



MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

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2.5.1 Mechanism of internal assessment is transparent and robust in terms of frequency and mode

S.No	Description	Page Number
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Chennai-603 103.



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INTERNAL ASSESSMENT MODEL EXAM - TIME TABLE

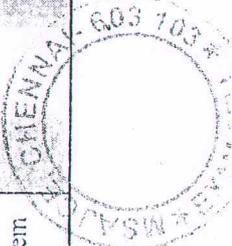
Ref: MSAJCE/COE/11 / 23-24

Academic Year: 2023-24

YEAR: II		SEM: III						
Date & Day / Dept.	CIVIL	MECH	EEE	ECE	CSE	IT	CSBS	AIDS
18.01.24	CE3302 Construction Materials and Technology	ME3392 Engineering Materials and Metallurgy	EC3301 Electronic Devices and Circuits	EC3353 Electronic Devices and Circuits	CS3391 Object Oriented Programming	CS3391 Object Oriented Programming	CS3391 Object Oriented Programming	AD3391 Database Design and Management
19.01.24	MA3351 Transforms and Partial Differential Equations	MA3351 Transforms and Partial Differential Equations	MA3303 Probability and Complex Functions	MA3355 Random Processes and Linear Algebra	CS3301 Data Structures	CD3291 Data Structure and Algorithm	AD3351 Design and Analysis of Algorithms	AD3351 Design and Analysis of Algorithms
20.01.24	CE3351 Surveying and Levelling	CE3391 Fluid Mechanics and Machinery	EE3302 Digital Logic Circuits	EC3352 Digital Systems Design	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics
22.01.24	CE3301 Fluid Mechanics	ME3391 Engineering Thermodynamics	EE3301 Electromagnetic Field	EC3354 Signals and Systems	CS3352 Foundations of Data Science	CS3352 Foundations of Data Science	AD491 Fundamentals of Data Science and Analytics	AL3391 Artificial Intelligence
23.01.24	CE3303 Water Supply and Wastewater Engineering	ME3393 Manufacturing Processes	CS3353 C Programming and Data Structures	CS3353 C Programming and Data Structures	CS3351 Digital Principles and Computer Organization			
24.01.24	ME3351 Engineering Mechanics	ME3351 Engineering Mechanics	EE3303 Electrical Machines - I	EC3351 Control System			CW3301 Fundamentals of Economics	AD3301 Data Exploration and Visualization

08.01.24

Exam cell *Gowtham*



M. V. *11/24*
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INTERNAL ASSESSMENT TEST II - TIME TABLE

Ref: MSAJCE/COE/10 / 23-24

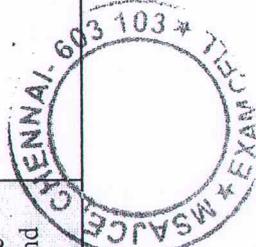
Academic Year: 2023-24

YEAR: II

SEM: III

Time: 8.30 AM to 11.30 AM

Date & Day / Dept.	CIVIL	MECH	EEE	ECE	CSE	IT	CSBS	AIDS
29.11.23 Wednesday	ME3351 Engineering Mechanics	ME3351 Engineering Mechanics	MA3303 Probability and Complex Functions	MA3355 Random Processes and Linear Algebra	CS3391 Object Oriented Programming	CS3391 Object Oriented Programming	CS3391 Object Oriented Programming	AL3391 Artificial Intelligence
30.11.23 Thursday	CE3303 Water Supply and Wastewater Engineering	ME3391 Engineering Thermodynamics	CS3353 C Programming and Data Structures	CS3353 C Programming and Data Structures	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics	MA3354 Discrete Mathematics
01.12.23 Friday	MA3351 Transforms and Partial Differential Equations	MA3351 Transforms and Partial Differential Equations	EE3301 Electromagnetic Field	EC3351 Control System	CS3352 Foundations of Data Science	CS3352 Foundations of Data Science	CW3301 Fundamentals of Economics	AD3301 Data Exploration and Visualization
02.12.23 Saturday	CE3302 Construction Materials and Technology	ME3392 Engineering Materials and Metallurgy	EE3302 Digital Logic Circuits	EC3352 Digital Systems Design	CS3351 Digital Principles and Computer Organization			
05.12.23 Tuesday	CE3301 Fluid Mechanics	CE3391 Fluid Mechanics and Machinery	EE3303 Electrical Machines - I	EC3354 Signals and Systems	CS3301 Data Structures	CD3291 Data Structure and Algorithm	AD3351 Design and Analysis of Algorithms	AD3351 Design and Analysis of Algorithms
06.12.23 Wednesday	CE3351 Surveying and Levelling	ME3393 Manufacturing Processes	EC3301 Electronic Devices and Circuits	EC3353 Electronic Devices and Circuits	CS3301 Data Structures	CD3291 Data Structure and Algorithm	AD3491 Fundamentals of Data Science and Analytics	AD3391 Database Design and Management



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27.11.23



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INTERNAL ASSESSMENT TEST III - TIME TABLE

Ref: MSAJCE / COE / 07 / 23-24

Academic Year: 2023-24
Time: 8.30 AM to 10.30 AM

SEM: V

YEAR: III

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
10.10.23 Tuesday	CE3501 Design of Reinforced Concrete Structural Elements	CS3551 Distributed Computing	EE3001 Utilization and Conservation of Electrical Energy	EC3551 Transmission lines and RF Systems	ME3592 Metrology and Measurements	CS3551 Distributed Computing
11.10.23 Wednesday	CE3003 Prefabricated Structures	CB3491 Cryptography and cyber Security	EE3006 Power Quality	CEC367 Industrial IoT and Industry 4.0	CME387 Non-traditional Machining Processes	IT3501 Full Stack Web Development
12.10.23 Thursday	CE3502 Structural Analysis I	CCW332 Digital Marketing	EE3501 Power System Analysis	EC3501 Wireless Communication	CME395 Casting and Welding Processes	CCS334 Big data Analysis
17.10.23 Tuesday	CE3025 Airports and Harbours	CS3591 Computer Networks	EE3012 Electrical Drives	CEC366 Image Processing	ME3591 Design of Machine Elements	CS3591 Computer Networks
18.10.23 Wednesday	CE3503 Foundation Engineering	CCS341 & CCS366 Data Warehousing & Software Testing & Automation	EE3591 Power Electronics	CEC370 Low Power IC Design	CME365 Renewable Energy Technologies	CCS341 & CCS366 Data Warehousing & Software Testing & Automation
19.10.23 Thursday	CE3009 Construction Equipment and Machinery	CS3501 Compiler Design	EE3503 Control Systems	EC3552 VLSI and Chip Design		CS3691 Embedded Systems & IoT

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Date: 06.10.23

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INTERNAL ASSESSMENT TEST I - TIME TABLE

Ref: MSAJCE/COE/02 / 23-24

Academic Year: 2023-24
Time: 8.30 AM to 10.30 AM

SEM: V

YEAR: III

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
09.08.23 Wednesday	CE3501 Design of Reinforced Concrete Structural Elements	CS3551 Distributed Computing	EE3001 Utilization and Conservation of Electrical Energy	EC3552 VLSI and Chip Design	ME3592 Metrology and Measurements	CS3551 Distributed Computing
10.08.23	CE3003 Prefabricated Structures	CB3491 Cryptography and cyber Security	EE3006 Power Quality	CEC366 Image Processing	CME387 Non-traditional Machining Processes	IT3501 Full Stack Web Development
11.08.23 Friday	CE3502 Structural Analysis I	CCW332 Digital Marketing	EE3501 Power System Analysis	EC3501 Wireless Communication	CME395 Casting and Welding Processes	CCS334 Big data Analysis
12.08.23 Saturday	CE3025 Airports and Harbours	CS3501 Compiler Design	EE3012 Electrical Drives	CEC370 Low Power IC Design	ME3591 Design of Machine Elements	CS3691 Embedded Systems & IoT
14.08.23 Monday	CE3503 Foundation Engineering	CCS341 & CCS366 Data Warehousing & Software Testing & Automation	EE3591 Power Electronics	CEC367 Industrial IoT and Industry 4.0	CME365 Renewable Energy Technologies	CCS341 & CCS366 Data Warehousing & Software Testing & Automation
16.08.23 Wednesday		CS3591 Computer Networks	EE3503 Control Systems	EC3551 Transmission lines and RF Systems		CS3591 Computer Networks

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Date: 03.08.23



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INTERNAL ASSESSMENT TEST I - TIME TABLE

Ref: MSAJCE / COE / 13 / 23-24

YEAR: III

SEM: VI

Academic Year: 2023-24

Time: 8.30 AM to 11.30 AM

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
12.03.24 Tuesday	CE3033 Solid & Hazardous Waste Management	CCS335 Cloud Computing	EE3601 Protection and Switchgear	CEC331 4G/5G Communication Networks		CCS335 Cloud Computing
13.03.24 Wednesday	CE3602 Structural Analysis	OEE351 Renewable Energy Systems	EE3018 Embedded Processors	OEE351 Renewable Energy Systems	CME347 Lean Manufacturing	OEE351 Renewable Energy Systems
14.03.24 Thursday	CE3022 Remote Sensing Concepts	CS3691 Embedded Systems & IoT	EE3602 Power System Operation & Control	CS3491 Artificial Intelligence & Machine Learning	CME396 Process Planning and Cost Estimation	CCW332 Digital Marketing
15.03.24 Friday	CE3601 Design of Steel Structural Elements	CCS334 Big Data Analytics	EE3009 Special Electrical Machines	CEC368 IoT based System Design	ME3691 Heat and Mass Transfer	CCS343 Digital & Mobile Forensics
16.03.24 Saturday	OCS352 IoT Concepts & Applications	CCS356 Object Oriented Software Engineering	OCS352 IoT Concepts & Applications	ET3491 Embedded Systems & IoT Systems	OCS352 IoT Concepts & Applications	CCS356 Object Oriented Software Engineering
19.03.24 Tuesday	AG3601 Engineering Geology	CCS366 Software Testing & Automation			CME384 Power Plant Engineering	

Date: 05.03.24



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INTERNAL ASSESSMENT TEST II - TIME TABLE

Ref: MSAJCE/COE/05 / 23-24

Academic Year: 2023-24

YEAR: III

SEM: V

Time: 8.30 AM to 10.30 AM

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
29.08.23 Tuesday	CE3501 Design of Reinforced Concrete Structural Elements	CS3551 Distributed Computing	EE3001 Utilization and Conservation of Electrical Energy	EC3552 VLSI and Chip Design	ME3592 Metrology and Measurements	CS3551 Distributed Computing
30.08.23 Wednesday	CE3003 Prefabricated Structures	CB3491 Cryptography and cyber Security	EE3006 Power Quality	CEC366 Image Processing	CME387 Non-traditional Machining Processes	IT3501 Full Stack Web Development
31.08.23 Thursday	CE3502 Structural Analysis I	CCW332 Digital Marketing	EE3501 Power System Analysis	EC3501 Wireless Communication	CME395 Casting and Welding Processes	CCS334 Big data Analysis
01.09.23 Friday	CE3025 Airports and Harbours	CS3501 Compiler Design	EE3012 Electrical Drives	CEC370 Low Power IC Design	ME3591 Design of Machine Elements	CS3691 Embedded Systems & IoT
02.09.23 Saturday	CE3503 Foundation Engineering	CCS341 & CCS366 Data Warehousing & Software Testing & Automation	EE3591 Power Electronics	CEC367 Industrial IoT and Industry 4.0	CME365 Renewable Energy Technologies	CCS341 & CCS366 Data Warehousing & Software Testing & Automation
05.09.23 Tuesday		CS3591 Computer Networks	EE3503 Control Systems	EC3551 Transmission lines and RF Systems		CS3591 Computer Networks

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Exam cell 23812

Date: 23.08.23



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INTERNAL ASSESSMENT TEST II - TIME TABLE

Ref: MSAJCE/COE/04 / 23-24

Academic Year: 2023-24
Time: 8.30 AM to 10.30 AM

SEM: VII

YEAR: IV

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
29.08.23 Tuesday	OME754 Industrial Safety	MG8591 Principles of Management (POM)	EE8701 High Voltage Engineering	EC8791 Embedded and Real Time Systems	ME8073 Unconventional Machining Processes	MG8591 Principles of Management
30.08.23 Wednesday	CE8701 Estimation, Costing and Valuation Engineering	CS8792 Cryptography and Network Security (CNS)	GE8077 Total Quality Management	EC8751 Optical communication	ME8793 Process Planning and Cost Estimation	CS8792 Cryptography and Network Security
31.08.23 Thursday	CE8702 Railways, Airports, Docks and Harbour Engineering	OMF751 Lean Six Sigma (LSS)	EE8703 Renewable Energy Systems	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma
01.09.23 Friday	CE8703 Structural Design and Drawing	CS8079 Human Computer Interaction	EE8702 Power System Operation and Control	EC8702 Adhoc and Wireless Sensor Networks	ME8792 Power Plant Engineering	CS8079 Human Computer Interaction
02.09.23 Saturday		CS8791 Cloud Computing (CC)	OCS752 Introduction to C Programming	EC8701 Antennas and Microwave Engineering	ME8791 Mechatronics	CS8791 Cloud Computing

Date: 23.08.23

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INTERNAL ASSESSMENT TEST III - TIME TABLE

Ref: MSAJCE / COE / 06 / 23-24

Academic Year: 2023-24

Time: 8.30 AM to 10.30 AM

YEAR: IV

SEM: VII

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
10.10.23 Tuesday	OME754 Industrial Safety	MG8591 Principles of Management (POM)	EE8701 High Voltage Engineering	EC8791 Embedded and Real Time Systems	ME8073 Unconventional Machining Processes	MG8591 Principles of Management
11.10.23 Wednesday	CE8701 Estimation, Costing and Valuation Engineering	CS8792 Cryptography and Network Security (CNS)	GE8077 Total Quality Management	EC8751 Optical communication	ME8793 Process Planning and Cost Estimation	CS8792 Cryptography and Network Security
12.10.23 Thursday	CE8702 Railways, Airports, Docks and Harbour Engineering	OMF751 Lean Six Sigma (LSS)	EE8703 Renewable Energy Systems	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma
17.10.23 Tuesday	CE8703 Structural Design and Drawing	CS8079 Human Computer Interaction	EE8702 Power System Operation and Control	EC8702 Adhoc and Wireless Sensor Networks	ME8792 Power Plant Engineering	CS8079 Human Computer Interaction
18.10.23 Wednesday		CS8791 Cloud Computing (CC)	OCS752 Introduction to C Programming	EC8701 Antennas and Microwave Engineering	ME8791 Mechatronics	CS8791 Cloud Computing

Date: 06.10.23

Exam cell

Principal

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INTERNAL ASSESSMENT TEST I - TIME TABLE

