr \\ &= \frac{1}{4\mu} \left(\frac{-\partial p}{\partial x} \right) \times 2\pi \left[\frac{R^2 r^2}{2} - \frac{r^4}{4} \right]_0^R = \frac{1}{4\mu} \left(\frac{-\partial p}{\partial x} \right) \times 2\pi \left[\frac{R^4}{2} - \frac{R^4}{4} \right] \\ &= \frac{1}{4\mu} \left(\frac{-\partial p}{\partial x} \right) \times 2\pi \times \frac{R^4}{4} = \frac{\pi}{8\mu} \left(\frac{-\partial p}{\partial x} \right) R^4 \end{aligned}$$

$$\therefore \text{Average velocity, } \bar{u} = \frac{Q}{\text{Area}} = \frac{\frac{\pi}{8\mu} \left(\frac{-\partial p}{\partial x} \right) R^4}{\pi R^2}$$

$$\text{or } \bar{u} = \frac{1}{8\mu} \left(\frac{-\partial p}{\partial x} \right) R^2 \quad \dots(9.5)$$

Dividing equation (9.4) by equation (9.5),

$$\frac{U_{\max}}{\bar{u}} = \frac{-\frac{1}{4\mu} \frac{\partial p}{\partial x} R^2}{\frac{1}{8\mu} \left(\frac{-\partial p}{\partial x} \right) R^2} = 2.0$$

\therefore Ratio of maximum velocity to average velocity = 2.0.



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4 Drop of pressure for a given length of pipe (Hagen Poiseuille Equation)

$$\bar{u} = \frac{1}{8\mu} \left(\frac{-\partial p}{\partial x} \right) R^2 \quad \text{or} \quad \left(\frac{-\partial p}{\partial x} \right) = \frac{8\mu\bar{u}}{R^2}$$

Integrating the above equation w.r.t. x , we get

$$-\int_2^1 dp = \int_2^1 \frac{8\mu\bar{u}}{R^2} dx$$

$$\therefore -[p_1 - p_2] = \frac{8\mu\bar{u}}{R^2} [x_1 - x_2] \quad \text{or} \quad (p_1 - p_2) = \frac{8\mu\bar{u}}{R^2} [x_2 - x_1]$$

$$= \frac{8\mu\bar{u}}{R^2} L$$

$$\{ \because x_2 - x_1 = L \text{ from Fig. 9.3} \}$$

$$= \frac{8\mu\bar{u}L}{(D/2)^2}$$

$$\left\{ \because R = \frac{D}{2} \right\}$$

or $(p_1 - p_2) = \frac{32\mu\bar{u}L}{D^2}$, where $p_1 - p_2$ is the drop of pressure.

$$\therefore \text{Loss of pressure head} = \frac{p_1 - p_2}{\rho g}$$

$$\therefore \frac{p_1 - p_2}{\rho g} = h_f = \frac{32\mu\bar{u}L}{\rho g D^2} \quad \dots(9.6)$$

Equation (9.6) is called **Hagen Poiseuille Formula**.

5 Flow of Viscous fluid between two parallel plates

In this case also, the shear stress distribution, the velocity distribution across a section ; the ratio of maximum velocity to average velocity and difference of pressure head for a given length of parallel plates, are to be calculated.

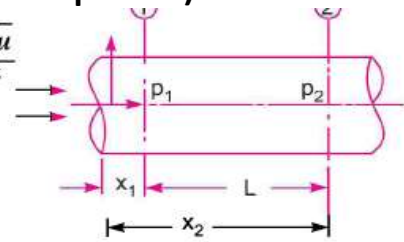


Fig. 9.3



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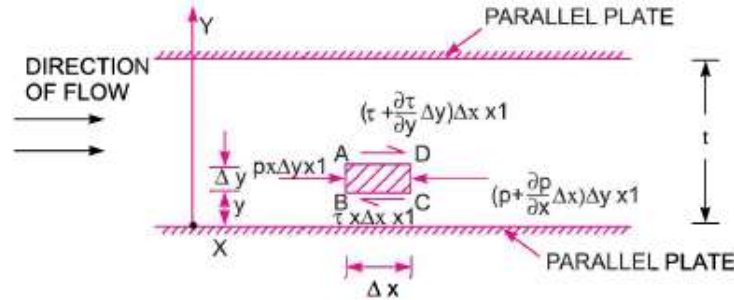


Fig. 9.6 Viscous flow between two parallel plates.

Consider two parallel fixed plates kept at a distance 'r' apart as shown in Fig. 9.6. A viscous fluid is flowing between these two plates from left to right. Consider a fluid element of length Δx and thickness Δy at a distance y from the lower fixed plate. If p is the intensity of pressure on the face AB of the fluid element then intensity of pressure on the face CD will be $\left(p + \frac{\partial p}{\partial x} \Delta x\right)$. Let τ is the shear stress acting on the face BC then the shear stress on the face AD will be $\left(\tau + \frac{\partial \tau}{\partial y} \Delta y\right)$. If the width of the element in the direction perpendicular to the paper is unity then the forces acting on the fluid element are :

1. The pressure force, $p \times \Delta y \times 1$ on face AB .
2. The pressure force, $\left(p + \frac{\partial p}{\partial x} \Delta x\right) \Delta y \times 1$ on face CD .
3. The shear force, $\tau \times \Delta x \times 1$ on face BC .
4. The shear force, $\left(\tau + \frac{\partial \tau}{\partial y} \Delta y\right) \Delta x \times 1$ on face AD .

For steady and uniform flow, there is no acceleration and hence the resultant force in the direction of flow is zero.

$$\therefore p \Delta y \times 1 - \left(p + \frac{\partial p}{\partial x} \Delta x\right) \Delta y \times 1 - \tau \Delta x \times 1 + \left(\tau + \frac{\partial \tau}{\partial y} \Delta y\right) \Delta x \times 1 = 0$$

$$\text{or} \quad -\frac{\partial p}{\partial x} \Delta x \Delta y + \frac{\partial \tau}{\partial y} \Delta y \Delta x = 0$$

$$\text{Dividing by } \Delta x \Delta y, \text{ we get } -\frac{\partial p}{\partial x} + \frac{\partial \tau}{\partial y} = 0 \quad \text{or} \quad \frac{\partial p}{\partial x} = \frac{\partial \tau}{\partial y}$$

6 Velocity distribution for flow between two fixed parallel plates

(i) **Velocity Distribution.** To obtain the velocity distribution across a section, the value of shear stress $\tau = \mu \frac{du}{dy}$ from Newton's law of viscosity for laminar flow is substituted in equation (9.7).

$$\therefore \frac{\partial p}{\partial x} = \frac{\partial}{\partial y} \left(\mu \frac{du}{dy} \right) = \mu \frac{\partial^2 u}{\partial y^2}$$

$$\therefore \frac{\partial^2 u}{\partial y^2} = \frac{1}{\mu} \frac{\partial p}{\partial x}$$

Integrating the above equation w.r.t. y , we get

$$\frac{\partial u}{\partial y} = \frac{1}{\mu} \frac{\partial p}{\partial x} y + C_1 \quad \left\{ \because \frac{\partial p}{\partial x} \text{ is constant} \right\}$$

Integrating again $u = \frac{1}{\mu} \frac{\partial p}{\partial x} \frac{y^2}{2} + C_1 y + C_2$

where C_1 and C_2 are constants of integration. Their values are obtained from the two boundary conditions that is (i) at $y = 0, u = 0$ (ii) at $y = t, u = 0$.

The substitution of $y = 0, u = 0$ in equation (9.8) gives
 $0 = 0 + C_1 \times 0 + C_2$ or $C_2 = 0$

The substitution of $y = t, u = 0$ in equation (9.8) gives

$$0 = \frac{1}{\mu} \frac{\partial p}{\partial x} \frac{t^2}{2} + C_1 \times t + 0$$

$$\therefore C_1 = -\frac{1}{\mu} \frac{\partial p}{\partial x} \frac{t^2}{2 \times t} = -\frac{1}{2\mu} \frac{\partial p}{\partial x} t$$

Substituting the values of C_1 and C_2 in equation (9.8)

$$u = \frac{1}{2\mu} \frac{\partial p}{\partial x} y^2 + y \left(-\frac{1}{2\mu} \frac{\partial p}{\partial x} t \right)$$

$$u = -\frac{1}{2\mu} \frac{\partial p}{\partial x} [ty - y^2]$$



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In the above equation, μ , $\frac{\partial p}{\partial x}$ and t are constant. It means u varies with the square of y . Hence equation (9.9) is a equation of a parabola. Hence velocity distribution across a section of the parallel plate is parabolic. This velocity distribution is shown in Fig. 9.7 (a).