Ref: MSAJCE/COE/01 / 23-24

Academic Year: 2023-24

Time: 8.30 AM to 10.30 AM

SEM: VII

YEAR: IV

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
09.08.23 Wednesday	OME754 Industrial Safety	MG8591 Principles of Management (POM)	EE8701 High Voltage Engineering	EC8791 Embedded and Real Time Systems	ME8073 Unconventional Machining Processes	MG8591 Principles of Management
10.08.23 Thursday	CE8701 Estimation, Costing and Valuation Engineering	CS8792 Cryptography and Network Security (CNS)	GE8077 Total Quality Management	EC8751 Optical communication	ME8793 Process Planning and Cost Estimation	CS8792 Cryptography and Network Security
11.08.23 Friday	CE8702 Railways, Airports, Docks and Harbour Engineering	OMF751 Lean Six Sigma (LSS)	EE8703 Renewable Energy Systems	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma	OMF751 Lean Six Sigma
12.08.23 Saturday	CE8703 Structural Design and Drawing	CS8079 Human Computer Interaction	EE8702 Power System Operation and Control	EC8702 Adhoc and Wireless Sensor Networks	ME8792 Power Plant Engineering	CS8079 Human Computer Interaction
14.08.23 Monday	-	CS8791 Cloud Computing (CC)	OCS752 Introduction to C Programming	EC8701 Antennas and Microwave Engineering	ME8791 Mechatronics	CS8791 Cloud Computing

Exam Cell
3/8/23

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M. L. 4/9/23
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Date: 03.08.23

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INTERNAL ASSESSMENT TEST I - TIME TABLE

Ref: MSAJCE/COE/12 / 23-24

YEAR: IV SEM: VIII Academic Year: 2023-24 Time: 8.30 AM to 11.30 AM

Date & Day / Dept.	CIVIL	CSE	EEE	ECE	MECH	IT
29.02.24 Thursday	GE8076 Professional Ethics in Engineering	GE8076 Professional Ethics in Engineering	MG8591 Principles of Management	GE8076 Professional Ethics in Engineering	MG8591 Principles of Management	GE8076 Professional Ethics in Engineering
01.03.24 Friday	CE8020 Maintenance, Repair and Rehabilitation of Structures	CS8080 Information Retrieval Techniques	EE8019 Smart Grid	EC8094 Satellite Communication	IE8693 Production Planning and Control	CS8080 Information Retrieval Techniques



24.02.24

Ram
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Reg.No:

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Question Paper Code:

B.E/B.Tech DEGREE INTERNAL ASSESMENT TEST - I

II Year / IV Semester

Department of Computer Science and Engineering

CS3451 Introduction to Operating System

(Common to CSE & IT)

(Regulations 2021)

Maximum: 100 marks

Time: 3 Hrs

Date: 27.04.2024

Course Objectives

- To understand the basics and functions of operating systems.
- To understand processes and threads
- To analyze scheduling algorithms and process synchronization.
- To understand the concept of deadlocks.
- To analyze various memory management schemes.
- To be familiar with I/O management and file systems
- To be familiar with the basics of virtual machines and Mobile OS like iOS and Android

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Analyze various scheduling algorithms and process synchronization.
CO2 : Explain deadlock prevention and avoidance algorithms.
CO3 : Compare and contrast various memory management schemes.
CO4 : Explain the functionality of file systems, I/O systems, and Virtualization
CO5 : Compare iOS and Android Operating Systems

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

- | | BL | CO | PI | AU Ref |
|---|----|-----|-------|--------|
| 1 List and briefly define the four main elements of a computer? | K1 | CO1 | 1.4.1 | ND22 |
| 2 Discuss the difference between symmetric and asymmetric multiprocessing | K2 | CO1 | 1.4.1 | AM23 |
| 3 List the advantage of multiprocessor system? | K2 | CO1 | 1.4.1 | ND22 |
| 4 Define system call. | K2 | CO1 | 1.4.1 | AM19 |
| 5 Name and draw five different process states with proper definition. | K2 | CO2 | 1.4.1 | ND19 |
| 6 Differentiate between single threaded and multi-threaded processes. | K1 | CO2 | 1.4.1 | AM23 |
| 7 List out the data fields associated with process Control Blocks. | K1 | CO2 | 1.4.1 | ND22 |
| 8 Give the condition necessary for a-deadlock situation to arise | K2 | CO2 | 1.4.1 | AM23 |
| 9 Define Demand Paging. | K1 | CO3 | 1.4.1 | ND19 |
| 10 What is Memory? | K1 | CO3 | 1.4.1 | AM23 |

PART B - (5 X 13 = 65 Marks)

- 11 a) Explain Operating System Structure and components.
- OR
- b) With neat sketch discuss Computer System Overview
- | | | | | |
|--|---|-----|-------|------|
| | K | CO1 | 1.4.1 | ND22 |
| | K | CO1 | 1.4.1 | AM22 |

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- 12 a) Explain the Detail about user operating system interface K CO1 1.4.1 AM23
- OR
- b) List the Services of operating system. Explain? K3 CO1 1.4.1 ND22
- 13 a) CPU scheduling algorithms-Scheduling criteria, FCFS, SJF, RR. Explain with suitable example K3 CO2 1.4.1 ND21
- OR
- b) Illustrate semaphores with neat example. K3 CO2 1.4.1 ND22
- 14 a) Deadlock Problems- Bankers algorithm, Resource allocation graph K3 CO2 1.4.1 AM23
- OR
- b) Threads and multi-threading models. Explain with example K3 CO2 1.4.1 AM22
- 15 a) Explain paging scheme for memory management, discuss the paging hardware and Paging. K3 CO3 1.4.1 AM22
- OR
- b) Explain about contiguous memory allocation? K3 CO3 1.4.1 ND21

PART C - (1 X 15 = 15 Marks)

- 16 a) What is System Program? Explain the different types of system programs with examples K3 CO1 1.4.1 ND22
- OR
- b) What is the important feature of critical section? State the Readers Writers problem and give solution using semaphore K3 CO2 1.4.1 ND22



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Reg.No:

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Question Paper Code:

B.E/B.Tech DEGREE INTERNAL ASSESMENT TEST - II

II Year / IV Semester

Department of Computer Science and Engineering

CS3451 Introduction to Operating System

(Common to CSE & IT)

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date: 06.06.2024

Course Objectives

- To understand the basics and functions of operating systems.
- To understand processes and threads
- To analyze scheduling algorithms and process synchronization.
- To understand the concept of deadlocks.
- To analyze various memory management schemes.
- To be familiar with I/O management and file systems
- To be familiar with the basics of virtual machines and Mobile OS like iOS and Android

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Analyze various scheduling algorithms and process synchronization.
- CO2 : Explain deadlock prevention and avoidance algorithms.
- CO3 : Compare and contrast various memory management schemes.
- CO4 : Explain the functionality of file systems, I/O systems, and Virtualization
- CO5 : Compare iOS and Android Operating Systems

K1-Remember K2-Understand K3-Apply K4-Analyze K5-Evaluate K6>Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 What is a Reference String?	K1	CO3	1.4.1	AM23
2 What do you mean by Best Fit, First fit and Worst fit?	K2	CO3	1.4.1	AM23
3 What are the various File Operations?	K2	CO4	1.4.1	AM23
4 Define Seek Time and Latency Time	K2	CO4	1.4.1	ND19
5 What are the advantages of Contiguous Allocation?	K2	CO4	1.4.1	ND22
6 If the average page faults service time of 25 ms and a memory access time of 100ns. Calculate the effective access time.	K1	CO4	1.4.1	ND22
7 List the Uses of Virtualization.	K1	CO5	1.4.1	AM23
8 What is the Application Containment?	K2	CO5	1.4.1	ND19
9 Define Linux Kernel	K1	CO5	1.4.1	AM23
10 Define Paravirtualization.	K1	CO5	1.4.1	AM23

PART B - (5 X 13 = 65 Marks)

- a) Explain about the following page replacement algorithms a)FIFO b)OPR c)LRU K CO3 1.4.1 ND22

OR

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- b) Explain the basic concepts of segmentation in detail K CO3 1.4.1 ND22
- a) Describe indexed file, indexed sequential file organization K CO4 1.4.1 ND21
- OR
- b) Explain about file attributes, file operations, and file types? K3 CO4 1.4.1 AM22
- a) Give overview of mass storage structure in detail. K3 CO4 1.4.1 ND21
- OR
- b) Explain different free space management techniques in detail K3 CO4 1.4.1 AM23
- a) Explain the architecture of Android OS. K3 CO5 1.4.1 ND22
- OR
- b) List the types of Virtual Machine and Explain in detail. K3 CO2 1.4.1 ND22
- a) Explain the Building Blocks of VMM K3 CO3 1.4.1 AM22
- OR
- b) Explain the architecture of iOS. K3 CO3 1.4.1 AM23

PART C - (1 X 15 = 15 Marks)

- a) Discuss the objectives for file management systems K3 CO4 1.4.1 ND22
- OR
- b) Explain the details about Operating systems Components K3 CO5 1.4.1 AM23



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Chennai - 603103.

Reg.No:

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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Civil Engineering

MA3351 & TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

(Common to Mechanical and Civil)

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date: 19.01.2024

Course Objectives

- To introduce the basic concepts of PDE for solving standard partial differential equations.
- To introduce Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems.
- To acquaint the student with Fourier series techniques in solving heat flow problems used in various situations.
- To acquaint the student with Fourier transform techniques used in wide variety of situations.
- To introduce the effective mathematical tools for the solutions of partial differential equations that model several physical processes and to develop Z transform techniques for discrete time systems.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Understand how to solve the given standard partial differential equations.
- CO2 : Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
- CO3 : Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
- CO4 : Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
- CO5 : Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

- | | | | | | |
|---|---|----|-----|-------|--------|
| | | BL | CO | PI | AU Ref |
| 1 | Find the complete solution of the PDE $p^2 + q^2 = 4pq$. | K2 | CO1 | 1.1.1 | ND22 |
| 2 | Find the complementary function of the PDE $(D^3 - 3DD^2 + 2D^3)z = e^{2x-y}$ | K2 | CO1 | 1.1.1 | ND22 |
| 3 | Identify the given $f(x)$ is an even or odd function. Also sketch its graph. | K2 | CO2 | 1.1.1 | ND22 |
| | $f(x) = \begin{cases} \pi + x & -\pi \leq x \leq -\frac{\pi}{2} \\ -x & -\frac{\pi}{2} \leq x \leq 0 \\ x & 0 \leq x \leq \frac{\pi}{2} \\ \pi - x & \frac{\pi}{2} \leq x \leq \pi \end{cases}$ | | | | |
| 4 | State Parseval's identity in Fourier series. | K2 | CO2 | 1.1.1 | ND22 |
| 5 | Write down the appropriate solution of the one dimensional heat flow equation. How is it chosen? | K2 | CO3 | 1.1.1 | ND22 |
| 6 | The ends A and B of a rod 30 cm long, have their temperature kept at 10°C and 100°C respectively. Then obtain the steady state temperature. | K2 | CO3 | 1.1.1 | ND22 |
| 7 | What are the sufficient conditions for the existence of Fourier transform of a function $f(x)$? | K2 | CO4 | 1.1.1 | ND22 |


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- 8 Obtain the Fourier cosine transform of $\frac{1}{2^t}$ K3 CO4 1.1.1 ND22
- 9 Find the inverse Z transform of $\frac{z}{(z-1)^2}$ K2 CO5 1.1.1 ND22
- 10 State final value theorem in Z transform. K2 CO5 1.1.1 ND22

PART B - (5 X 16 = 80 Marks)

- 11 a) (i) Solve : $(x - 2z)p + (2z - y)q - y - x$. K3 CO1 1.1.1 ND22
(ii) Solve : $(D^3 + D^2D' - 4DD'^2 - 4D'^3)z = \cos(2x + y)$.

or

- b) (i) Solve the PDE $2z + p^2 + qy + 2y^2 = 0$. K3 CO1 1.1.1 ND22
(ii) Solve $(D^2 + 2DD' + D'^2 - 2D - 2D')z = \sin(x + 2y)$.

- 12 a) (i) Obtain the Fourier series of periodicity 2π for $f(x) = e^{-x}$ in the interval $0 < x < 2\pi$. K3 CO2 1.1.1 ND22
(ii) Obtain the half range Fourier cosine series of $f(x) = x(1-x)$ in $(0,1)$.

or

- b) The following table gives the variations of periodic current over a period, K3 CO2 1.1.1 ND22
- | | | | | | | | |
|--------|------|------|------|------|-------|-------|------|
| t sec: | 0 | T/6 | T/3 | T/2 | 2T/3 | 5T/6 | T |
| A amp: | 1.98 | 1.30 | 1.05 | 1.30 | -0.88 | -0.25 | 1.98 |

Show that there is a direct current part of 0.75 amp in the variable current and obtain the amplitude of the first harmonic. (Harmonic Analysis).

- 13 a) A tightly stretched string of length 2l is fastened at both ends. The midpoint of the string is displaced by a distance 'b' transversely and the string is released from rest in this position. Find the displacement y at any distance x from one end at any time t. K3 CO3 1.1.1 ND22

or

- b) An infinitely long metal plate in the form of an area is enclosed between the lines $y = 0$ and $y = \pi$ for positive values of x. The temperature is zero along the edges $y = 0$ and $y = \pi$ and the edge at infinity. If the edge $x = 0$ is kept at temperature 'ky' find the steady state temperature at any point in the plate. K3 CO3 1.1.1 ND22

- 14 a) (i) Find the Fourier transform of $f(x)$ given by K3 CO4 1.1.1 ND22

$$f(x) = \begin{cases} 1, & \text{for } |x| \leq a \\ 0, & \text{for } |x| > a \end{cases}$$

(ii) Find the Fourier sine transform of $f(x) = e^{-ax}$, $a > 0$ and hence find $F_c(xe^{-ax})$

or

- b) (i) Using Parseval's identity for Fourier transforms, evaluate K3 CO4 1.1.1 ND22

$$\int_0^{\infty} \frac{ds}{(a^2 + s^2)(b^2 + s^2)}$$

(ii) Find the Fourier cosine transform of


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$$f(x) = \begin{cases} x & ; 0 < x < 1 \\ 2 - x & ; 1 < x < 2 \\ 0 & ; x > 2 \end{cases}$$

- 15 a) Using Z transform, solve the difference equation K3 CO5 1.1.1 ND22

$$U_{n+2} + 4U_{n+1} + 3U_n = 3n \text{ with } u_0=0, u_1=1$$

or

- b) State and prove convolution theorem in Z transforms and use it to K3 CO5 1.1.1 ND22

find $Z^{-1}\left\{\frac{x^2}{(z-a)(z-b)}\right\}$



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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Computer Science and Engineering

CS3301 DATA STRUCTURE

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date: 19.01.2024

Course Objective:

- To understand the concepts of ADTs.
- To Learn linear data structures – lists, stacks, and queues.
- To understand non-linear data structures – trees and graphs.
- To understand sorting, searching and hashing algorithms.
- To apply Tree and Graph structures.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Define linear and non-linear data structures.
CO2 : Implement linear and non-linear data structure operations.
CO3 : Use appropriate linear/non-linear data structure operations for solving a given problem.
CO4 : Apply appropriate graph algorithms for graph applications.
CO5 : Analyze the various searching and sorting algorithms

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 State the uses of Abstract Data Type (ADT).	K2	CO1	1.4.1	AM23
2 List the advantages of doubly linked list.	K2	CO1	1.4.1	AM23
3 Give the limitations of linear queue.	K2	CO2	1.4.1	AM23
4 Write the underflow and overflow conditions in stack?	K1	CO2	1.4.1	AM23
5 Mention the types of rotations performed on AVL tree.	K2	CO3	1.4.1	AM23
6 State the properties of binary search tree.	K2	CO3	1.4.1	AM23
7 Define critical path.	K2	CO4	1.4.1	AM23
8 State the uses of topological sort.	K2	CO4	1.4.1	AM23
9 Outline perfect minimal hashing function.	K2	CO5	1.4.1	AM23
10 Identify the principle behind the external sorting algorithms.	K2	CO5	1.4.1	AM23

PART B - (5 X 13 = 65 Marks)

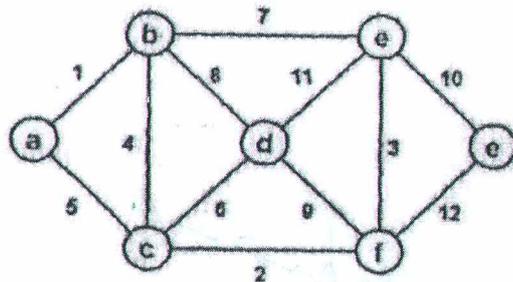
11 a) Explain how list operations can be implemented using Arrays.	K2	CO1	1.4.1	AM23
or				
b) Explain how polynomial expression can be represented using linked list.	K2	CO1	1.4.1	AM23
12 a) Write an algorithm for Push and Pop operations on Stack using Linked list.	K3	CO2	1.4.1	AM23
or				

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- b) Explain the addition and deletion operations performed on a circular queue with necessary algorithms. K2 CO2 1.4.1 AM23
- 13 a) Identify the types of Priority Queue. Explain about min heap insertion and deletion operations. K3 CO3 1.4.1 AM23
- or
- b) Explain Heap tree ADT in detail. K2 CO3 1.4.1 AM23
- 14 a) Write and explain the prim's algorithm and depth first search algorithm. K2 CO4 1.4.1 AM23
- or
- b) Explain about B+ trees with algorithms to insert a node into a B+ tree. K2 CO4 1.4.1 AM23
- 15 a) Write an algorithm to implement Bubble sort with suitable example. K3 CO5 1.4.1 AM23
- or
- b) Discuss the common collision resolution strategies used in closed hashing system. K3 CO5 1.4.1 AM23

PART C - (1 X 15 = 15 Marks)

- 16 a) The keys 12,18,13,2,3,23,5, and 15 are inserted into an initially empty hash table of length 10 using linear probing with hash function $h(k) = k \text{ mod } 10$. What is the resultant hash table? K3 CO5 1.4.1 AM23
- or
- b) Using Prim's Algorithm, find the cost of minimum spanning tree (MST) of the given graph. K3 CO3 1.4.1 AM23



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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM
II Year / III Semester
 Department of Electrical and Electronics Engineering
MA3303 PROBABILITY AND COMPLEX FUNCTIONS
 (Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:19.01.2024

Course Objective:

- This course aims at providing the required skill to apply the statistical tools in engineering problems.
- To introduce the basic concepts of probability and random variables.
- To introduce the basic concepts of two dimensional random variables.
- To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property.
- To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1** : Explain the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
- CO2** : Describe the basic concepts of one and two dimensional random variables and apply in engineering applications.
- CO3** : Apply the standard techniques of complex variable theory in particular analytic function and its mapping property.
- CO4** : Summarize complex integration techniques and contour integration techniques which can be used in real integrals.
- CO5** : Explain Differential Equations which are significantly used in engineering problems.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 A pair of dice is tossed twice. Find the probability of scoring 7 points at least once.	K2	CO1	1.4.1	ND 22
2 The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$. If 12 such pens are manufactured, find the probability that exactly two will be defective.	K2	CO1	1.4.1	ND 22
3 If the joint probability density function of the random variable (X,Y) is given by $f(x,y)=kxye^{-(x^2-y^2)}$, $x > 0, y > 0$. Find the value of K.	K3	CO2	1.4.1	ND 22
4 State central limit theorem	K2	CO2	1.4.1	ND 22
5 Show that the function $f(z) = z\bar{z}$ is nowhere analytic.	K2	CO3	1.4.1	ND 22
6 Under the transformation $W = \frac{1}{z}$, find the images of $2x + y = 2$	K2	CO3	1.4.1	ND 22
7 Evaluate $\int_c \frac{e^x}{z(1-z)^3} dz$ if 0 lies inside c and 1 lies outside c.	K2	CO4	1.4.1	ND 22
8 Expand $f(z) = e^z$ as a Taylor's series about $z = 0$	K2	CO4	1.4.1	ND 22
9 Solve $(D^2-3D+2)y = e^x$.	K2	CO5	1.4.1	ND 22
10 Solve $(xD^2 + D)y = 0$	K2	CO5	1.4.1	ND 22

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PART B - (5 X 13 = 65 Marks)

11 a) (i) A random variable X has the following probability function:	K3	CO1	1.4.1	ND 22
x: 0 1 2 3 4 5 6 7				
p(x): 0 k 2k 2k 3k k ² 2k ² 7k ² +k				
(1) Find the value of k?				
(2) Evaluate P(X < 6) and P(0 < X < 5).				
(ii) In 256 sets of 12 tosses of a coin in how many cases one can expect 8 heads and 4 tails.				

OR

- (i) In attest on 2000 electric bulbs, it was found that the life of a particular make, was normally distributed with an average life of 2040 hours and S.D. of 60 hours. Estimate the number of bulbs likely to burn for
- b) (1) More than 2150 hours,
(2) Less than 1950 hours.
- (ii) Find the moment generating function of the exponential distribution $f(x) = \frac{1}{c} e^{-\frac{x}{c}}$ $0 \leq x \leq 8, c > 0$. Hence find its mean and standard deviation.
- 12 a) (i) The joint probability mass function of (X,Y) is given by $f(x, y) = k(2x + 3y)$, $x = 0, 1, 2; y = 1, 2, 3$. Find all the marginal distribution of X given $Y = 2, Y = 3$.
(ii) Find the covariance for the following heights of fathers X and their sons Y :
X: 65 66 67 67 68 69 70 72
Y: 67 68 65 68 72 72 69 71
- OR
- b) (i) A study of prices of rice of Chennai and Madurai gave the following data:
- | | Chennai | Madurai |
|------|---------|---------|
| Mean | 19.5 | 17.75 |
| S.D. | 1.75 | 2.5 |
- Also the coefficient of correlation between the two is 0.8. Estimate the most likely price at Chennai corresponding to the price of 18 at Madurai.
- (ii) If X and Y follow exponential distribution with parameter 1 and are independent, find the probability distribution function of $U = X - Y$.
- 13 a) (i) If $f(z)$ is a regular function of z , prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) |f(z)|^2 = 4|f'(z)|^2$
(ii) If $f(z) = u + iv$, is analytic find $f(z)$ and v if $u = \frac{\sin 2x}{\cos 2x + \cosh 2y}$
- OR
- b) (i) Find the bilinear map which maps the points $z = 1, i, 0$ onto $w = 1, i, -1$
(ii) Show that the map $w = \frac{1}{z}$ maps the totality of circles and lines as circles or lines.
- 14 a) (i) Evaluate, using Cauchy's integral formula $\int_c \frac{z+1}{z^2+2z+4} dz$ where c is the circle $|z+1+i|=2$
(ii) Expand $f(z) = \frac{z^2-1}{(z+2)(z+3)}$ in a Laurent's series if $|z| < 2$.
- OR
- b) (i) Evaluate $\oint_c \frac{z \sec z}{(1-z^2)} dz$ where c is the ellipse $4x^2 + 9y^2 = 9$.
(ii) Evaluate $\int_0^{2\pi} \frac{d\theta}{13+5\sin\theta}$
- 15 a) (i) Solve the equation $(D^2 - 4D + 3)y = \sin 3x + x^2$
(ii) Solve $(x^2 D^2 - xD + 1)y = \left[\frac{\log x}{x}\right]^2$
- OR
- b) (i) Solve the equation $\frac{d^2 y}{dx^2} + a^2 y = \tan ax$, by the method of variation of parameters.
(ii) Solve the simultaneous equation $\frac{dx}{dt} + 2x - 3y = t, \frac{dy}{dt} - 3y + 2y = 2e^{2t}$

K3 CO1 1.4.1 ND 22

K3 CO2 1.4.1 ND 22

K3 CO2 1.4.1 ND 22

K3 CO3 1.4.1 ND 22

K3 CO3 1.4.1 ND 22

K3 CO4 1.4.1 ND 22

K3 CO4 1.4.1 ND 22

K3 CO5 1.4.1 ND 22

K3 CO5 1.4.1 ND 22

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PART B - (5 X 16 = 80 Marks)

11 a) (i) A lot of 100 semiconductor chips contain 20 that are defective. Two are selected randomly, without replacement, from the lot. K3 CO1 1.4.1 ND22

- (1) What is the probability that the first one selected is defective?
- (2) What is the probability that the second one selected is defective given that the first one was defective?
- (3) What is the probability that both are defective?

(ii) A company producing electric relays have three manufacturing plants producing 50, 30, and 20 percent respectively of its product. Suppose that the probabilities that a relay manufactured by these plants is defective are 0.02, 0.05 and 0.01 respectively. If a relay selected at random is found to be defective, what is the probability that it was manufactured by plant 2?

or

b) (i) All manufactured devices and machines fail to work sooner or later. Suppose that the failure rate is constant and the time to failure (in hours) is an exponential random variable X with parameter λ . Measurements shows that the probability that the time to failure for computer memory chips in a given class exceeds 10^4 hours is e^{-1} . Find the value of λ and calculate the time X_0 such that the probability that the time to failure is less than X_0 is 0.05. K3 CO1 1.4.1 ND22

(ii) A production line manufactures 1000 ohm resistors that have 10% tolerance. Let X denotes the resistance of a resistor. Assuming that X is a normal random variable with mean 1000 and variance 2500, find the probability that a resistor picked at random will be rejected.

12 a) Consider an experiment of drawing randomly three balls from an urn containing two red, three white, and four blue balls. Let (X, Y) be a bivariate random variable where X and Y denote respectively the number of red and white balls chosen. K3 CO2 1.4.1 ND22

- (i) Find the range of (X, Y) .
- (ii) Find the joint probability mass function of (X, Y) .
- (iii) Find the marginal probability function of X and Y .
- (iv) Are X and Y independent?

or

b) Test two integrated circuits one after the other. On each test, the possible outcomes are a (accept) and r (reject). Assume that all circuits are acceptable with probability 0.9 and that the outcomes of successive tests are independent. Count the number of acceptable circuits X and count the number of successful tests Y before you observe the first reject. (If both tests are successful, let $Y = 2$.) K3 CO2 1.4.1 ND22

- (i) Find the joint probability mass function of X and Y .
- (ii) Find the correlation between X and Y .
- (iii) Find the covariance of X and Y .

13 a) (i) The input to a digital filter is an identical and independently distributed random sequence $\dots, X_{-1}, X_0, X_1, \dots$ with $E[X_i]=0$ and $\text{Var}[X_i]=1$. The output is a random sequence $\dots, Y_{-1}, Y_0, Y_1, \dots$ related to the input sequence by the formula $Y_n = X_n + X_{n-1}$ for all integers n . Find the expected value $E[Y_n]$ and auto-covariance function $C_y[m, k]$. K3 CO3 1.4.1 ND22

(ii) At the receiver of an AM radio, the received signal contains a cosine carrier signal at the carrier frequency f_c with a random phase that is a sample value of the uniform $(0, 2\pi)$ random variable. The received carrier signal is $X(t) = A \cos(2\pi f_c t + \theta)$. What are the expected value and autocorrelation of the process $X(t)$?

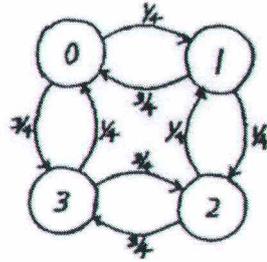
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b) Consider the Markov chain shown in the following figure.

K3 CO3 1.4.1 ND22



(i) What is the period d of state 0?

(ii) What are the stationary probabilities π_0, π_1, π_2 and π_3 ?

(iii) Given the system is in state 0 at time 0, what is the probability the system is in state 0 at time nd in the limit as $n \rightarrow \infty$?

14 a) Determine whether the set of all pairs of real numbers (x,y) with the operations $(x, y) + (p, q) = (x + p + 1, y + q + 1)$ and $k(x, y) = (kx, ky)$ is a vector space or not. If not, list all the axioms that fail to hold.

K3 CO4 1.4.1 ND22

or

b) Determine the basis and the dimension of the homogeneous system

K3 CO4 1.4.1 ND22

$$2x_1 + 2x_2 - x_3 + x_5 = 0; -x_1 - x_2 + 2x_3 - 3x_4 + x_5 = 0;$$

$$x_1 + x_2 - 2x_3 - x_5 = 0; x_3 + x_4 + x_5 = 0$$

15 a) (i) State and prove the dimension theorem for linear transformation.

K3 CO5 1.4.1 ND22

(ii) Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ be a linear transformation defined by

$$T \begin{pmatrix} x \\ y \end{pmatrix} = \begin{bmatrix} y \\ -5x + 13y \\ -7x + 16y \end{bmatrix}$$

Find the matrix for the transformation T with respect to the bases $B = \{u_1, u_2\}$ for \mathbb{R}^2 and $B_1 = \{v_1, v_2, v_3\}$ for \mathbb{R}^3

$$\text{where } u_1 = \begin{bmatrix} 3 \\ 1 \end{bmatrix}, u_2 = \begin{bmatrix} 5 \\ 2 \end{bmatrix}, v_1 = \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}, v_2 = \begin{bmatrix} -1 \\ 2 \\ 2 \end{bmatrix}, v_3 = \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}.$$

or

b) Find the orthogonal projection of the vector $u = (-3, -3, 8, 9)$ on the subspace of \mathbb{R}^4 spanned by the vectors $v_1 = (3, 1, 0, 1), v_2 = (1, 2, 1, 1), v_3 = (-1, 0, 2, -1)$.

K3 CO5 1.4.1 ND22

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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

I Year / I Semester

Department of Civil Engineering

(Common to All)

GE3151- PROBLEM SOLVING AND PYTHON PROGRAMMING

(Regulations 2021)

Time: 3 Hrs Maximum: 100 marks

Date:23.01.2024

- To understand the basics of algorithmic problem solving.
- To learn to solve problems using Python conditionals and loops.
- To define Python functions and use function calls to solve problem
- To use Python data structures - lists, tuples, dictionaries to represent complex data.
- To do input/output with files in Python.

Course Outcomes: On completion of the course, the student is expected to be able to

CO1 : Develop algorithmic solutions to simple computational problems.