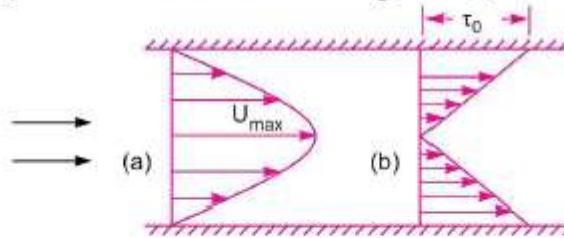


Fig. 9.7 Velocity distribution and shear stress distribution across a section of parallel plates.

7 Ratio of maximum to average velocity

Velocity is maximum when $y = t/2$ thus maximum velocity is

$$\begin{aligned} U_{\max} &= -\frac{1}{2\mu} \frac{\partial p}{\partial x} \left[t \times \frac{t}{2} - \left(\frac{t}{2} \right)^2 \right] \\ &= -\frac{1}{2\mu} \frac{\partial p}{\partial x} \left[\frac{t^2}{2} - \frac{t^2}{4} \right] = -\frac{1}{2\mu} \frac{\partial p}{\partial x} \frac{t^2}{4} = -\frac{1}{8\mu} \frac{\partial p}{\partial x} t^2 \quad \dots(9.10) \end{aligned}$$

The average velocity, \bar{u} , is obtained by dividing the discharge (Q) across the section by the area of the section ($t \times 1$). And the discharge Q is obtained by considering the rate of flow of fluid through the strip of thickness dy and integrating it. The rate of flow through strip is

$$dQ = \text{Velocity at a distance } y \times \text{Area of strip}$$

$$= -\frac{1}{2\mu} \frac{\partial p}{\partial x} [ty - y^2] \times dy \times 1$$

\therefore

$$Q = \int_0^t dQ = \int_0^t -\frac{1}{2\mu} \frac{\partial p}{\partial x} [ty - y^2] dy$$

$$= -\frac{1}{2\mu} \frac{\partial p}{\partial x} \left[\frac{ty^2}{2} - \frac{y^3}{3} \right]_0^t = \frac{1}{2\mu} \frac{\partial p}{\partial x} \left[\frac{t^3}{2} - \frac{t^3}{3} \right]$$

$$= -\frac{1}{2\mu} \frac{\partial p}{\partial x} \frac{t^3}{6} = -\frac{1}{12\mu} \frac{\partial p}{\partial x} t^3$$

\therefore

$$\bar{u} = \frac{Q}{\text{Area}} = \frac{-\frac{1}{12\mu} \frac{\partial p}{\partial x} t^3}{t \times 1} = -\frac{1}{12\mu} \frac{\partial p}{\partial x} t^2 \quad \dots(9.11)$$

Dividing equation (9.10) by equation (9.11), we get

$$\frac{U_{\max}}{\bar{u}} = \frac{-\frac{1}{8\mu} \frac{\partial p}{\partial x} t^2}{-\frac{1}{12\mu} \frac{\partial p}{\partial x} t^2} = \frac{12}{8} = \frac{3}{2} \quad \dots(9.12)$$

8 (iii) **Drop of Pressure head for a given Length.** From equation (9.11), we have

$$\bar{u} = -\frac{1}{12\mu} \frac{\partial p}{\partial x} t^2 \quad \text{or} \quad \frac{\partial p}{\partial x} = -\frac{12\mu\bar{u}}{t^2}$$

Integrating this equation w.r.t. x , we get

$$\int_2^1 dp = \int_2^1 -\frac{12\mu\bar{u}}{t^2} dx$$

$$\text{or} \quad p_1 - p_2 = -\frac{12\mu\bar{u}}{t^2} [x_1 - x_2] = \frac{12\mu\bar{u}}{t^2} [x_2 - x_1]$$

$$\text{or} \quad p_1 - p_2 = \frac{12\mu\bar{u}L}{t^2} \quad [\because x_1 - x_2 = L]$$

If h_f is the drop of pressure head, then

$$h_f = \frac{p_1 - p_2}{\rho g} = \frac{12\mu\bar{u}L}{\rho g t^2} \quad \dots(9.13)$$

(iv) **Shear Stress Distribution.** It is obtained by substituting the value of u from equation (9.9) into

$$\tau = \mu \frac{\partial u}{\partial y}$$

$$\therefore \tau = \mu \frac{\partial u}{\partial y} = \mu \frac{\partial}{\partial y} \left[-\frac{1}{2\mu} \frac{\partial p}{\partial x} (ty - y^2) \right] = \mu \left[-\frac{1}{2\mu} \frac{\partial p}{\partial x} (t - 2y) \right]$$

$$\tau = -\frac{1}{2} \frac{\partial p}{\partial x} [t - 2y] \quad \dots(9.14)$$

In equation (9.14), $\frac{\partial p}{\partial x}$ and t are constant. Hence τ varies linearly with y . The shear stress distribution is shown in Fig. 9.7 (b). Shear stress is maximum, when $y = 0$ or t at the walls of the plates. Shear stress is zero, when $y = t/2$ that is at the centre line between the two plates. Max. shear stress (τ_0) is given by

$$\tau_0 = -\frac{1}{2} \frac{\partial p}{\partial x} t. \quad \dots(9.15)$$

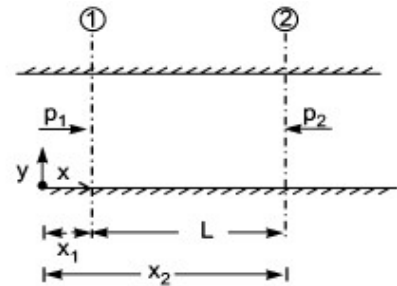


Fig. 9.8

9 Kinetic energy correction and momentum correction factor

Kinetic energy correction factor is defined as the ratio of the kinetic energy of the flow per second based on actual velocity across a section to the kinetic energy of the flow per second based on average velocity across the same section. It is denoted by α . Hence mathematically,

$$\alpha = \frac{\text{K.E./sec based on actual velocity}}{\text{K.E./sec based on average velocity}} \quad \dots(9.16)$$

Momentum Correction Factor. It is defined as the ratio of momentum of the flow per second based on actual velocity to the momentum of the flow per second based on average velocity across a section. It is denoted by β . Hence mathematically,

$$\beta = \frac{\text{Momentum per second based on actual velocity}}{\text{Momentum per second based on average velocity}} \quad \dots(9.17)$$

10 Power absorbed in viscous flow

For the lubrication of the machine parts, an oil is used. Flow of oil in bearings is an example of viscous flow. If a highly viscous oil is used for lubrication of bearings, it will offer great resistance and thus a greater power loss will take place. But if a light oil is used, a required film between the rotating part and stationary metal surface will not be possible. Hence, the wear of the two surface will take place. Hence an oil of correct viscosity should be used for lubrication. The power required to overcome the viscous resistance in the following cases will be determined :

1. Viscous resistance of Journal Bearings,
2. Viscous resistance of Foot-step Bearings,
3. Viscous resistance of Collar Bearings.

9.5.1 Viscous Resistance of Journal Bearings. Consider a shaft of diameter D rotating in a journal bearing. The clearance between the shaft and journal bearing is filled with a viscous oil. The oil film in contact with the shaft rotates at the same speed as that of shaft while the oil film in contact with journal bearing is stationary. Thus the viscous resistance will be offered by the oil to the rotating shaft.

Let N = speed of shaft in r.p.m.
 t = thickness of oil film
 L = length of oil film

$$\therefore \text{Angular speed of the shaft, } \omega = \frac{2\pi N}{60}$$

$$\therefore \text{Tangential speed of the shaft} = \omega \times R \text{ or } V = \frac{2\pi N}{60} \times \frac{D}{2} = \frac{\pi DN}{60}$$

The shear stress in the oil is given by, $\tau = \mu \frac{du}{dy}$



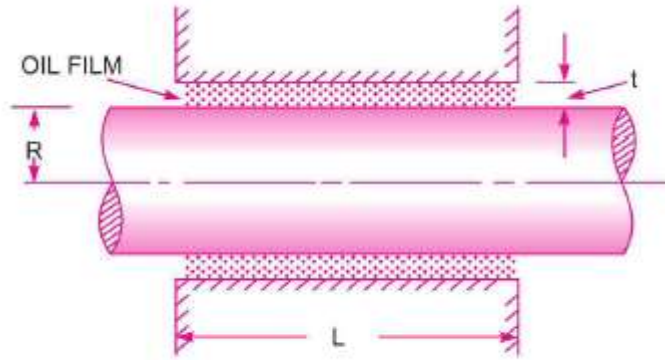


Fig. 9.10 Journal bearing.