CO2 : Develop and execute simple Python programs.

CO3 : Write simple Python programs using conditionals and loops for solving problems. Decompose a Python program into functions.

CO4 : Represent compound data using Python lists, tuples, dictionaries etc

CO5 : Read and write data from/to files in Python programs.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 Write an algorithm to find smallest among three numbers.	K2	CO1	1.4.1	AM22
2 Which is better iteration or recursion? Justify your answer.	K2	CO1	1.4.1	AM22
3 List any four built in data types in Python.	K2	CO2	1.4.1	AM22
4 How do you assign a value to a tuple in Python?	K2	CO2	1.4.1	AM22
5 What are the purposes of pass statement in Python?	K1	CO3	1.4.1	AM22
6 What is Linear Search?	K1	CO3	1.4.1	AM22
7 Give examples for mutable and immutable objects.	K2	CO4	1.4.1	AM22
8 What is purpose of dictionary in Python?	K1	CO4	1.4.1	AM22
9 List any four file operations.	K2	CO5	1.4.1	AM22
10 Write a python program to Count Words in a sentence using split() function.	K2	CO5	1.4.1	AM22

PART B - (5 X 13 = 65 Marks)

11 a) List out the control flow statements in Python and explain repetition type in detail with a sample program.

OR

b) What is recursion? Write and explain a Python program to find factorial of number using recursion.

12 a) Why do we call python as interpreted and object-oriented programming language? Also explain about Interactive Python.

OR

b) Write and explain the python program to swap two numbers with and without temporary variables.


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- 13 a) What is difference between break and continue in Python? Explain with suitable examples. K2 CO3 1.4.1 AM22
- OR
- b) What is string function in Python? Explain any three Python string methods with an example. K2 CO3 1.4.1 AM22
- 14 a) Define Python lists. How to add elements to the list? Explain with a suitable example program. K3 CO4 1.4.1 AM22
- OR
- b) Explain bubble sort algorithm using python programming. K2 CO4 1.4.1 AM22
- 15 a) Why does Python require file handling? Explain opening files in python with all modes. K2 CO5 1.4.1 AM22
- OR
- b) Give a brief note on Python Exception Handling using try, except, raise and finally statements. K2 CO5 1.4.1 AM22



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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM
II Year / III Semester
Department of Civil Engineering
CE3303 & Water Supply and Wastewater Engineering
(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:23.01.2024

- To introduce students to various components and design of water supply scheme, water treatment methods, water storage distribution system, sewage treatment and disposal and design of intake structures and sewerage system.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Explain the various components of water supply scheme and design of intake structure and conveyance system for water transmission
- CO2 : Describe the characteristics and composition of sewage, ability to estimate sewage generation and design sewer system including sewage pumping stations
- CO3 : Explain the process of conventional treatment and design of water and wastewater treatment system and gain knowledge of selection of treatment process and biological treatment process
- CO4 : Ability to design and evaluate water distribution system and water supply in buildings and understand the self-purification of streams and sludge and sewage disposal methods.
- CO5 : Able to understand and design the various advanced treatment system and knowledge about the recent advances in water and wastewater treatment process and reuse of sewage.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 How do you measure pH?	K1	CO1	1.4.1	ND22
2 Name some water borne diseases.	K1	CO1	1.4.1	ND22
3 What is the significance of velocity gradient in flash mixer?	K1	CO2	1.4.1	ND22
4 Define breakpoint chlorination.	K2	CO2	1.4.1	ND22
5 What are the methods of water distribution?	K1	CO3	1.4.1	ND22
6 How to identify leakage in pipes?	K1	CO3	1.4.1	ND22
7 What do you mean by Population equivalent?	K1	CO4	1.4.1	ND22
8 Mention the factors to be considered while selecting pumps for sewerage system	K2	CO4	1.4.1	ND22
9 What is the necessity of recirculation in trickling filter?	K1	CO5	1.4.1	ND22
10 Define the term sludge age.	K2	CO5	1.4.1	ND22

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PART B - (5 X 13 = 65 Marks)

11 a) Enumerate the various water demands.	K3	CO1	1.4.1	ND22
OR				
b) Describe the river intake and canal intake with necessary sketch.	K3	CO1	1.4.1	ND22
12 a) Mention the types of aerators.	K3	CO2	1.4.1	ND22
OR				
b) Categorize the methods of defluoridation techniques.	K3	CO2	1.4.1	ND22
13 a) Elaborate various layouts of distribution network with its merits and demerits.	K3	CO3	1.4.1	ND22
OR				
b) (i) Enlist the functions of service reservoir. (ii) Sketch house service connection.	K3	CO3	1.4.1	ND22

- 14 a) Classify the materials used for constructing sewer pipes with its pros and cons. K3 CO4 1.4.1 ND22
- OR
- b) Discuss the systems of plumbing for drainage with its types in detail K3 CO4 1.4.1 ND22
- 15 a) Analyze the working of conventional activated sludge process with flow diagram. K3 CO5 1.4.1 ND22
- OR
- b) Assess various stages of sludge digestion process and explain disposal of digested sludge. K3 CO5 1.4.1 ND22

PART C - (1 X 15 = 15 Marks)

- 16 a) Illustrate the sand filters with suitable sketch. K3 CO3 1.4.1 ND22
- OR
- b) Summarize the sewer appurtenances with its sketch. K3 CO2 1.4.1 ND22



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Question Paper Code:

B.E./B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Electrical and Electronics Engineering

CS3353 C PROGRAMMING AND DATA STRUCTURES

(Common to EEE & ECE)

(Regulations 2021)

Time: 3 Hrs Maximum: 100 marks

Date:23.01.2024

- To introduce the basics of C programming language.
- To learn the concepts of advanced features of C.
- To understand the concepts of ADTs and linear data structures.
- To know the concepts of non-linear data structure and hashing.
- To familiarize the concepts of sorting and searching techniques

Course Outcomes: On completion of the course, the student is expected to be able to

CO1 : Develop C programs for any real world/technical application.

CO2 : Apply advanced features of C in solving problems.

CO3 : Write functions to implement linear and non-linear data structure operations.

CO4 : Suggest and use appropriate linear/non-linear data structure operations for solving a given problem.

CO5 : Appropriately use sort and search algorithms for a given application.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

		BL	CO	PI	AU Ref
1	What is the role of associativity in prioritizing the operators?	K1	CO1	1.4.1	AM23
2	Define recursion.	K1	CO1	1.4.1	AM23
3	Write short notes on 'enum'.	K2	CO2	1.4.1	AM23
4	What is the role of pointers in call by reference.	K1	CO2	1.4.1	AM23
5	List the advantages of linked list over arrays.	K2	CO3	1.4.1	AM23
6	Name any four applications of queue in the field of computer applications.	K2	CO3	1.4.1	AM23
7	Convert the infix expression to postfix: $(A - B / C) * (D / E - F)$	K2	CO4	1.4.1	AM23
8	What is rehashing? When is it Preferred?	K1	CO4	1.4.1	AM23
9	What is output of selection sort after second iteration for the number sequence: 15, 50, 43, 7, 25, 11	K1	CO5	1.4.1	AM23
10	Is linear search is better than binary search? Why?	K1	CO5	1.4.1	AM23

PART B - (5 X 13 = 65 Marks)

11	a) What is the use of looping? Explain about the entry - controlled and exit-controlled loops available in 'C' with appropriate sample C programs	K2	CO1	1.4.1	AM23
	OR				
	b) What is an array? List the various types of arrays. Elaborate on t - D array with an example.	K2	CO1	1.4.1	AM23
12	a) (i) What is the significance of 'structure' in language C? Explain in detail with an example program. (ii) Enumerate the difference between structures and unions.	K3	CO2	1.4.1	AM23
	OR				
	b) (i) Explain the procedure to pass an array as argument to a function with an example program. (ii) Write brief notes on preprocessor directives.	K3	CO2	1.4.1	AM23

- 13 a) (i) Write and explain the algorithms of enqueue and dequeue operations of queue. K3 CO3 1.4.1 AM23
(ii) Write short notes on doubly linked list with few operations.
OR
b) (i) Write and explain the algorithms of peek and display operations of stack. K3 CO3 1.4.1 AM23
(ii) With appropriate diagram explain any one application of queue.
- 14 a) (i) What is tree traversal? Explain various methods of traversals. K3 CO4 1.4.1 AM23
(ii) Construct an expression tree for the expression $(p + r * q) + ((s * t + u) * v)$.
What would be the output if inorder, preorder and postorder traversals are done.
OR
b) (i) What is a hash function? Explain the concept of hashing with example. K3 CO4 1.4.1 AM23
(ii) Construct BST for the following: {20,30, 10,40, 50, - 20, -30, 60}
- 15 a) (i) Sort the following values using quick sort: 35,40,45,50,55,30,25,20,15 K3 CO5 1.4.1 AM23
Illustrate each step of the sorting process.
(ii) Write and explain the algorithm of linear search.
OR
b) (i) Explain about the sorting algorithm that works based on divide and conquer K2 CO5 1.4.1 AM23
technique.
(ii) What are the advantages of linear search over binary search? Justify your observation with an example.

PART C - (1 X 15 = 15 Marks)

- 16 a) (i) Convert the following arithmetic expression in infix form to post fix form K3 CO3 1.4.1 AM23
using stack: $A + B / C + D * (E - F) ^ G$
(ii) Explain the procedure for string reversal using stack with suitable diagram.
OR
b) (i) Evaluate the following arithmetic expression using stack. $2*(4 + 3)-5$ K3 CO3 1.4.1 AM23
(ii) Explain the procedure for balanced parenthesis checker using stack with suitable diagram.


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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Mechanical Engineering

ME3393 MANUFACTURING PROCESSES

(Regulations 2021)

Time: 3 Hrs Maximum: 100 marks

Date:23.01.2024

- To illustrate the working principles of various metal casting processes.
- To learn and apply the working principles of various metal joining processes.
- To analyse the working principles of bulk deformation of metals.
- To learn the working principles of sheet metal forming process.
- To study and practice the working principles of plastics molding

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Explain the principle of different metal casting processes.
CO2 : Describe the various metal joining processes.
CO3 : Illustrate the different bulk deformation processes.
CO4 : Apply the various sheet metal forming process.
CO5 : Apply suitable molding technique for manufacturing of plastics components.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

- | | BL | CO | PI | AU Ref |
|---|----|-----|-------|--------|
| 1 Name the different melting furnaces employed for metal casting. | K2 | CO1 | 1.4.1 | AM23 |
| 2 List the different types of patterns used in modern foundry. | K2 | CO1 | 1.4.1 | AM23 |
| 3 State any two disadvantages of sub-merged arc welding. | K1 | CO2 | 1.4.1 | AM23 |
| 4 Why is flux used in brazing? | K2 | CO2 | 1.4.1 | AM23 |
| 5 Give some basic forging operations. | K2 | CO3 | 1.4.1 | AM23 |
| 6 What is meant by cold spinning? | K1 | CO3 | 1.4.1 | AM23 |
| 7 List some of the sheet metal operations. | K2 | CO4 | 1.4.1 | AM23 |
| 8 What are the advantages of Rubber pad forming? | K1 | CO4 | 1.4.1 | AM23 |
| 9 What is film blowing? | K1 | CO5 | 1.4.1 | AM23 |
| 10 What is meant by Thermoforming? | K1 | CO5 | 1.4.1 | AM23 |

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PART B - (5 X 13 = 65 Marks)

- 11 a) Discuss the properties of moulding sand. K3 CO1 1.4.1 AM23

OR

- b) Explain the centrifugal casting with a neat sketch. Mention its advantages and applications. K3 CO1 1.4.1 AM23
- 12 a) Explain Electro slag Welding process with a neat sketch. Also state its advantages and disadvantages. K3 CO2 1.4.1 AM23

OR

- b) Discuss the working principle, types, equipments, advantages, limitations and applications of Plasma arc welding with neat sketches. K3 CO2 1.4.1 AM23

- | | | | | | | |
|----|----|---|----|-----|-------|------|
| 13 | a) | Write a short on the following:
(i) Drop forging
(ii) Upset forging | K3 | CO3 | 1.4.1 | AM23 |
| OR | | | | | | |
| | b) | Define Extrusion and explain the various classifications with a suitable sketch. Also state its advantages, disadvantages and applications. | K3 | CO3 | 1.4.1 | AM23 |
| 14 | a) | Describe the working principle of hydro-forming process with a help of neat sketch. Also list out its advantages. | K3 | CO4 | 1.4.1 | AM23 |
| OR | | | | | | |
| | b) | Explain the principle of explosive forming with a neat sketch. State its applications, advantages and disadvantages. | K3 | CO4 | 1.4.1 | AM23 |
| 15 | a) | Explain the working principle of Transfer moulding with a neat sketch. Also state its advantages, disadvantages and applications. | K3 | CO5 | 1.4.1 | AM23 |
| OR | | | | | | |
| | b) | What is Rotational moulding? Explain the same with necessary sketch. Mention its advantages, disadvantages and applications. | K3 | CO5 | 1.4.1 | AM23 |
- PART C - (1 X 15 = 15 Marks)**
- | | | | | | | |
|----|----|---|----|-----|-------|------|
| 16 | a) | Describe the step by step procedure involved in making green sand mould with a suitable diagram. Also state its advantages and disadvantages. | K3 | CO1 | 1.4.1 | AM23 |
| OR | | | | | | |
| | b) | Explain screw Injection moulding process with neat sketch. State its applications, advantages and disadvantages. | K3 | CO5 | 1.4.1 | AM23 |



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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

I Year / I Semester

Department of Civil Engineering

(Common to All)

HS3151 PROFESSIONAL ENGLISH -I

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:24.01.2024

Course Objectives:

- To improve the communicative competence of learners
- To learn to use basic grammatic structures in suitable contexts
- To acquire lexical competence and use them appropriately in a sentence and understand their meaning in a text
- To help learners use language effectively in professional contexts
- To develop learners' ability to read and write complex texts, summaries, articles, blogs, definitions, essays and user manuals

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1** : To use appropriate words in a professional context
CO2 : To gain understanding of basic grammatic structures and use them in right context.
CO3 : To read and infer the denotative and connotative meanings of technical texts
CO4 : To write definitions, descriptions and narrations on various topics
CO5 : To write expressions and essays on various topics

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

1 Choose the best option to complete the given sentences:

- (i) I am planning to _____ in May or June.
(a) get a holiday (b) have a holiday
(c) make a holiday (d) go on a holiday
- (ii) I wouldn't do that if I were you. You are making a _____.
(a) huge mistake (b) biggest mistake
(c) great mistake (d) massive mistake
- (iii) After _____ we decided not to buy the new equipment for the lab.
(a) caring consideration (b) deliberate consideration
(c) careful consideration (d) genuine consideration
- (iv) Our company is always on the _____ young and talented programmers.
(a) search for (b) look out for
(c) demand for (d) need for

2 Write a definition for any two of the following:

- (a) Modem
(b) Dictionary
(c) GPS
(d) Photo Copier

3 Fill in the blanks with appropriate tense forms.

- (a) I _____ (work) for the company for thirty years. Then I gave it all up.
(b) After Ravi _____ (swallow) his medicine, he _____ (begin) to feel better.
(c) I _____ (just / finish) my assignment.