As the thickness of oil film is very small, the velocity distribution in the oil film can be assumed as linear.

Hence

$$\frac{du}{dy} = \frac{V - 0}{t} = \frac{V}{t} = \frac{\pi DN}{60 \times t}$$

∴

$$\tau = \mu \frac{\pi DN}{60 \times t}$$

∴ Shear force or viscous resistance = $\tau \times$ Area of surface of shaft

$$= \frac{\mu \pi DN}{60t} \times \pi DL = \frac{\mu \pi^2 D^2 NL}{60t}$$

∴ Torque required to overcome the viscous resistance,

$$T = \text{Viscous resistance} \times \frac{D}{2}$$

$$= \frac{\mu \pi^2 D^2 NL}{60t} \times \frac{D}{2} = \frac{\mu \pi^2 D^3 NL}{120t}$$

∴ Power absorbed in overcoming the viscous resistance

$$*P = \frac{2\pi NT}{60} = \frac{2\pi N}{60} \times \frac{\mu \pi^2 D^3 NL}{120t}$$

$$= \frac{\mu \pi^3 D^3 N^2 L}{60 \times 60 \times t} \text{ watts. Ans.} \quad \dots(9.18)$$

Problems on viscous losses in journal bearings




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10.1 Viscous resistance of foot step bearing

9.5.2 Viscous Resistance of Foot-Step Bearing. Fig. 9.11 shows the foot-step bearing, in which a vertical shaft is rotating. An oil film between the bottom surface of the shaft and bearing is provided, to reduce the wear and tear. The viscous resistance is offered by the oil to the shaft. In this case the radius of the surface of the shaft in contact with oil is not constant as in the case of the journal bearing. Hence, viscous resistance in foot-step bearing is calculated by considering an elementary circular ring of radius r and thickness dr as shown in Fig. 9.11.

Let N = speed of the shaft
 t = thickness of oil film
 R = radius of the shaft

Area of the elementary ring = $2\pi r dr$

Now shear stress is given by $\tau = \mu \frac{du}{dy} = \mu \frac{V}{t}$

where V is the tangential velocity of shaft at radius r and is equal to

$$\omega \times r = \frac{2\pi N}{60} \times r$$

\therefore Shear force on the ring = $dF = \tau \times \text{area of elementary ring}$

$$= \mu \times \frac{2\pi N}{60} \times \frac{r}{t} \times 2\pi r dr = \frac{\mu}{15} \frac{\pi^2 N r^2}{t} dr$$

\therefore Torque required to overcome the viscous resistance,

$$dT = dF \times r$$

$$= \frac{\mu}{15t} \pi^2 N r^2 dr \times r = \frac{\mu}{15t} \pi^2 N r^3 dr \quad \dots(9.19)$$

\therefore Total torque required to overcome the viscous resistance,

$$T = \int_0^R dT = \int_0^R \frac{\mu}{15t} \pi^2 N r^3 dr$$

$$= \frac{\mu}{15t} \pi^2 N \int_0^R r^3 dr = \frac{\mu}{15t} \pi^2 N \left[\frac{r^4}{4} \right]_0^R = \frac{\mu}{15t} \pi^2 N \frac{R^4}{4}$$

$$= \frac{\mu}{60t} \pi^2 N R^4 \quad \dots(9.19A)$$

\therefore Power absorbed, $P = \frac{2\pi NT}{60}$ watts

$$= \frac{2\pi N}{60} \times \frac{\mu}{60t} \pi^2 N R^4 = \frac{\mu \pi^3 N^2 R^4}{60 \times 30t} \quad \dots(9.20)$$

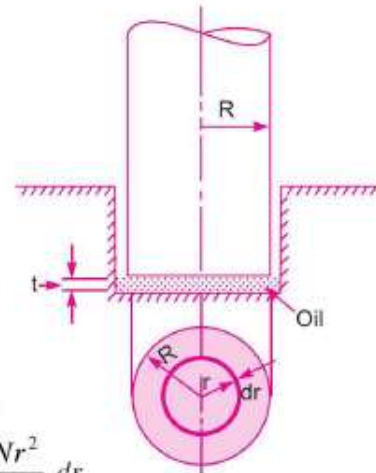


Fig. 9.11 Foot-step bearing.



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9.5.3 Viscous Resistance of Collar Bearing. Fig. 9.12 shows the collar bearing, where the face of the collar is separated from bearing surface by an oil film of uniform thickness.

Let

N = Speed of the shaft in r.p.m.

R_1 = Internal radius of the collar

R_2 = External radius of the collar

t = Thickness of oil film.

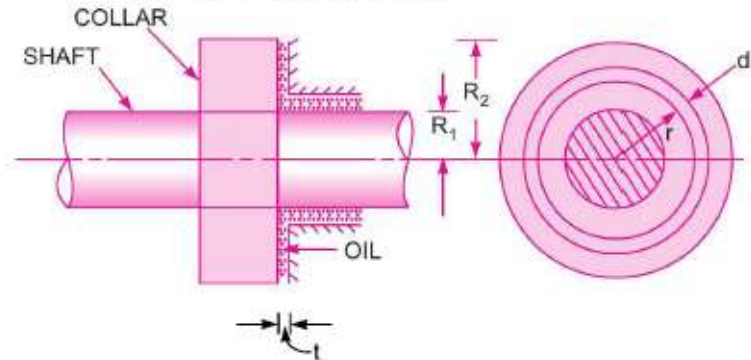


Fig. 9.12 Collar bearing.

Consider an elementary circular ring of radius ' r ' and width ' dr ' of the bearing surface. Then the torque (dT) required to overcome the viscous resistance on the elementary circular ring is the same as given by equation (9.19A) or

$$dT = \frac{\mu}{15t} \pi^2 N r^3 dr$$

∴ Total torque, required to overcome the viscous resistance, on the whole collar is

$$\begin{aligned} T &= \int_{R_1}^{R_2} dT = \int_{R_1}^{R_2} \frac{\mu}{15t} \pi^2 N r^3 dr = \frac{\mu}{15t} \pi^2 N \left[\frac{r^4}{4} \right]_{R_1}^{R_2} \\ &= \frac{\mu}{15t \times 4} \pi^2 N [R_2^4 - R_1^4] = \frac{\mu}{60t} \pi^2 N [R_2^4 - R_1^4] \end{aligned} \quad \dots(9.21)$$

∴ Power absorbed in overcoming viscous resistance

$$\begin{aligned} P &= \frac{2\pi NT}{60} = \frac{2\pi N}{60} \times \frac{\mu}{60t} \pi^2 N [R_2^4 - R_1^4] \\ &= \frac{\mu \pi^3 N^2}{60 \times 30t} [R_2^4 - R_1^4] \text{ watts.} \end{aligned} \quad \dots(9.22)$$

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11 Frictional losses in pipe flow

When a liquid is flowing through a pipe, the velocity of the liquid layer adjacent to the pipe wall is zero. The velocity of liquid goes on increasing from the wall and thus velocity gradient and hence shear stresses are produced in the whole liquid due to viscosity. This viscous action causes loss of energy which is usually known as frictional loss.

On the basis of his experiments, William Froude gave the following laws of fluid friction for turbulent flow.

The frictional resistance for turbulent flow is :

- (i) proportional to V^n , where n varies from 1.5 to 2.0,
- (ii) proportional to the density of fluid,
- (iii) proportional to the area of surface in contact,
- (iv) independent of pressure,
- (v) dependent on the nature of the surface in contact.

10.3.1 Expression for Loss of Head Due to Friction in Pipes. Consider a uniform horizontal pipe, having steady flow as shown in Fig. 10.3. Let 1-1 and 2-2 are two sections of pipe.

Let p_1 = pressure intensity at section 1-1,

V_1 = velocity of flow at section 1-1,

L = length of the pipe between sections 1-1 and 2-2,

d = diameter of pipe,

f' = frictional resistance per unit wetted area per unit velocity,

h_f = loss of head due to friction,

and p_2, V_2 = are values of pressure intensity and velocity at section 2-2.

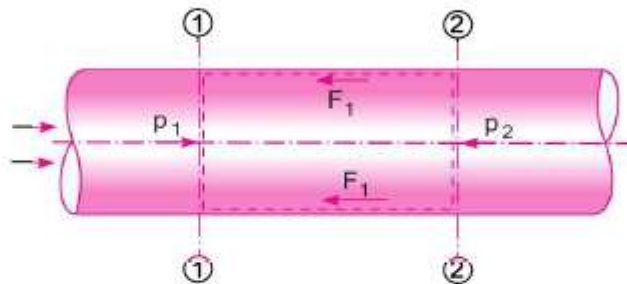


Fig. 10.3 Uniform horizontal pipe.

Applying Bernoulli's equations between sections 1-1 and 2-2,

Total head at 1-1 = Total head at 2-2 + loss of head due to friction between 1-1 and 2-2

or

$$\frac{p_1}{\rho g} + \frac{V_1^2}{2g} + z_1 = \frac{p_2}{\rho g} + \frac{V_2^2}{2g} + z_2 + h_f$$

But

$z_1 = z_2$ as pipe is horizontal

$V_1 = V_2$ as dia. of pipe is same at 1-1 and 2-2

$$\therefore \frac{p_1}{\rho g} = \frac{p_2}{\rho g} + h_f \text{ or } h_f = \frac{p_1}{\rho g} - \frac{p_2}{\rho g} \quad \dots(i)$$

But h_f is the head lost due to friction and hence intensity of pressure will be reduced in the direction of flow by frictional resistance.

Now frictional resistance = frictional resistance per unit wetted area per unit velocity \times wetted area \times velocity²

$$\text{or } F_1 = f' \times \pi d L \times V^2 \quad [\because \text{wetted area} = \pi d \times L, \text{ velocity} = V = V_1 = V_2]$$

$$= f' \times P \times L \times V^2 \quad [\because \pi d = \text{Perimeter} = P] \quad \dots(ii)$$

The forces acting on the fluid between sections 1-1 and 2-2 are :

1. pressure force at section 1-1 = $p_1 \times A$

where A = Area of pipe

2. pressure force at section 2-2 = $p_2 \times A$

3. frictional force F_1 as shown in Fig. 10.3.

Resolving all forces in the horizontal direction, we have

$$p_1 A - p_2 A - F_1 = 0 \quad \dots(10.1)$$

$$\text{or } (p_1 - p_2)A = F_1 = f' \times P \times L \times V^2 \quad [\because \text{From (ii), } F_1 = f' P L V^2]$$

$$\text{or } p_1 - p_2 = \frac{f' \times P \times L \times V^2}{A}$$

But from equation (i), $p_1 - p_2 = \rho g h_f$

Equating the value of $(p_1 - p_2)$, we get

$$\rho g h_f = \frac{f' \times P \times L \times V^2}{A}$$

$$\text{or } h_f = \frac{f'}{\rho g} \times \frac{P}{A} \times L \times V^2 \quad \dots(iii)$$

$$\text{In equation (iii), } \frac{P}{A} = \frac{\text{Wetted perimeter}}{\text{Area}} = \frac{\pi d}{\frac{\pi}{4} d^2} = \frac{4}{d}$$

$$\therefore h_f = \frac{f'}{\rho g} \times \frac{4}{d} \times L \times V^2 = \frac{f'}{\rho g} \times \frac{4 L V^2}{d} \quad \dots(iv)$$

Putting $\frac{f'}{\rho} = \frac{f}{2}$, where f is known as co-efficient of friction.

$$\text{Equation (iv), becomes as } h_f = \frac{4 \cdot f}{2g} \cdot \frac{L V^2}{d} = \frac{4f \cdot L \cdot V^2}{d \times 2g} \quad \dots(10.2)$$

Equation (10.2) is known as Darcy-Weisbach equation. This equation is commonly used for finding loss of head due to friction in pipes.

Sometimes equation (10.2) is written as

$$h_f = \frac{f \cdot L \cdot V^2}{d \times 2g} \quad \dots(10.2A)$$

Then f is known as friction factor.

10.3.2 Expression for Co-efficient of Friction in Terms of Shear Stress. The equation (10.1) gives the forces acting on a fluid between sections 1-1 and 2-2 of Fig. 10.3 in horizontal direction as

$$p_1A - p_2A - F_1 = 0$$

or
$$(p_1 - p_2)A = F_1 = \text{force due to shear stress } \tau_0$$

$$= \text{shear stress} \times \text{surface area}$$

$$= \tau_0 \times \pi d \times L$$

or
$$(p_1 - p_2) \frac{\pi}{4} d^2 = \tau_0 \times \pi d \times L \quad \left\{ \because A = \frac{\pi}{4} d^2 \right\}$$

Cancelling πd from both sides, we have

$$(p_1 - p_2) \frac{d}{4} = \tau_0 \times L$$

or
$$(p_1 - p_2) = \frac{4\tau_0 \times L}{d} \quad \dots(10.3)$$

Equation (10.2) can be written as
$$h_f = \frac{p_1 - p_2}{\rho g} = \frac{4f \cdot L \cdot V^2}{d \times 2g}$$

or
$$(p_1 - p_2) = \frac{4f \cdot L \cdot V^2}{d \times 2g} \times \rho g \quad \dots(10.4)$$

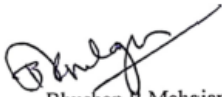
Equating the value of $(p_1 - p_2)$ in equations (10.3) and (10.4),

$$\frac{4\tau_0 \times L}{d} = \frac{4f \cdot L \cdot V^2}{d \times 2g} \times \rho g$$

or
$$\tau_0 = \frac{fV^2 \times \rho g}{2g} = \frac{fV^2}{2g} \times \rho g$$

or
$$\tau_0 = f \frac{\rho V^2}{2} \quad \dots(10.5)$$

$$f = \frac{2\tau_0}{\rho V^2} \quad \dots(10.6)$$



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Academic Year 2018-19

MBA Semester- I

SUB: PRINCIPLES OF MANAGEMENT

Subject Code: (1T1)

UNIT NO -3 FUNCTIONS OF MANAGEMENT 2- ORGANIZING

Introduction

What is organizational structure?

An organizational structure is a system that outlines how certain activities are directed in order to achieve the goals of an organization. These activities can include rules, roles, and responsibilities. The organizational structure also determines how information flows between levels within the company.

Organizational Structure

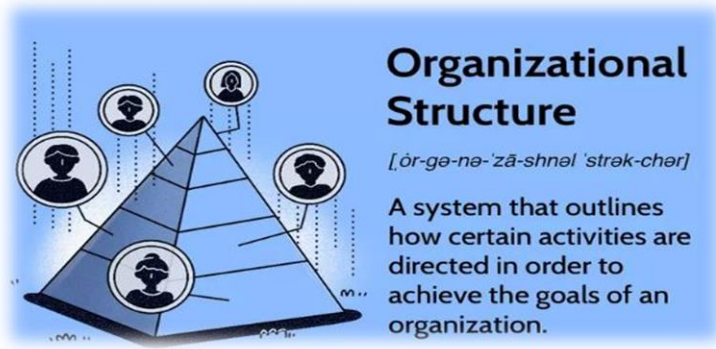
Businesses of all shapes and sizes use organizational structures heavily. They define a specific term within an organization. A successful organizational structure defines each employee's job and how it fits within the overall system. Put simply, the organizational structure lays out who does what so the company can meet its objectives.

This structuring provides a company with a visual representation of how it is shaped and how it can best move forward in achieving its goals. Organizational structures are normally illustrated in some sort of chart or diagram like a pyramid, where the most powerful members of the organization sit at the top, while those with the least amount of power are at the bottom.

Not having a formal structure in location may prove difficult for certain organizations. For instance, employees may have difficulty knowing to whom they should report. That can lead to uncertainty as to who is responsible for what in the organization.



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What is organizing?

Organizing is the second key management function, after planning, which coordinates human efforts, arranges resources and incorporates the two in such a way which helps in the achievement of objectives. It involves deciding the ways and means with which the plans can be implemented.

It entails defining jobs and working relationships, assigning different tasks associated with the plans, arranging and allocating resources, design a structure which distinguishes duties, responsibilities and authorities, scheduling activities, in order to maintain smoothness and effectiveness in operations



Division of Labour: Work is assigned to the employee who is specialised in that work.