BL CO PI AU
K1 CO1 10.1.1 Ref
ND22

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K1 CO1 10.1.1 ND22

K1 CO2 10.1.1 ND22

- 4 Combine the following sentences using appropriate causal expressions. K1 CO2 10.1.1 ND22
 (a) The cyclone blew the roof off our house. We had to find another place to live.
 (b) The ocean is extremely polluted. The coral reefs die.

- 5 Complete the following table with suitable form of words: K1 CO3 10.1.1 ND22

Noun	Verb	Adjective
Addition		
	Confide	
		Equal
Strength		

- 6 Complete the following sentences using an appropriate form of the verb given in the brackets. K1 CO3 10.1.1 ND22
 (a) My friends who are in the district team _____ (want / wants) me to play with them.
 (b) Neither the cat nor the dogs _____ (is/ are) going outside.
 (c) Even though the students like the class, a few _____ (think / thinks) that the subject is too complicated.
 (d) The samples on the tray in the Geology lab _____ (need/ needs) testing.

- 7 Choose the correct one word substitute for the given phrases: K1 CO4 10.1.1 ND22
 (a) An act of returning something that was lost or stolen to its owner:
 (i) Duty (ii) Restitution (iii) Atonement (iv) Reference
 (b) An excessively morbid desire to steal
 (i) Dipsomania (ii) Megalomania (iii) Pyromania (iv) Kleptomania
 (c) Animals without backbone are called
 (i) Vertebrates (ii) Amphibians (iii) Invertebrates (iv) Omnivores
 (d) Changing from one state or condition to another
 (i) Transition (ii) Backtrack (iii) Tweak (iv) Incision

- 8 Frame two sentences using any two of the phrasal verbs given below: K1 CO4 10.1.1 ND22
 (a) broke into (b) look forward to (c) show up (d) back off

- 9 Frame any four compound nouns from the given words. You can use one word only once. K1 CO5 10.1.1 ND22

back	pan	eye	track	pour
down	sound	ground	witness	sauce

- 10 Frame wh-questions for the following statements. K1 CO5 10.1.1 ND22
 (a) I got this sculpture from the new gallery in the city.
 (b) Ravi met his old friend in the stadium last night.

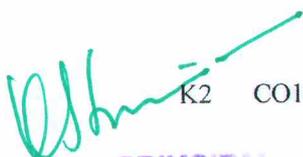
PART B - (5 X 16 = 80 Marks)

- 11 a) Read the following passage and answer the questions given below: K2 CO1 10.1.1 ND22

The Upside of Dyslexia

We live in a society where reading is very important-not just for school, but for daily life. (Think street signs, maps, medicine labels, and allergy labels on food packaging.) So life can be hard for people with dyslexia. Dyslexia is a learning disability that affects a person's reading ability. For people with dyslexia, the parts of their brains that process language aren't functioning the way they're supposed to.

According to the American Academy of Pediatrics, dyslexia was the most


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common learning disability in 2011. It is still common today. However, people with dyslexia can learn to cope with the disability so that they can succeed in life.

Says Emerson Dickman, president of the International Dyslexia Association in Baltimore: "Individuals who have difficulty reading and writing tend to deploy other strengths. They rely on mentors, and as a result, become very good at reading other people and delegating duties to them. They become adept at using visual strengths to solve problems."

Take, for example, Richard Branson, the successful founder of Virgin Atlantic Airways, who credits his dyslexia as his 'greatest strength.' As he explains it, he "got bored easily" in school because he couldn't read well, and teachers thought he was simply "lazy and not very clever." So he spent most of his time visualizing all the things he would do when he left school. After launching his first business at 16, he went on to start eight different companies and amass billions of dollars. "On one of my last days at school, the headmaster said I would either end up in prison or become a millionaire," Branson recalls. "That was quite a startling prediction, but in some respects, he was right....!"

Branson is not the only entrepreneur who is dyslexic. In 2007, Julie Logan, a professor of entrepreneurship at the Cass Business School in London, did a study on entrepreneurs in the United States. Thirty-five percent of the entrepreneurs in the study identified themselves as dyslexic.

"We found that dyslexics who succeed had overcome an awful lot in their lives by developing compensatory skills," says Logan. 'If you tell your friends and acquaintances that you plan to start a business, you'll hear over and over, 'It won't work. It can't be done.' But dyslexics are extraordinarily creative about maneuvering their way around problems."

Well-known journalist Anderson Cooper, who has visited many battle-torn areas and conducted interviews about tough subjects, knows this fact first hand. Diagnosed as dyslexic as a child, he relied on the help of a reading specialist. He says that she encouraged him to find books he was very passionate about. I don't think it's an accident that I became a war correspondent." Cooper says. "I'm interested in stories of survival: how some people make it through desperate times and others don't."

The television and film world also boasts a number of other dyslexic superstars. For example, Whoopi Goldberg, an Oscar-winning actress and comedian was diagnosed with dyslexia after suffering through her school years. When she was a child, she couldn't understand why she struggled so much with reading.

"You can never change the effect that the words 'dumb' and 'stupid' have on young people," says Goldberg. However, she says, "I knew I wasn't stupid, and I knew I wasn't dumb. My mother told me that."

Now, Goldberg defines herself as a person who believes that "it is okay to feel differently than the pack." When asked about what it takes to be successful? Goldberg says, "We're born with success. It is only others who point out our failures and what they attribute to us as failure."

Clearly, people with dyslexia may face many obstacles. However, they shouldn't be discouraged. There are ways they can cope with it and lead very successful lives.

(A) Answer the following questions based on the passage:

(1) According to the text, what does dyslexia affect?


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- (a) Living a successful life
 (b) People who are lazy
 (c) The American Academy of Paediatrics
 (d) A person's reading ability
- (2) What does the author describe in the passage?
 (a) Entrepreneurs who identifies themselves as dyslexic
 (b) How Anderson Cooper became a war correspondent
 (c) Celebrities who are coping with their dyslexia
 (d) How Richard Branson founded Virgin Atlantic Airways
- (3) Richard Branson was not very successful in school. What evidence from the passage best supports this conclusion?
 (a) Branson's teachers thought he was lazy and not very smart.
 (b) Branson spent his time visualizing what he would do when he left school
 (c) Branson credits dyslexia as "his greatest strength."
 (d) Branson launched his first business at sixteen and started eight companies.
- (4) Why might Whoopi Goldberg have been called "dumb" or "stupid"?
 (a) Because she thought she could become a famous actress
 (b) Because she was not as intelligent as her classmates
 (c) Because she listened to what her mother said
 (d) Because she struggled so much with reading
- (5) The phrase "compensatory skills" in the passage means
 (a) Skills that are not necessary for life
 (b) Skills that can only be gained from practice
 (c) Skills that make up for a weakness
 (d) Skills that are taught in textbooks
- (6) Choose the answer that best completes the sentence below:
 Dyslexic people have trouble reading and understanding text, _____ they often develop ways to cope with dyslexia.
 (a) so (b) after
 (c) for example (d) otherwise
- (7) In the line, "Well-known journalist Anderson Cooper, who has visited many battle-torn areas and conducted interviews about tough subjects knows this fact first hand." What is the fact referred by the author in this context?
 (a) cynical behaviour (b) creative manoeuvring
 (c) statistics about battles (d) importance of reading
- (8) Who considered dyslexia as their 'greatest strength'?
 (a) Richard Branson (b) Goldberg
 (c) Julie Logan (d) Anderson Cooper
- (9) In the sentence, 'it is okay to feel differently than the pack', who does the pack refers to?
 (a) pack of cards (b) her family
 (c) friends (d) all other people
- (10) What is author's opinion about dyslexia?
 (a) He feels people with such disease should be given personal care
 (b) Dyslexic people, in spite of many obstacles, shouldn't be discouraged.
 (c) People with dyslexia are mostly educated people
 (d) Dyslexia, as a disease has affected mostly poorer children

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(B) Say True or False

- (1) Dyslexia is a chronic disease that is genetic in nature.
- (2) After undergoing suffering during school days, Whoopi Goldberg today feels that it is okay to be different from others.
- (3) In a study conducted to find about dyslexic people, it was found that more than 50% of the study population were dyslexic.

(C) Choose the right meaning for the highlighted words:

(1) What is a 'startling prediction'?

- (a) amazing (b) shocking
(c) disquieting (d) humbling

(2) To become adept at' means?

- (a) to become interested
(b) to become addled
(c) to become proficient
(d) to become shocked

(3) What did the author mean when he says 'tend to deploy'?

- (a) likely to use
(b) tired to attend
(c) told to arrange
(d) tasked to play

12 a) You are a member of the Cyber Club in your college. As part of social media awareness, your club plans to put up posters about Cyber Crimes. You have been asked to put up a set of eight instructions that have to be followed by users on social media. Your set of instructions should comprise of do's and don'ts in social media for teenagers.

OR

b) As a volunteer for a NCC event, you have been asked to put up a poster for Road Safety week in your city. Your poster should have a set of eight recommendations that have to be followed for safe driving in the city.

13 a) Your class had a gone for a field visit to an industry. As the Class Representative, you have been asked to write a short report of the visit to your Head of the Department Write an email to your Head of the Department about this visit and enclose a short report of the same.

OR

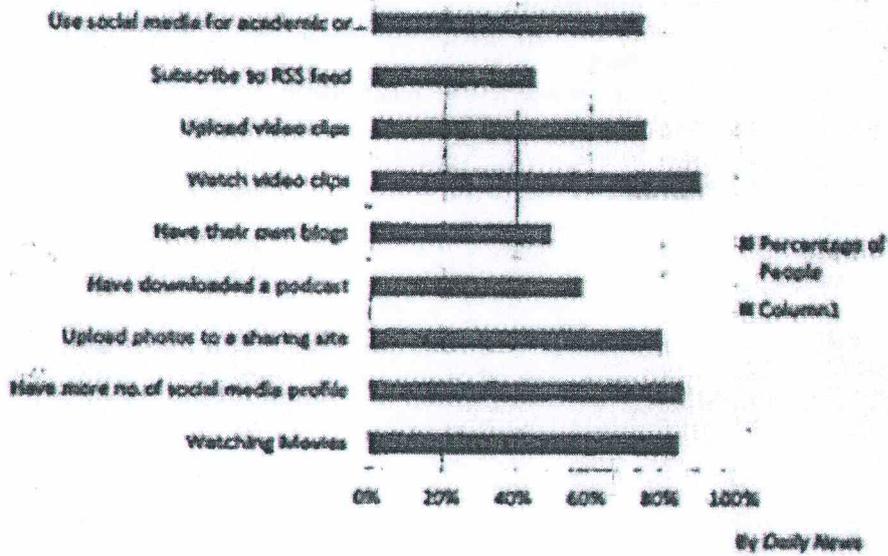
b) You are the Student President of your college. You are organizing an inter-college technical festival for two days. You would like to invite the CEO of a reputed social media company. Invite him by email with a short report about technical festival that you are organizing.

14 a) Choose any one of the diagram and write a detailed description and interpretation for the same in not more than 200 words.

(a) The following bar chart depicts the social media usage in India. Describe and interpret the chart and give recommendations to the users.


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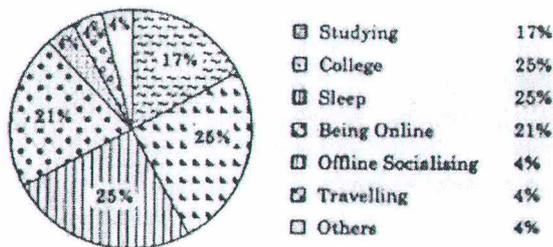
Social Media Usage In India 2021



OR

- b) The following pie chart depicts the daily routine of a college student. K3 CO4 10.1.3 ND22
Describe and interpret the chart and give recommendations on better time management.

A College Student's Daily Routine



- 15 a) Write an essay on any one of the topics for not more than 300 words. CO5 ND22
Your first day of college (face-to-face class)
- OR
- b) Your favorite place. K2 CO5 10.1.2 ND22

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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Electronics and Communication Engineering

EC3351 & CONTROL SYSTEMS

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:24.01.2024

Course Objective:

- To introduce the components and their representation of control systems
- To learn various methods for analysing the time response, frequency response and stability of the systems.
- To learn the various approach for the state variable analysis.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Compute the transfer function of different physical systems.
- CO2 : Analyse the time domain specification and calculate the steady state error.
- CO3 : Illustrate the frequency response characteristics of open loop and closed loop system response.
- CO4 : Analyse the stability using Routh and root locus techniques.
- CO5 : Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

1 Find the transfer function of the network as shown in Fig. 1.

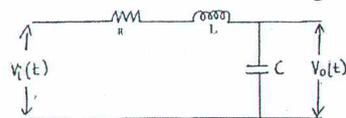


Fig. 1

BL	CO	PI	AU Ref
K2	CO1	1.4.1	AM23

2 List the components of feedback control system.

K2	CO1	1.4.1	AM23
----	-----	-------	------

3 Recall the importance of PD control? State the effect of a PD controller on the system performance.

K2	CO2	1.4.1	AM23
----	-----	-------	------

4 Find the order of the closed-loop transfer functions for the systems given by

K2	CO2	1.4.1	AM23
----	-----	-------	------

(a) $C(s)/R(s) = 10[1 + 2s + s^2] / [1 + 3s + s^2 + s^3]$.

(b) $C(s)/R(s) = 6[1 + 2s] / [1 + 4s]$.

5 List the disadvantages of frequency response analysis.

K2	CO3	1.4.1	AM23
----	-----	-------	------

6 List the effects of dominant poles.

K2	CO3	1.4.1	AM23
----	-----	-------	------

7 State the angle and magnitude criterion for root locus.

K2	CO4	1.4.1	AM23
----	-----	-------	------

8 Define Gain margin.

K2	CO4	1.4.1	AM23
----	-----	-------	------

9 Mention the different canonical forms.

K2	CO5	1.4.1	AM23
----	-----	-------	------

10 List the advantages of state-variable analysis.

K2	CO5	1.4.1	AM23
----	-----	-------	------

PART B - (5 X 13 = 65 Marks)

11 a) (i) For the block diagram of the system shown in Figure 11(a)(i), Apply block diagram reduction technique, determine the closed-loop transfer function.

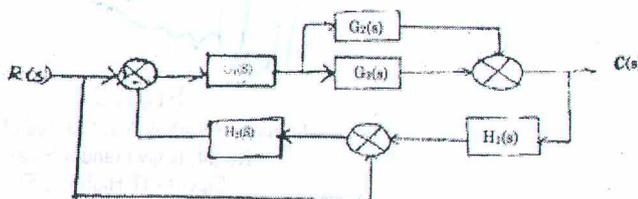


Figure. 11(a)(i)

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(ii) Evaluate the transfer function of the electrical network shown in Figure 11(a)(ii)

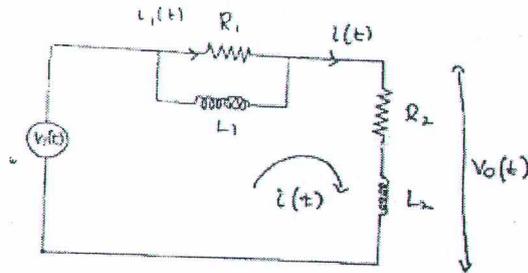


Figure. 11(a)(ii)

or

- b) For the mechanical translational system shown in Figure 11(b): Determine
- differential equations
 - F-V analogous circuit
 - F-I analogous circuit

K3 CO1 1.4.1 AM23

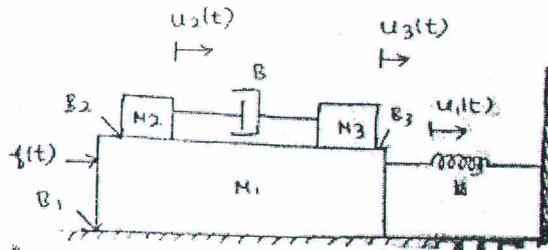


Figure. 11(b)

- 12 a) (i) The unity feedback system is characterized by an open loop transfer function, $G(s) = \frac{K}{s(s+10)}$. Determine gain K, so that the system will have a damping ratio of 0.5 for this value of K. Determine settling time, peak overshoot and time to peak overshoot for a unit step input.

K3 CO2 1.4.1 AM23

(ii) When a unit-step signal is applied, the time response of the second order system is $c(t) = 1 + 0.2e^{-60t} - 1.2e^{-10t}$. Determine

- the closed loop transfer function of the system
- undamped natural frequency, ω_n and
- damping ratio of the system.

or

- b) A unity feedback control system has an open loop transfer function $G(s) = 10 / (s(s + 2))$. Find the rise time percentage overshoot, peak time and settling time for a step input of 12 units.

K3 CO2 1.4.1 AM23

- 13 a) The loop transfer function of a system is given by $G(s)H(s) = (Ks^2) / (1 + 0.2s)(1 + 0.02s)$. Sketch the bode plot for the given system.

K3 CO3 1.4.1 AM23

or

- b) Sketch the polar plot of the function: $G(s)H(s) = (s + 2) / [s^2(s + 2)(2s + 1)]$

K3 CO3 1.4.1 AM23

- 14 a) The unity feedback control system has an open loop transfer function: $G(s)H(s) = K / [s(s + 4)(s^2 + 4s + 20)]$. Sketch the root locus.

K3 CO4 1.4.1 AM23

or

- b) (i) Examine the stability of the system using Routh's criterion for the characteristic equation of a system given by $s^5 + 2s^4 + 3s^3 + 6s^2 + 10s + 15 = 0$.
 (ii) Determine the stability of the following system using Routh's criterion.

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$$G(s)H(s) = 1/(s+2)(s+4)$$

- 15 a) A system is given by the state equation $\dot{x}(t) + \begin{bmatrix} 0 & 1 \\ 0 & 0 \\ 2 & 1 \end{bmatrix} x(t) = u(t)$ and output equation $y(t) = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix} x(t)$. Justify, whether the system is controllable.

K3 CO5 1.4.1 AM23

or

- b) Determine the state space model for the electrical system shown in the Figure. 15 (b).

K3 CO5 1.4.1 AM23

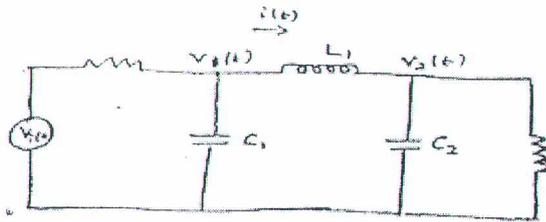


Figure. 15(b)

PART C - (1 X 15 = 15 Marks)

- 16 a) The transfer function of the system is given by $T(s) = \frac{s^2+3s+3}{s^3+2s^2+3s+1}$. Draw the Signal Flow Graph for the given transfer function.

K3 CO3 1.4.1 AM23

or

- b) Determine the state representation of a continuous-time LTI system with system function $G(s) = \frac{3s+7}{(s+1)(s+2)(s+5)}$

K3 CO2 1.4.1 AM23

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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Artificial Intelligence and Data Science

AD3301 DATA EXPLORATION AND VISUALIZATION

(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:24.01.2024

Course Objective

- To outline an overview of exploratory data analysis.
- To implement data visualization using Matplotlib.
- To perform univariate data exploration and analysis.
- To apply bivariate data exploration and analysis.
- To use Data exploration and visualization techniques for multivariate and time series data

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Understand the fundamentals of exploratory data analysis.
- CO2 : Implement the data visualization using Matplotlib.
- CO3 : Perform univariate data exploration and analysis.
- CO4 : Apply bivariate data exploration and analysis.
- CO5 : Use Data exploration and visualization techniques for multivariate and time series data.

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 What is meant by EDA?	K1	CO1	1.4.1	ND22
2 How do you get cross tabulation?	K2	CO1	1.4.1	ND22
3 What is the difference between MATLAB and matplotlib?	K1	CO2	1.4.1	ND22
4 Is a histogram always a bar chart? Justify with your answer.	K2	CO2	1.4.1	ND22
5 What is the main purpose of univariate analysis?	K1	CO3	1.4.1	ND22
6 What is the mathematical mean of the following numbers? 10, 6,4, 4, 6, 4.	K1	CO3	1.4.1	ND22
7 What are the three common methods for performing bivariate analysis?	K1	CO4	1.4.1	ND22
8 Outline the difference between univariate and bivariate data.	K2	CO4	1.4.1	ND22
9 Show the characteristics of multivariate analysis.	K2	CO5	1.4.1	ND22
10 What is TSA in Statsmodel?	K1	CO5	1.4.1	ND22

PART B - (5 X 13 = 65 Marks)

11 a) What is the primary purpose of EDA? What are the differences between EDA with classical and Bayesian analysis? Discuss it in detail.	K2	CO1	1.4.1	ND22
b) Explain various transformation techniques in EDA.	K2	CO1	1.4.1	ND22
12 a) How to over plot a line on a scatter plot in Python? Illustrate with code.	K3	CO2	1.4.1	ND22
b) Discuss with how Seaborn helps to visualize the statistical, relationships. Illustrate with code and example.	K3	CO2	1.4.1	ND22

OR

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OR

13 a) Explain the 10 Essential Numerical Summaries in Statistics with example. K2 CO3 1.4.1 ND22

OR

b) How, When, and Why Should You Normalize / Standardize / Rescale Your Data? K2 CO3 1.4.1 ND22

14 a) What is a table of frequency values for a bivariate distribution? Explain What graph is used in the analysis of bivariate data? K3 CO4 1.4.1 ND22

OR

b) How do you analyze a contingency table? Discuss. K3 CO4 1.4.1 ND22

15 a) What is meant by time series data? Describe its four components. K2 CO5 1.4.1 ND22

OR

b) What is the best way to visualize time series data? What patterns might appear when you plot the time series data? K2 CO5 1.4.1 ND22

PART C - (1 X 15 = 15 Marks)

16 a) What are the tools used for EDA? Give a case study on applying EDA in a real business scenario. K3 CO1 1.4.1 ND22

OR

b) Discuss in detail about Data Cleaning (missing data, outliers detection and treatment). K3 CO5 1.4.1 ND22

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Question Paper Code:

B.E/B.Tech DEGREE MODEL EXAM

II Year / III Semester

Department of Computer Science and Business Systems
CW3301 & FUNDAMENTALS OF ECONOMICS
(Regulations 2021)

Time: 3 Hrs

Maximum: 100 marks

Date:24.01.2024

Course Objectives:

- To exemplify the demand curves of households and supply curves of firms with the principles.
- To differentiate Price ceilings, price floors and compare income effects, substitute effects.
- To Analyse the Keynesian's process of multiplier theory in macroeconomics.

Course Outcomes: On completion of the course, the student is expected to be able to

- CO1 : Analyse the supporting of price, income and substitution effects in the consumers and producers surplus
CO2 : Compare the equilibrium of a firm under perfect competition, monopoly and monopolistic competition.
CO3 : Study the concepts of demand for money and supply of money with appropriate model in macroeconomic analysis.
CO4 : Examine and evaluate the problems of voluntary and involuntary unemployment

K1-Remember

K2-Understand

K3-Apply

K4-Analyze

K5-Evaluate

K6-Create

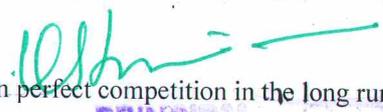
Answer all the Question

PART A – (10 X 2 = 20 Marks)

	BL	CO	PI	AU Ref
1 How microeconomics and macroeconomics are closely intertwined?	K2	CO1	1.4.1	ND22
2 What is a demand curve?	K1	CO1	1.4.1	ND22
3 How is consumer surplus calculated?	K2	CO2	1.4.1	ND22
4 What are the three types of market failures?	K1	CO2	1.4.1	ND22
5 What is diminishing marginal product?	K1	CO3	1.4.1	ND22
6 What is diseconomies of scale?	K1	CO3	1.4.1	ND22
7 How CDP is used to measure a nations economy?	K2	CO4	1.4.1	ND22
8 What is the significance of producer price index?	K1	CO4	1.4.1	ND22
9 When does an involuntary unemployment occur in a country?	K1	CO5	1.4.1	ND22
10 What is wage rigidity?	K1	CO5	1.4.1	ND22

PART B - (5 X 13 = 65 Marks)

11 a) Explain the steps involved in analyzing the changes in supply and demand equilibrium.	K3	CO1	1.4.1	ND22
or				
b) Explain price elasticity of demand and the relationship between total revenue and price elasticity of demand.	K3	CO1	1.4.1	ND22
12 a) Illustrate with examples how seller's cost, producer surplus and the supply curve are related to each other.	K3	CO2	1.4.1	ND22
or				
b) Explain how price ceiling set below the equilibrium level affect the quantity demanded and quantity supplied.	K3	CO2	1.4.1	ND22
13 a) Explain how equilibrium price is fixed in perfect competition in the long run.	K3	CO3	1.4.1	ND22
b) Explain how monopolist chooses the quantity of output to produce and the price to charge.	K3	CO3	1.4.1	ND22
14 a) Illustrate how IS-LM model is used to describe aggregate markets for real goods and financial markets.	K3	CO4	1.4.1	ND22


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or

- b) Using the concept of market equilibrium explain the changes in the interest rate and money supply. K3 CO4 1.4.1 ND22
- 15 a) Explain the tools used in Monetary and Fiscal Policy to bring about the shifts in macroeconomic fundamentals. K3 CO5 1.4.1 ND22

or

- b) Discuss the relationship between central bank and the government and explain the role of central government in monetary policy. K3 CO5 1.4.1 ND22

PART C - (1 X 15 = 15 Marks)

- 16 a) You are the manager of an automobile manufacturing company that manufactures cars. What happens to the market in the following scenarios?
- (i) If the price of the engine increases
 - (ii) If there is severe impact of pandemic K3 CO 1.4.1 ND22
 - (iii) If the price of the Gear Box decreases
 - (iv) If there is 10% discount in the price of the car
 - (v) If there is an advancement in technology which cuts the assembling time of the car to half the production time

or

- b) "The data from IMF shows that CDP in India has gone down 8%. And that's the worst amongst all developing countries. In fact, the average for developing countries is much less than that. It's just 2.4. So, India is as bad as the average for all developing countries. The IMF forecasts that says that India will bounce back. Will we rebound? Will India rebound?". Given the scenario described above, what macroeconomic policies you would suggest in the above scenario for India to bounce back. K3 CO 1.4.1 ND22



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PART-A.

1) List & briefly define the four main elements of a computer.

- * CPU
- * Main memory
- * I/O devices
- * System interconnection.

2) Difference between Symmetric and asymmetric multiprocessing.

→ Multiprocessing is the use of two or more central processing units within a single computer system. work should be able to be distributed evenly among the systems.

→ Asymmetric multiprocessing system is a multiprocessor computer system where not all the multiple interconnect central processing units are equally treated.

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3. List the advantages of Multiprocessor system?

* Reliability. If one processor fails in a multiprocessor system, the other processors can pick up the slack & continue to function.

* Increased throughput. Throughput is the number of processes executed at a given time.

* Cost saving.

4. What is multiprogramming system?

An operating system that allows multiple programmes to run simultaneously on a single processor machine is known as multiprogramming operating system.

5) Name & draw five different process states with proper definition.


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The model has five states, new, ready, running, waiting & terminated.

6) List out the data fields associated with process control blocks.

PCB contains fields like process ID, process priority, state accounting information, list of open files, etc...

PART - B.

11). a) Operating System - Structure.

* Multiprogramming needed for efficiency.

* Single user cannot keep CPU & I/O devices busy at all times.

* Multiprogramming organize jobs so CPU always has one to execute. A subset of total jobs in system is kept in memory.

MULTIPROGRAMMING.

When two or more programs are residing in memory at the same time, then sharing the

processor is referred to the Multiprogramming.

Multiprogramming ^{assumes} ~~increases~~ a single shared processor.

Multiprogramming increases CPU utilization by organizing jobs so that the CPU always has one to execute.

OS1

Job1

Job2

Job3

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7) State the methods for handling deadlocks.

* deadlock avoidance

* deadlock prevention

* deadlock detection & recovery.

* deadlock ignorance.

8) Preemptive & non-preemptive Scheduling.

In preemptive Scheduling, resources are allocated to a process for a specified time period. In non-preemptive Scheduling, once resources are allocated to the process.

a) Define Demand paging.

It is a process in which data is moved from Secondary memory to RAM on a demand basis.