- **Coordination:** Different members of the organization are given different tasks to perform when all the tasks are put together logically and sequentially, it results in the objectives, so coordination is required.
- **Objectives:** Objectives need to be specifically defined.
- **Authority-Responsibility Structure:** For an effective authority responsibility structure, the position of each manager and executive is specified, as per the degree of the authority and responsibility assigned to them, while performing the duties.



- **Communication:** The techniques flow and importance of communication must be known to all the members

Process of Organizing

Organizing is the core function which binds all the activities and resources together in a systematic and logical sequence. It encompasses a number of steps which are pursued to achieve organizational goals. Now, we will discuss those steps in detail.

1. **Identification and division of work:** Organizing process begins with identifying the work and dividing them as per the plans. Basically, the work is classified into different manageable activities, to avoid redundancy, and sharing of work is encouraged.
2. **Departmentalization:** After classifying the work into different activities, the activities having a similar nature are grouped together. This process is called as departmentalization which facilitates specialization and forms the basis for creating departments.
3. **Assignment of the task:** After the formation of departments, employees are placed in different departments under a manager, called as a departmental manager. Thereafter, employees are assigned the jobs as per their skills, qualifications and competencies. For the effectiveness of the performance, the manager must ensure that there is a proper match between the job and the incumbent, i.e. the right person has to be placed at the right job.
4. **Establishment of organizational hierarchy:** Deployment of work is not all, the employees must be aware of whom they have to report and who can give them orders. Hence, work relationships need to be established clearly, which helps in the creation of a hierarchical structure of the organization.
5. **Provision of resources to the members:** Arrangement and deployment of resources such as money, materials, supplies, and machine, etc. which are important to carry out day to day operations of the organization.
6. **Coordination of efforts and scheduling of activities:** The final step to this process is the coordination of efforts and scheduling the activities in a logical and systematic manner so that the common objectives can be achieved effectively.




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Importance of Organizing

Organizing is integral to management as it facilitates the smooth functioning of the enterprise. The importance of organizing is as under.

- **Advantage of Specialization:** Organizing helps in the classification of jobs systematically amongst the workforce, which helps in the reduction of workload, as well as improved productivity. This is because the organization will get the benefit of specialization wherein workers will perform specific work on a regular basis, according to their competency.
- **Describes work relationships:** The definition of work relationships describes the flow of communication and determine the superior-subordinate relationship. This removes confusion and chaos, in getting orders and instructions.
- **Effective utilization of resources:** Organizing function ensures the best possible utilization of resources whether it is human, material, financial or technical. This is because jobs are assigned to the employees who avoid overlapping and duplication of work.
- **Adaptation to change:** Organizing process helps the organization to survive and adapt the changes, by making substantial changes in the strategies, hierarchy, relationships, etc.
- **Development of personnel:** Organising encourages creativity in executives. Delegation of authority reduces their workload and they get time to identify new methods to perform the work. It also enables them to explore new areas for their growth and development.

Principles of Work Specialization

The principle of work specialization is a key element of organizational design. A manager typically delegates various responsibilities to employees. An employee's skills, qualifications, job role, and abilities determine how a manager can delegate their work.

Work specialization is especially useful in manufacturing. Suppose an assembly process where every worker performs a repetitive task in the process of product development.

For instance, A assembles the frames, B fixes the sides, C paints the products, D assures that the products are complete, and E prepares the products for shipment. The whole development process is quite complex and is combined with different specialized steps. But this process

becomes less complex when all the steps are divided among different employees. The products are completed and ready for sale after every employee finishes her/his respective task in the process of product development. If only one employee or worker were responsible for this whole process of product development, the outcomes would be much time consuming and less efficient.

What is Departmentalization?

Departmentalization is an organizational structure that separates people into groups, or departments, based on a particular set of criteria. These departments have their own leadership and work together to complete tasks. With large or complicated projects, multiple departments may work together.



Types of Departmentalization

- Functional Departmentalization.
- Departmentalization by Territory.
- Departmentalization of the organization by customer group.
- Matrix departmentalization.
- Planning Task Force.
-

An organizer is free to use any means of departmentalization in constructing an organization structure.

In fact, in any given structure several means are typically used.

1. Functional Departmentalization

Functional departmentalization groups together jobs which are involving the same or similar activities. It allows the organization to staff all important positions with functional experts and facilitates coordination and integration.

2. Departmentalization by Territory

Departmentalization by Territory method is followed where; unless to local conditions appear to offer advantages, such as low cost of operation and opportunities to capitalize on attractive local conditions as they arise. Territorial departmentalization is especially popular for sales where division appears feasible according to some geographic market segregation.



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3. Departmentalization of the organization by customer group.

Customer departmentalization is where the organization's activities are ready to respond to and interact with specific customers or customer groups. This organizational form is used when the great emphasis is placed on effectively serving different customer types.

4. Matrix departmentalization

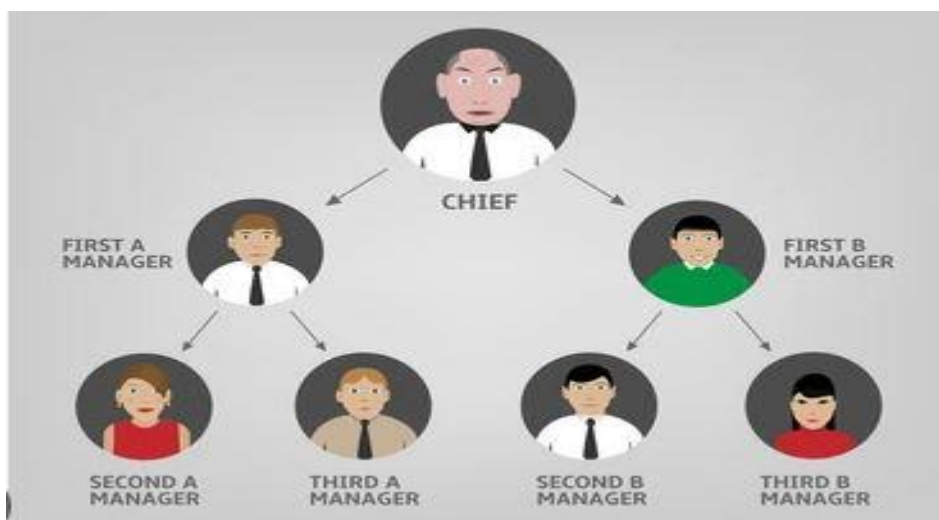
Matrix departmentalization attempts to combine functional and task force (project) departmentalization designs to improve the synchronization of multiple components for a single activity (i.e., a moon launch), to improve the economics of scale, and to better serve the customer and company.

5. Planning Task Force

The planning task force is most often formed when the organization requires addressing special circumstances. It is more preferable, and efficient than maintaining a different planning staff or department.

What is Chain of Command?

- In an organisation, a chain of command refers to a structure that decides and documents how each member of a company reports their work to one another. It is the company's pyramid of reporting relationships, from the bottom to the top.
- The owner or chief executive officer at the top level. The people working under them appear directly below as senior managers who have a team of people reporting to them. Its implementation continues until every employee becomes a part of the established system.
- Such a structure can encourage accountability amongst employees when they work with senior leaders who offer support, motivation and encouragement to their respective teams. The primary goals of establishing a hierarchy are to distribute control over the company's functions and responsibilities, keep employees up-to-date about any vital news on the company, and create a systematic approach to knowledge sharing.



Merits of Chain of Command




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- In a chain of the command system, accountability and responsibilities are clearly defined. Each manager is responsible for managing and controlling a group of employees, and he is accountable for their performance.
- Employees of the organisation have the clarity to whom to approach when they need resources to get work done. Similarly, they know without confusion to whom to contact when they want to provide feedback.
- The chain of command eliminates the uncertainty of reporting. In small organizations, all employees report to the owner of the business. But in organizations where there is a large number of employees, it becomes difficult for one person to manage everyone. Therefore, in such scenarios, having different people managing different works helps. Each employee has somebody to report for his work.
- Each employee in the organisation has one boss. They report directly to their boss and ask for assistance from their immediate boss. Each boss will have a boss to whom he is supposed to report.
- With the help of the chain of command, work is done quickly and efficiently as all employees have clearly defined responsibilities and authorities.
- Similarly, the chain of command helps in fast resolution of problems. Because there is no confusion among employees to whom to approach when a problem arises.
- A simple structure of an organisation is created using the chain of the command system. A simple structure helps organize a large number of employees quickly.