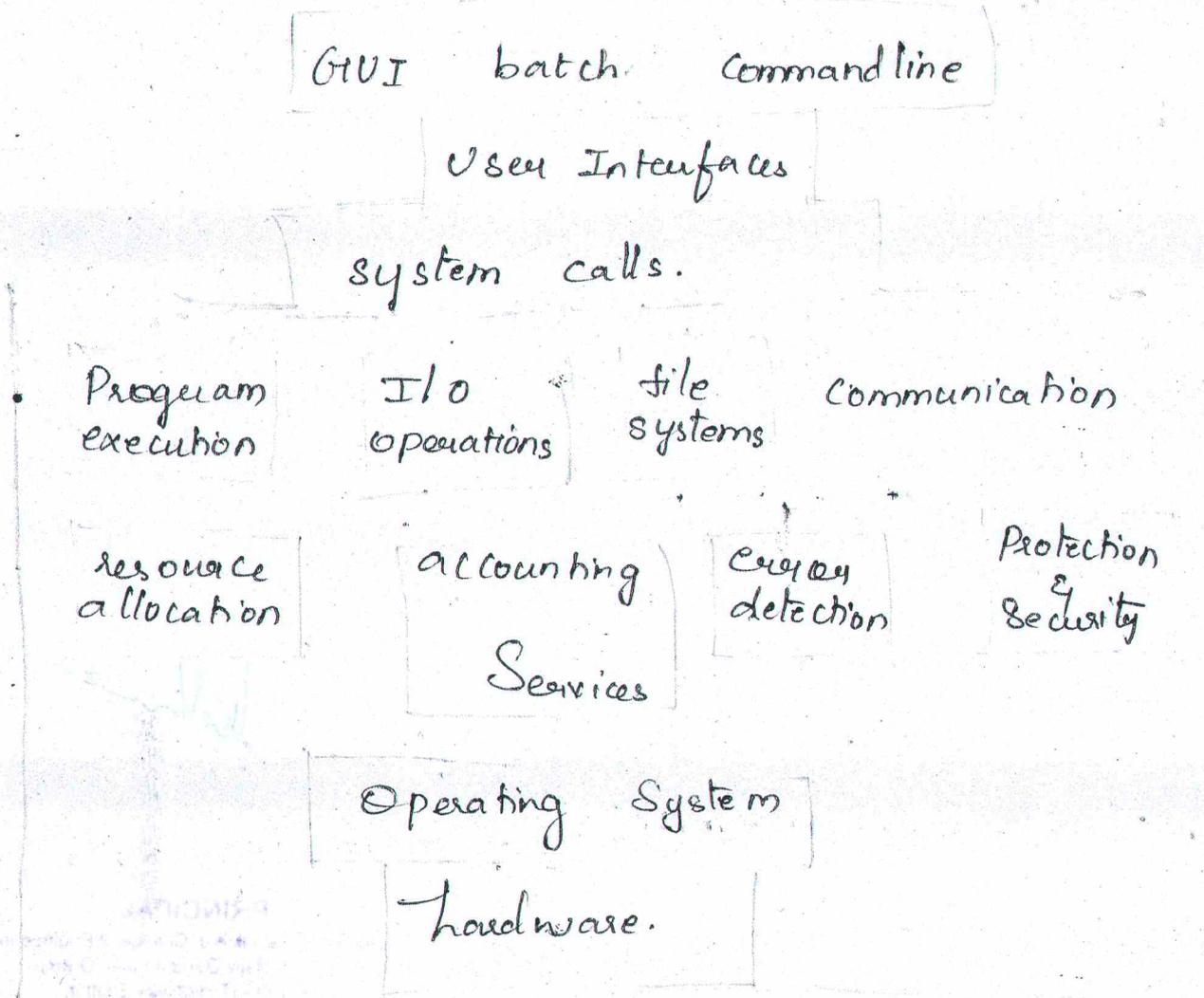
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10) what is Swapping and what is its purpose.

Swapping is moving data between physical (RAM) & Secondary memory. In Computing Virtual Memory is a management technique that combines the Computer hard disk.

12) b. List the Services of OS. Explain?



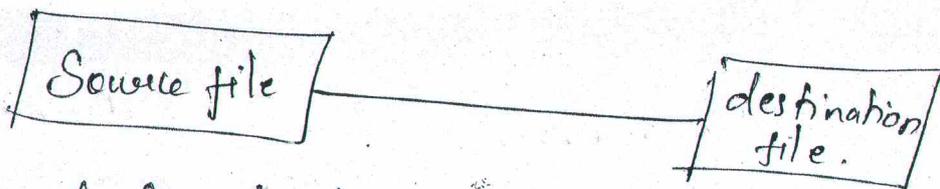
- * Program execution
- * I/O operations
- * file systems
- * Communication.

Wsh

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System calls:-

- * Programming interface to the services provided by OS.
- * Typically written in a high level language.
- * Why use APIs rather than System calls.



Eg of Standard API.

Consider the `Read file ()` function in the Win 32 API... a function for reading from a file.

System Call Implementation.

* Typically, a Number associated with each System Call.

* System interface maintains a table, indexed according to those Number.

System Call parameter Passing

Often, more information is Required than simply identify of designed System.

WSh

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- * Resource allocation
- * Accounting
- * error detection
- * protection & Security.

13. b) Illustrate Semaphores with neat example.

SEMAPHORES.

A Semaphore is an integer Variable.
Semaphore accesses only through two operations.

1) wait : * Wait operation decrements the count by 1.

* If the Result value is negative, the Process executing the wait operation is blocked.

2) Signal operation:

* Signal operation increments by 1.

* if the value is $-ve$, then one of the Process blocked in wait operation unblocked.

Eg:-

```
Wait (s) {  
while s <= 0 ; //  
no-op  
s-- ;  
}
```

```
Signal (s)  
{  
s++ ;  
}
```

In binary Semaphore count can be 0 or 1. The value of Semaphore is initialized to 1.

```
do {  
wait (mutex);  
// critical Section  
Signal (mutex);  
// remainder Section.  
} while (TRUE);
```



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PROBLEMS:

1) Deadlock.

Deadlock occurs when multiple processes are blocked each waiting for a resource that can only be freed by one of the other blocked processes.

2) Starvation.

One or more processes gets blocked forever & never get a chance to take their turn in the critical section.

3) Priority inversion.

If low priority process is running, priority processes are waiting for low priority process, high priority processes are waiting for medium priority processes, this is called priority inversion.

* The two most common kinds of semaphores are counting semaphores & binary semaphores, as the name implies, represents two possible states (generally 0 or 1; locked or unlocked).



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14. b). Threads & Multi-Threading models. Explain.

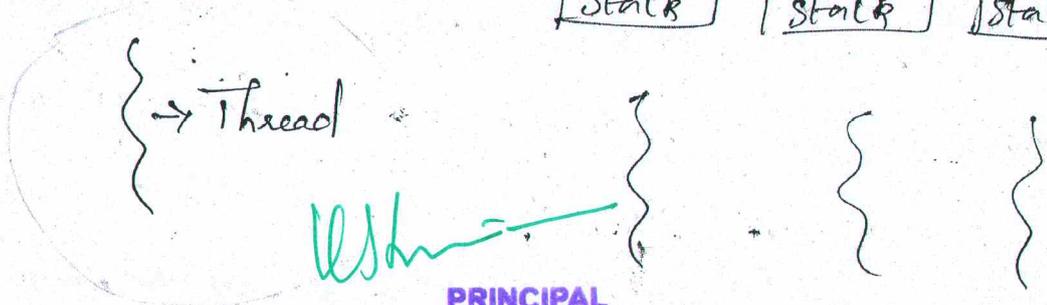
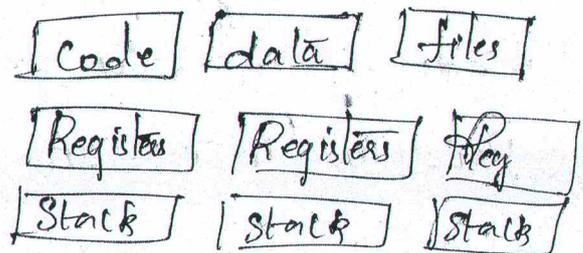
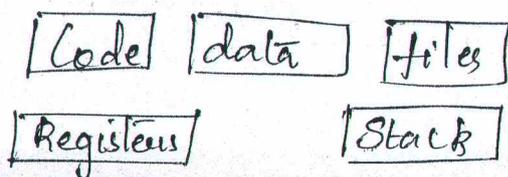
THREADS.

A process is divided into number of light weight process, each light weight process is said to be a thread. The thread has a program counter.

MULTITHREADING.

* A process is divided into number of smaller tasks, each task is called thread.

* Number of threads within a process execute at a time is called multithreading.



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Single Thread.

Multithread

Code - Contains instruction

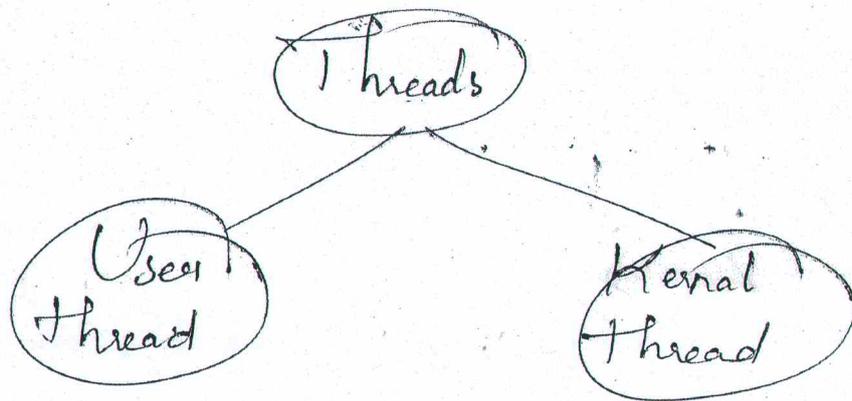
Data - holds global Variable

Files - Opening & Closing files.

Register - Contains info about cpu state

Stack - Parameters, local var, functions.

TYPES OF THREADS.



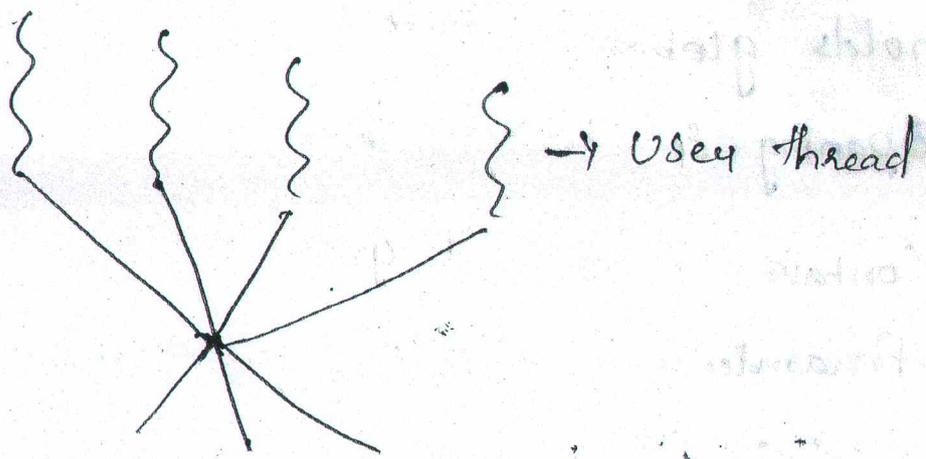
Multithreads Models

- * Many to Many
- * Many to one
- * One to one.

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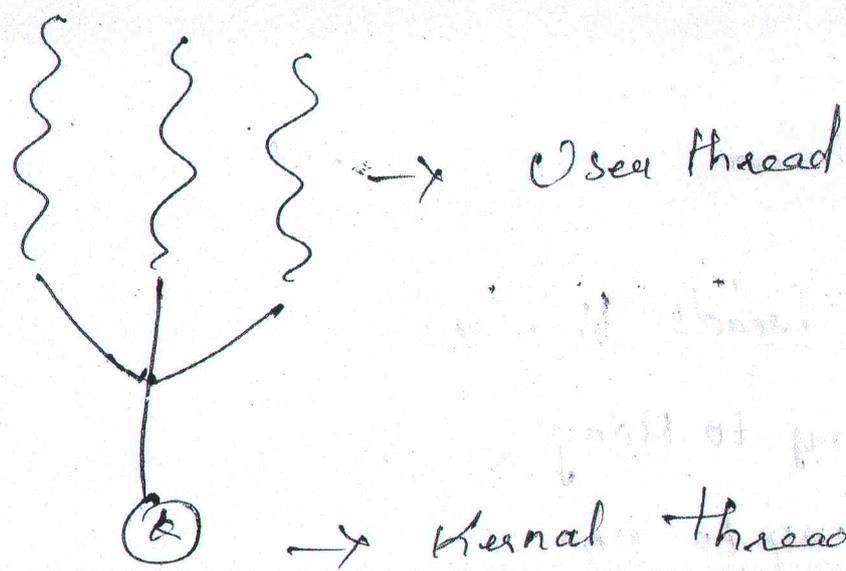
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* Many to Many.



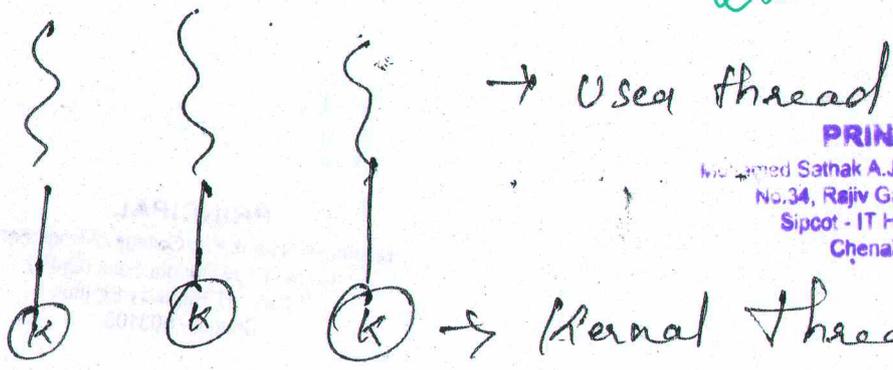
(K) (K) (K) (K) → Kernel thread.

* Many to one.



→ Kernel thread.

* One to one.



→ Kernel thread.

Redu

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15). b) Explain about Contiguous memory allocation?

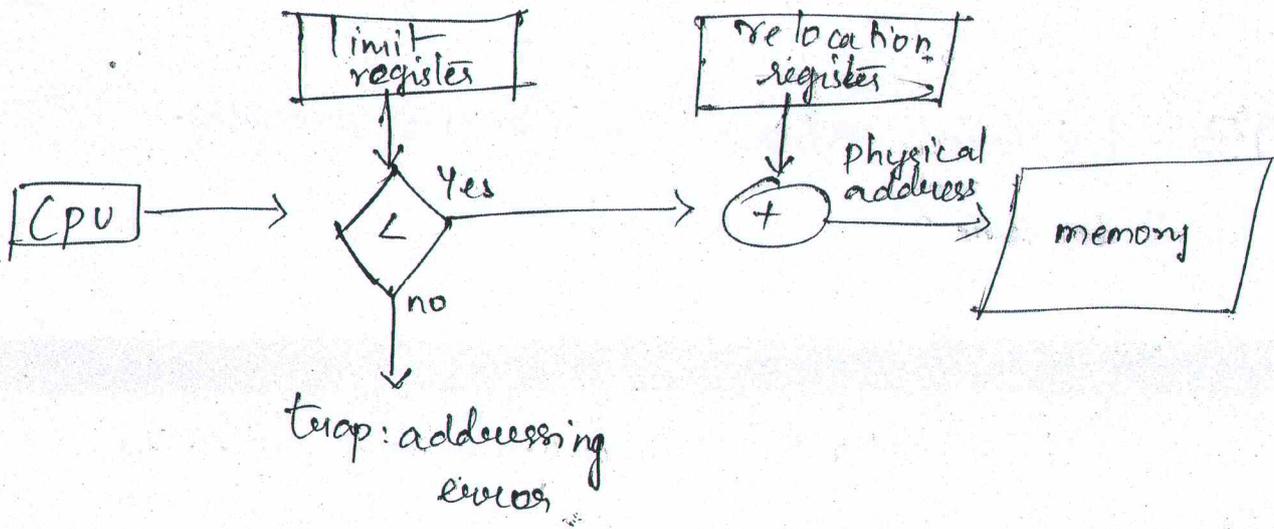
CONTIGUOUS ALLOCATION.