What is Span of Control?

The span of control or span of management is the number of employees each manager in an organization is responsible for managing. Typically, the modern model of control span's average employees per manager is about 15 to 20 individuals, while the traditional model states about five to six employees for each manager. Modern companies may adhere to a wider control span to help manage costs, employees, and company tasks and goals more effectively and efficiently.

Organization size: An organization's size can affect the control span because it determines how many employees a manager handles. For example, a large company may have a wider control span compared to a smaller one because it's based on the number of professionals working in an organization.



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Factors affecting the control span:

Organization culture: An organization with a flexible culture may indicate the control span is wider compared to a hierarchical company that may have a narrow control span. To determine a company's control span, it's helpful to determine the type of culture of a company.

Work type: The type of work a company produces can help you determine the control span. For example, a company with more routine work and less complexity in tasks can have a wider control span, while companies with more complex tasks and frequent decisions can have a narrow control span.

Manager's skills and competencies: A manager's skills and competencies, especially experience level, can determine the control span. For example, an experienced manager may have a wider control span compared to a manager starting their career who may have a more narrow control span.

Employee's skills and competencies: An employee's skills and competencies can determine the type of supervisor they may require. For example, an inexperienced employee may require more training and supervision, which is a narrow control span, while supervisors with more experienced employees can delegate more and train less for a wider control span.

Interaction type: The interaction type between managers and employees can determine the company's control span. For example, more frequent interactions between the parties is a more narrow control span, while fewer interactions between the professionals which comprise asking and answering questions is a wider control span..

What is Centralization and Decentralization?

Centralization:-Centralized organizations have all decisions coming from the same place. Centralized management is the organizational structure where a small handful of individuals make most of the decisions in a company. For example, a small family diner owned by a married couple probably uses centralized management. The couple themselves order inventory, decide the marketing direction, and hire new employees. As a company with centralized management grows, they add new levels of mid and lower level managers, each of whom answers to a superior, with very strictly defined roles in the company.

More centralized management is usually seen in highly competitive industries, where companies specialize in similar products to their competition. A common example is Apple computers, where most of the direction of the company is orchestrated at the very top (formerly Steve Jobs himself), which the lower levels of management and employees very tightly organized to execute those goals.




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Decentralization:- Decentralized organizations have decisions coming from all levels of management towards the same goal.

Decentralized management is the opposite – the upper levels of management transfers some of the decision-making processes onto lower levels, and even to individual employees. The overall authority is still maintained by top level managers, who make policies that influence the major decisions of the company, but most decision-making responsibility is delegated to the lower levels.

This form of management would, for example, allow a manager at a call centre or retail store to make instant decisions that impact their work environment. Decentralized management is found most often in areas with a lot of direct contact with clients and customers, since it allows the managers closest to the “Action” have more flexibility.

Decentralization should not be confused with the allocation of tasks to individual members of the management team, since this is an individual action and does not always reflect the broader trend of the company.

An increase in duties of the lower-level employees can be seen as “decentralizing”, while decreasing their duties is “centralizing”.

Centralization and Decentralization comparison

| DECENTRALIZED | CENTRALIZED |
|--|--|
| Middle and Low Level Managers have decision making power | A few upper management members have decision making power |
| Authority is given to those who are closer to stakeholders | Authority is given to those who are at the top of the chain of command |
| Organizations are self-sufficient | More standardization |
| Faster decision making | More control |
| More expensive | Less expensive |
| More creativity | Limited creativity |

Formalization

- Formalization in an organization is the degree to which fixed rules and procedures dictate how employees should behave. Formalization is one of the key dimensions in organizational design as it helps the organization provide a more predictable product or service.



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- Formalization in management refers to the process of creating a set of rules, procedures, and guidelines that dictate how tasks should be performed and how decisions should be made within an organization. This can include creating formalized policies and procedures, job descriptions, and decision-making processes. Formalization in management helps to ensure consistency and efficiency in the way tasks are performed and decisions are made, and can also help to reduce the potential for errors or misunderstandings.
- Formalization can also be implemented by creating formal organizational structures, such as a clear hierarchy of roles and responsibilities, and by establishing formal lines of communication. This helps to ensure that information and directives flow smoothly through the organization and that everyone is aware of their roles and responsibilities.

Advantages of formalization

1. **Internal standardization.** Rules enable the creation of standards. A common safety standard is to hold the handrail when climbing a flight of stairs on an oil rig. With this rule, you're less likely to die if you slip.
2. **Repeatable work processes.** Formalization enables creating repeatable work processes. This means that two machine operators who never spoke with each other can do the exact same job without any inconsistencies in their output. This makes roles replaceable and removes risk from the organization.
3. **Predictable product or service quality.** As a result of formalization, the products or services that are produced are of higher quality. A Michelin Star restaurant is able to create a consistently great experience because they follow the same procedure.
4. **Compliance with external norms.** Some products need to comply with an external norm. All electric machines in Europe need to be able to handle between 220 and 240 Volt. Otherwise, they are not allowed to be sold. The same thing happens with accounting standards and labour regulations. Each of these reasons boils down to consistency and control. Because of the rules, the employer or manager is able to get exactly what they are looking for simply because the rules are followed.

Disadvantages of formalization

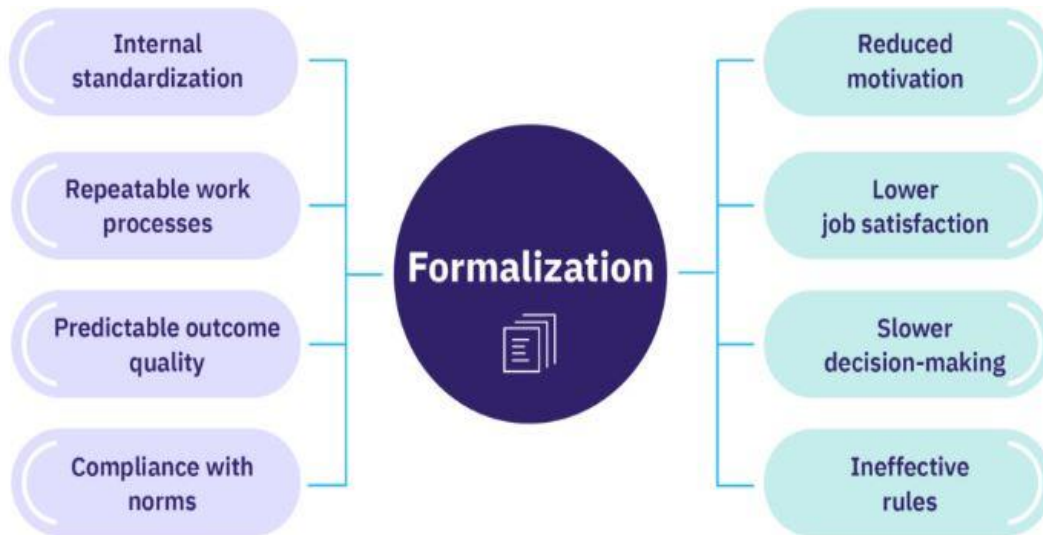
1. Reduced motivation. Rules reduce the autonomy of the worker, leading to lower motivation. This also means that a highly formalized work environment is not for everyone.
2. Less fun. Following rules is less fun than coming up with the answer yourself. An increase in formalization will lead to lower job satisfaction.



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3. Slow decision-making. Formalization reduces autonomy and standardizes decision-making processes. Decisions must first travel through the organizational hierarchy, slowing them down and making the organization less agile.
4. Ineffective rules. Sometimes you can help a customer better by breaking a rule. Say a customer knocks on the shop door at closing time. The rule is to let no customers in after ten minutes before closing time, but you help them anyway. Technically, you've broken a rule, but the customer will be happy.



Factors Affecting Structural Choice:-

➤ Strategy

Every organization has one (or at least, every organization should). If an organization's structure is a means by which that organization achieves its objectives, then strategy and structure should be closely linked.

An innovation strategy is one that emphasizes the introduction of major new products and services. A company like 3M or Apple could be characterized as organizations who would adopt innovative strategies. Ideally, an organic, loose organizational structure is more appropriate to support an innovative strategy.

An organization that is controlling costs and refrains from unnecessary innovation or marketing expenses is probably practicing a cost-minimization strategy. These companies sell a basic product and keep prices low. Wal-Mart employs this strategy. A mechanistic strategy allows for tight control, extensive work specialization, high formalization and centralization, and so it best fits this strategy.

An imitation strategy is one that seeks to move into new products or new markets after their viability has already been proven. They want to minimize risk and maximize profit, so they take successful ideas and copy them. A company like IBM might be considered one that uses an imitation strategy to its advantage. The best structural option here might be a mix between

mechanistic and organic structure, which would allow tight control for current business and looser structures for new pursuits.

➤ **Organization Size**

There is significant research supporting the idea that organizational structure is impacted by the size of the organization in question. Large organizations tend to have more work specialization, more vertical levels, rules, regulations, and so on. So they tend to be more mechanistic in nature.

Large organizations, those that have 2,000 or more employees, are likely to be more mechanistic, but as they increase in size, they do not become more mechanistic. If the organization increases to 2,500 people, the mechanistic-ness of the organization's structure doesn't necessarily increase. But if you were to add 500 employees to an organization that only had 300 to start, the percentage increase in size is likely to make that smaller organization more mechanistic.

➤ **Technology**

In this instance, the word technology refers to how the organization transfers its inputs and outputs. Every organization has at least one technology for converting their resources into products or services. For example, the technology Ford Motor Company uses to produce cars is the assembly line.

There is not a strong association between technology and organizational structure, but studies have found that there is some correlation between the degrees of routine-ness of the technology the organization employs, and the structure that best supports it. By "degree of routine-ness" we mean that the technology tends either toward routine (automated and standardized) or non-routine (varied operations) activities.

Routine tasks are often supported by organization structures that are taller and more departmentalized. Organizations that relied on routine tasks often had more manuals and formalized documentation, and decisions were more centralized. Non-routine tasks required decentralization of decisions to support the uniqueness of the tasks.

➤ **Environment**

General Motors, as we noted earlier, doesn't face a lot of environmental change. The car market fluctuates a bit here and there, but they basically make cars and sell them. Other organizations feature all kinds of uncertainty. Organizational structures can assist in helping the business withstand the external issues of environment.

What is Traditional Organizational Designs?

In the basic traditional design procedure, design usually starts when a client recognizes the need for and economic feasibility of a building and engages an architect, a professional with a broad background in building design. The architect, in turn, engages consulting engineers and other consultants.




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➤ **Simple Structure**

A simple structure is defined as a design with low departmentalization, wide spans of control, centralized authority, and little formalization. This type of design is very common in small start up businesses. For example in a business with few employees the owner tends to be the manager and controls all of the functions of the business. Often employees work in all parts of the business and don't just focus on one job creating little if any departmentalization. In this type of design there are usually no standardized policies and procedures. When the company begins to expand then the structure tends to become more complex and grows out of the simple structure.

➤ **Functional Structure**

A functional structure is defined as a design that groups similar or related occupational specialties together. It is the functional approach to departmentalization applied to the entire organization.

➤ **.Divisional Structure**

A divisional structure is made up of separate, semi-autonomous units or divisions. Within one corporation there may be many different divisions and each division has its own goals to accomplish. A manager oversees their division and is completely responsible for the success or failure of the division. This gets managers to focus more on results knowing that they will be held accountable for them.

➤ **Team Structure**

A team structure is a design in which an organization is made up of teams, and each team works towards a common goal. Since the organization is made up of groups to perform the functions of the company, teams must perform well because they are held accountable for their performance. In a team structured organization there is no hierarchy or chain of command. Therefore, teams can work the way they want to, and figure out the most effective and efficient way to perform their tasks. Teams are given the power to be as innovative as they want. Some teams may have a group leader who is in charge of the group.

➤ **Matrix Structure**

A matrix structure is one that assigns specialists from different functional departments to work on one or more projects. In an organization there may be different projects going on at once. Each specific project is assigned a project manager and he has the duty of allocating all the resources needed to accomplish the project. In a matrix structure those resources include the different functions of the company such as operations, accounting, sales, marketing, engineering, and human resources. Basically the project manager has to gather specialists from each function in order to work on a project, and complete it successfully. In this structure there are two managers, the project manager and the department or functional manager.



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Adaptive Organization

These four principles are critical enablers of organizational transformation and are the basis for the Consortium for Service Innovation's work.

How do we improve our customers' experience, productivity, and success while improving the efficiency and effectiveness of those who interact with our customers? This has been the focus of the Members of the Consortium for Service Innovation since 1992. In developing methodologies to answer this question, the Members have identified four principles that are the basis of the Consortium's work. As organizations strive to become more agile and adaptive, these four principles prove to be prerequisites for organizational transformation.

➤ **Boundary less Organization**

A boundary less organization is an organization that actively removes boundaries to innovation, meaning it has less hierarchy and functional separation and is more integrated. This allows for a free flow of information, ideas, and innovations.

A boundary less organization has four dimensions. Reducing boundaries for each dimension is one of the key characteristics of a boundary less organization.

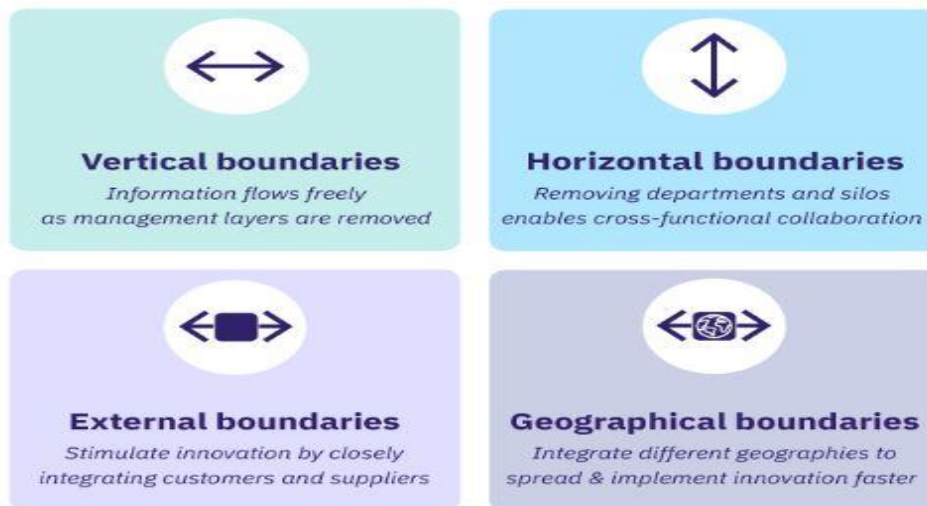
- **Vertical.** This is the traditional, hierarchical structure. Reducing management layers allows ideas to travel freely through the organization, and new initiatives can be implemented without managers stifling potential innovation. The aim here is to create a “healthy hierarchy”.
- **Horizontal.** This is the functional separation, including departments and other silos. By removing horizontal boundaries, ideas can easily be shared and implemented cross-functionally.
- **External.** This is separation within the value chain. By working closely with customers and suppliers, implementing innovations will be more effective.
- **Geographical.** This refers to the separation between countries or geographies and is a specific form of horizontal separation. By integrating different geographies, innovations will spread more easily and can be implemented faster.




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Boundaryless Organizations

Reducing Four Types of Boundaries



Characteristics of a boundary less organization

Boundary fewer organizations remove obstacles to innovation and promote the generation and implementation of new ideas. The goal is to permeate boundaries so that ideas can travel through the organization with little hindrance.

Boundary less organizations has more agility, flexibility, and a higher degree of integration. This means that the organization can better marshal resources into new products and services. The result is more innovation potential.

Virtual Organizations:-

What is meant by virtual organization?

- A virtual organization is a temporary or permanent collection of geographically dispersed individuals, groups, organizational units, or entire organizations that depend on electronic linking in order to complete the production process (working definition).
- A virtual organization is an operation where all members of the company work in different geographic locations while appearing as a single unit. It uses computers, software, phones and other technology to work together and converse in real-time, despite any physical distance. It's important for virtual organizations to establish detailed procedures that ensure consistency in employee performance and provide employees with the ample resources and support they need to conduct their responsibilities in a remote work environment.

Components of a virtual organization

Each virtual organization is unique, although they often include many of the same components for optimal operations, like a remote workforce and company-specific technology networks. Other components of a virtual organization may include:

A flat organization structure with less middle management



Virtual teams
Loose organizational structure
Boundaries and expectations
Power flexibility
Informal communication

- **Benefits of a virtual organization:-**

Here are some benefits of virtual organizations:

Lower overhead costs

Virtual organizations often have lower overhead costs because they don't need to pay monthly fees for renting office spaces. Companies also save money by not having to pay supplemental fees involved with renting a space, like utilities and maintenance costs. Some organizations also ask employees to use their own equipment, such as personal computers and web cameras, reducing equipment costs.

Improved employee satisfaction

Many virtual organizations have higher levels of employee satisfaction, presumably from the increased freedom employees have to work in their own space. Some employees feel less stressed, and the flexibility of working remotely often reduces absences. This helps improve overall company morale and can encourage individuals to present quality work on behalf of their employer.

Improved efficiency

Virtual organizations don't have the same distractions as traditional office settings, such as the urge to chat with people surrounding you. With fewer distractions, efficiency may improve, resulting in higher levels of productivity and better-quality work. Employees can establish their own work environment, allowing them to determine what helps them best achieve more work in less time.

Larger hiring market

Virtual organizations can hire employees from anywhere in the world. This removes geographic restrictions, expanding the talent pool for hiring and allowing companies to hire individuals with varying backgrounds and perspectives. This allows organizations to find, recruit and hire the best talent without physical locations getting in the way.

Flexible hours

Virtual organizations often have flexible hours, with many employers allow employees to determine their own schedules within certain parameters. For example, some companies establish core hours, such as 10 a.m. to 2 p.m. within a specific time zone each day, and allow employees to work whenever they want outside of those hours. This level of flexibility often allows organizations to accommodate a variety of different employees and their lifestyles.




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Improved employee retention

Many virtual organizations have happy employees. Satisfied employees are often more engaged at work and less likely to leave the company. This is especially true if the organization also offers excellent benefits and competitive salaries besides their virtual organization setup.

Access to new markets

Virtual organizations often have access to a wide range of markets. These organizations do not have geographic restrictions, allowing them to work with customers who may have been inaccessible. This is especially appealing for remote sales professionals who can access consumer markets from all corners of the world without physical distance or travel costs getting in the way.

• Learning Organization

- A learning organization is one that seeks to create its own future. It is one that assumes learning is an ongoing and creative process for its members and therefore, develops, adapts, and transforms itself in response to the needs and aspirations of people, both inside and outside itself.
- What learning organizations do is set its employees free. Employees no longer have to be passive players in the equation. They learn to express ideas and challenge themselves to contribute to create a better work environment by participating in a paradigm shift from the traditional authoritarian workplace philosophy to one where the hierarchy is broken down and human potential is given a boost. Learning organizations foster an environment wherein people can "create the results they truly desire," and where they can learn to learn together for the betterment of the whole.

What is the importance of a learning organization?

There are many strong importance of a learning organization. This includes:

- Efficiency gains
- Increased productivity
- Increased profit
- Decreased employee turnover, as employee satisfaction levels rise and loyalty and commitment is increased

Raising the bar by creating a continuous improvement mindset, shared ownership for projects and shared accountability for results

What are the five disciplines of a learning organization?

Peter Senge is a leading writer in the area of learning organizations. His seminal works, *The Fifth Discipline: The Art and Practice of the Learning Organization*, and *The Fifth*



Discipline Field book: Strategies and Tools for Building a Learning Organization, describe five disciplines that must be mastered when introducing learning into an organization:

Systems Thinking - the ability to see the big picture, and to distinguish patterns instead of conceptualizing change as isolated events. Systems thinking needs the other four disciplines to enable a learning organization to be realized. There must be a paradigm shift - from being unconnected to interconnected to the whole, and from blaming our problems on something external to a realization that how we operate, our actions, can create problems.

Personal Mastery - begins "by becoming committed to lifelong learning," and is the spiritual cornerstone of a learning organization. Personal Mastery involves being more realistic, focusing on becoming the best person possible, and striving for a sense of commitment and excitement in our careers to facilitate the realization of potential.

Mental Models - must be managed because they do prevent new powerful insights and organizational practices from becoming implemented. The process begins with self-reflection; unearthing deeply held belief structures and generalizations, and understanding how they dramatically influence the way we operate in our own lives. Until there is realization and a focus on openness, real change can never take place.

Building Shared Visions - visions cannot be dictated because they always begin with the personal visions of individual employees, who may not agree with the leader's vision. What is needed is a genuine vision that elicits commitment in good times and bad, and has the power to bind an organization together. As Peter Senge contends, "building shared vision fosters a commitment to the long term".

Team Learning - is important because modern organizations operate on the basis of teamwork, which means that organizations cannot learn if team members do not come together and learn. It is a process of developing the ability to create desired results; to have a goal in mind and work together to attain it.

Flexi work

What do you mean by Flexi work?

- A situation in which an employer allows people to choose the times that they work so that they can do other things, for example spend time with their children: Employers can help women by offering childcare and flexible working, Working hours.
- Flexible working means offering employees flexibility in how they arrange their work schedule and working conditions. There are many ways of flexible working, and companies can create widely different flexible working policies based on their needs and those of their employees.
- Offering flexible working hours or other flexible work arrangements to your employees is generally considered a benefit. As such, it can have a positive impact on your employer branding and employee retention, thus reducing employee turnover.



- In some cases, however, it might also be a legal requirement for an employer to offer such arrangements.

Types of flexible working

Working from home

1. When the job duties allow it, for example when working digitally as a Software Engineer, an employee might request a working from home policy (also called home office). For example, they might be allowed to work from home two days per week.
2. The COVID-19 pandemic has already forced many companies into becoming more flexible in this respect.

Remote work

1. In some cases, employees may request (or employers may offer) fully remote work. In this case, the employee never has to work from the office. This should be clearly stated in their contract.
2. This differs from the option to work from home, where it generally isn't specified in the contract but rather offered to the employee as a flexible working benefit.
- 3.

Benefits for employers:

1. Offering flexible working arrangements can greatly boost the employer branding, as flexibility is a very sought after employee benefit.
2. Flexible working policies not only make your company appeal to more candidates, but it also makes it more accessible. For example, a single mom might not apply to a job if there is no flexitime. So, offering flexible work can help broaden your recruiting efforts and attract more diverse talent who will add to your culture.
3. Flexible work will improve employee happiness, satisfaction, and productivity, which in turn will improve your employee retention. Not being flexible can also be a reason for resignation for some employees.
4. This, in turn, will lead to a more positive company culture as well as a more engaged workforce

Disadvantages of flexible working

1. The pros generally outweigh the cons when it comes to flexibility in working. However, there are a few disadvantages to consider as an employer:



2. Some might abuse their new-gained freedom. Although most of your employees will feel empowered and actually become more productive, there can always be employees who use flexible working arrangements to simply put in less work.
3. Creating and implementing fair and clear flexible working policies will take some time.
4. As employees move from all working at the same location and time to choosing their own schedule, the office culture and team spirit might be affected. For example, some employees might struggle to connect with their colleagues when some are working fully remote.
5. This is why, as with any HR policy, you should carefully consider the specific rules you want to implement in your business. For example, to allow employees freedom whilst still nurturing an office culture, many companies have implemented hybrid working arrangements where they try to find the sweet spot between flexibility and some regulation.

Tele-working:-

The term telework or teleworking refers to a work flexibility arrangement under which an employee performs the duties and responsibilities of such employee's position, and other authorized activities, from an approved worksite other than the location from which the employee would otherwise work.

Tele working, also known as telecommuting, means working from home or remotely using modern technology and telecommunications to remain in touch with your employer or business. Tele working allows individuals to work either at home, a local cafe with WiFi, or at a local tele work centre for one or more days each week, or full time.

The tele worker uses communication tools to carry out work duties from a remote location. Over the past twenty years, the practice has become much more common. The term remote working also means the same as tele working.

Global Organizations

An Global organization, also known as an intergovernmental organization or an international institution, is an organization that is established by a treaty, or is an instrument governed by international law and possessing its own legal personality, such as the United Nations, the World Health Organization, Save the Children International, International Union for Conservation of Nature, and NATO .Global organizations are composed of primarily member states, but may also include other entities, such as other Global organizations, firms, and nongovernmental organizations. Additionally, entities (including states) may hold observer status. An alternative definition is that an Global organization is a stable set of norms and rules meant to govern the behaviour of states and other actors in the international system.

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