- * Main Memory Usually into two partitions:
- * Resident OS, usually held in low memory with interrupt Vector.
- * User processes then held in high memory.
- Relocation registers used to protect user processes from each other, and from changing OS code & data.
- * Base register contains value of smallest physical address.
- * Limit register contains range of logical addresses - each logical address must be less than the limit register.
- * MMU maps logical address dynamically.



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- * Multiple - partition allocation
- * Hole - block of available memory; holes of various size are scattered throughout memory.

Contiguous memory allocation.

It is one of the efficient ways of allocating main memory to the processes. The memory is divided into two partitions. one for the OS and another for the User Processes. OS is placed in low or high memory depend. g on the interrupt vector placed. In Contiguous memory allocation each process is contained in a single contiguous section of memory.

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PART-C.

16) a) what is System program? Explain the different types of system programs with example.

SYSTEM PROGRAM

System programs provide a convenient environment for program development & execution. They can be divided into;

* File Management - Create, delete, copy, rename, print, dump, list & generally manipulate files & directories.

* Status information. date, time, amount of available memory, disk space, number of users others provide detailed performance, logging and debugging info.

* File modifications. Text editors & modify files.

* Programming language Support.

Compilers, assemblers, debuggers and interpreters sometimes provided.

* Program loading & execution.

Absolute loaders, relocatable loaders, linkage editors and overlay loaders, debugging systems for higher level & machine language.

* Communication.

* Provide the mechanism for creating Virtual Connections among processes, users & Computer Systems.

* Allows users to send message to one another's screens, browse web pages, send electronic - mail message, log in remotely, transfer files from one machine to another.

System programs

* File management.

* Status information.

* File modification.

* Programming language support.

* Program loading & execution.

* Communication.

* Application programs.



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1. What is a Reference string?

i) We evaluate an algorithm by running it on a particular string of memory reference and computing the number of page fault.

ii) The string of memory reference is called reference string.

2. What do you mean by Best fit, first fit and worst fit?

BEST FIT:

i) Allocate the smallest hole that is big enough.

ii) produces smallest leftover hole.

FIRST FIT:

i) Allocate the first hole that is big enough.

ii) scan from the beginning.

WORST FIT:

i) Allocate the largest hole that is big enough.

ii) produce largest leftover hole.

3. What are the various File operation?

i) create a File

ii) open a File

iii) Read a File

iv) write a File

v) delete a File

vi) truncate the File

vii) close the File

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4) Define seek time and latency time.

* seek time is measured defines the amount of time it takes a hard drive's read/write head to find the physical location of a piece of data on the disk.

* Latency is the average time for the sector being accessed to rotate into position under a head; after a completed seek.

5. What are the advantages of contiguous Allocation?

* It allows users to access files randomly.

* It provides excellent read performance to the user.

7. List the uses of virtualization?

* Minimized or eliminated downtime

* Simplified data center management

* Increased IT productivity and responsiveness.

8. What is the Application containment?

* Endpoint application isolation and containment technology is a cybersecurity solution which aims to protect computer systems by isolating and containing malicious applications from executing potentially harmful actions.

9. Define Linux kernel?

The Linux kernel is the main component of a Linux operating system (OS) and is the core interface between a computer's hardware and its processes. It communicates between the 2, managing resources as efficiently as possible.

10. Define paravirtualization:

Paravirtualization is a type of virtualization where software instruction from the guest operation system running inside a virtual machine can use "hypercalls" that communicate directly with the hypervisor.

PART-B

Q1) Explain the architecture of Android OS.

Android architecture or Android software stack is categorized into five parts:

1. Linux kernel
2. native libraries
3. Android Runtime
4. Application Framework
5. Applications.

Linux Kernel:

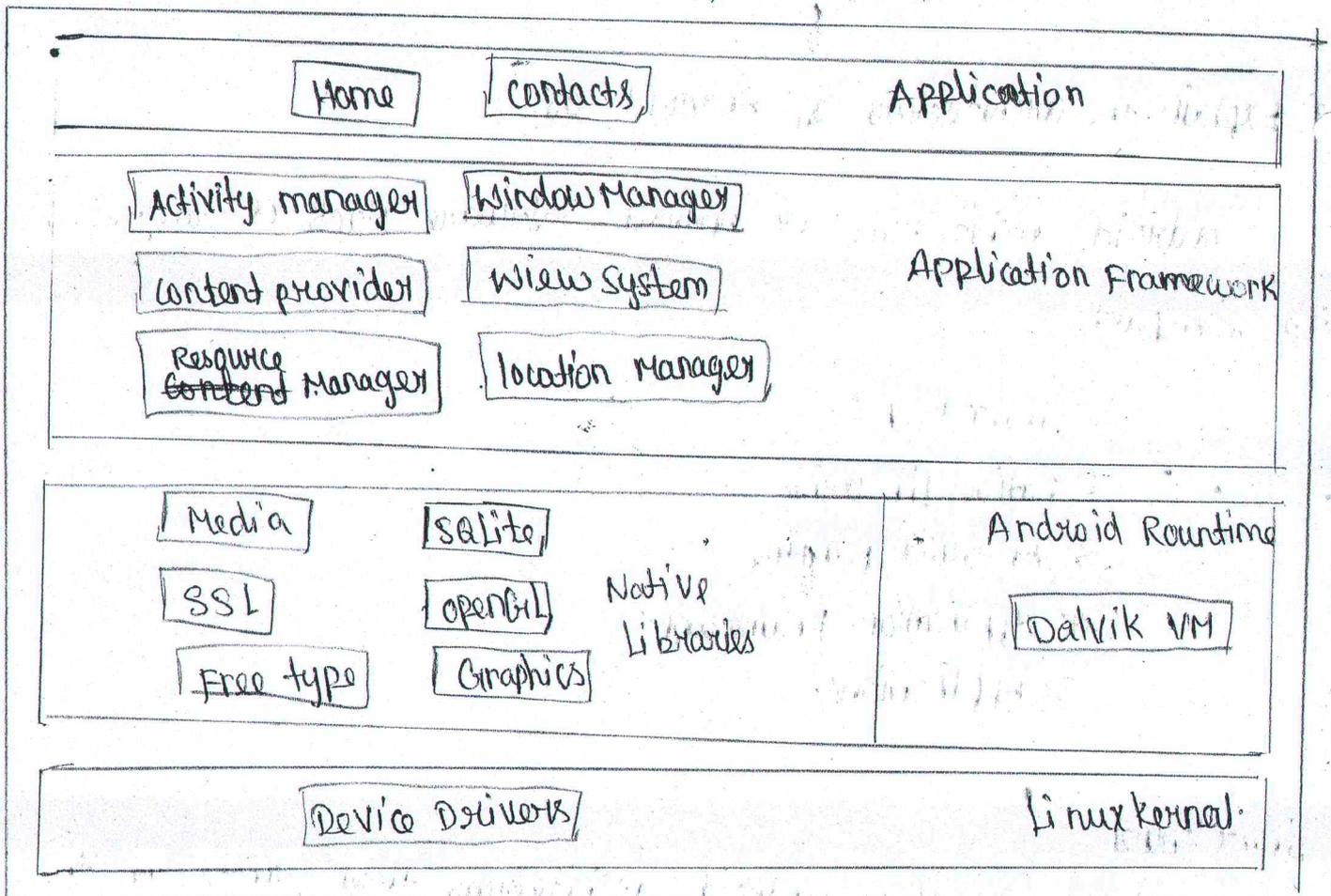
It is the heart of android architecture that exists at the root of android architecture.

Linux kernel is responsible for device drivers, power management, memory management, device management and ~~and~~ ~~to~~ source access.

Native Libraries:

on the top of linux kernel, there are native libraries such as webkit, opengl, Free Type, SQLite, Media, C runtime library etc.

The webkit library is responsible for browser support, SQLite is for database, Free type for font support, Media for playing and recording audio and video formats.



Android Runtime

In android runtime, there are core libraries and DVM which is responsible to run android application. DVM is like JVM but it is optimized for mobile devices.

It consumes less memory and provides fast performance.

Android Framework:

on the top of Native Libraries and android runtime, there is android framework.

Android framework include Android API's such as UI, telephony, and package managers.

Applications:

• on the top of android framework, there are applications.

All applications such as home, contact, setting, games, browsers are using android framework that uses android runtime and libraries.

14) b) List the types of virtual machine and Explain in detail.

Virtual machine is like fake computer system operation on your hardware.

It partially uses the hardware of your system but its space is completely separated from your main system.

Types of virtual Machines:

1. System virtual machine:

These types of virtual machines gives us complete system platform

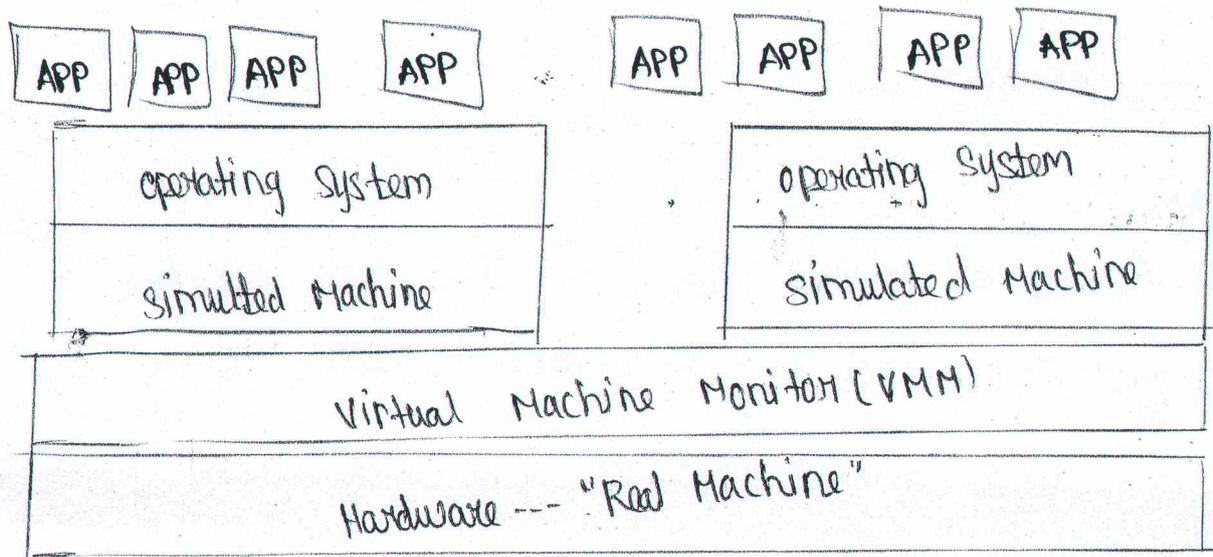
and gives the execution of the complete virtual operating system.

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Just like virtual box, system virtual machine is providing an environment for an OS to be installed completely.

System Virtual Machine



2. process virtual machine:

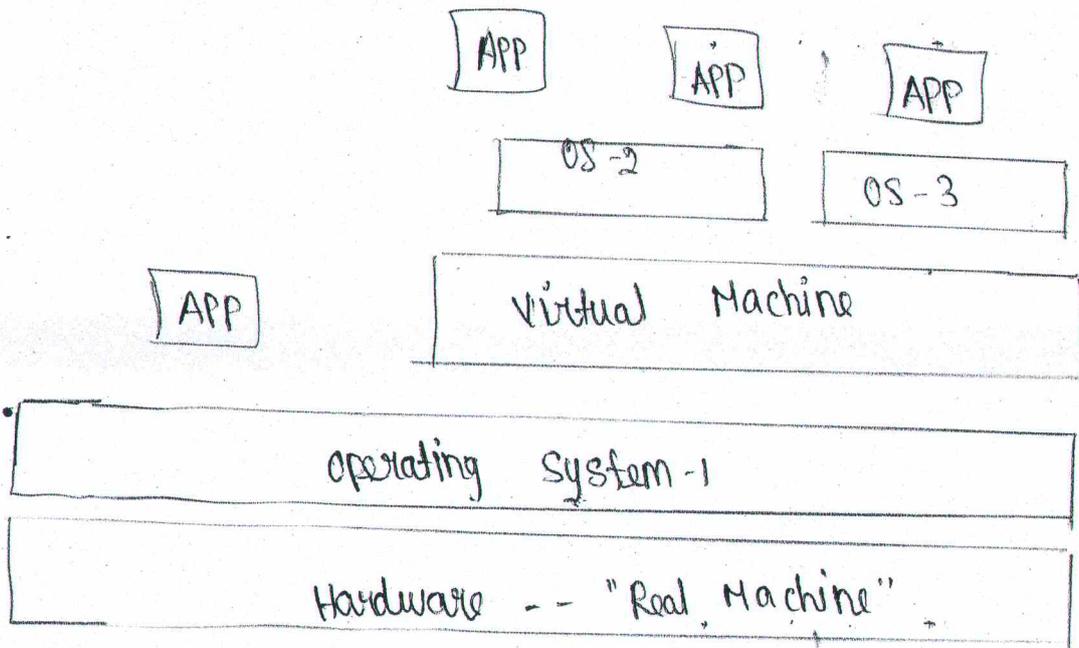
While process virtual machines, unlike system virtual machine, does not provide us with the facility to install the virtual operating system completely.

Rather it creates virtual environment will be destroyed as soon as we exit from that app.

Like in below image, there are some apps running on main OS as well some virtual machines are created to run other apps.

Example: wine software in linux helps to run window application.

Process Virtual Machine



Virtual Machine language:

it's type of language which can be understood by different operating systems.

It is platform-independent.

The same virtual machine language works.

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PART-B

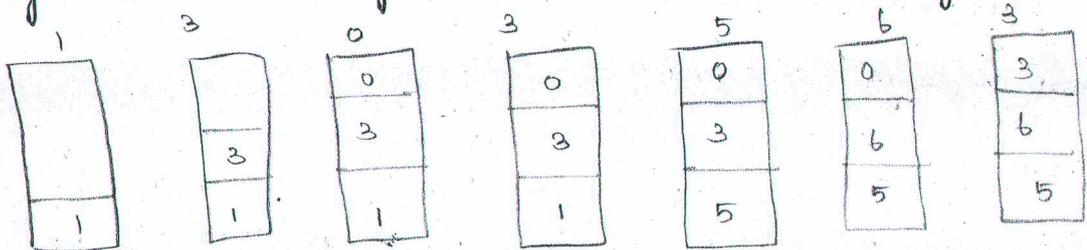
Explain about the following page replacement algorithms a) FIFO
b) OPR c) LRU.

FIFO:-

* This is the simplest page replacement algorithm.

* In this algorithm, the operating system keeps track of all pages in the memory in a Queue; the oldest page in the memory in a Queue, the oldest page is in the front of the Queue.

eg:- page reference string 1, 3, 0, 3, 5, 6, 3 with 3 page frames.

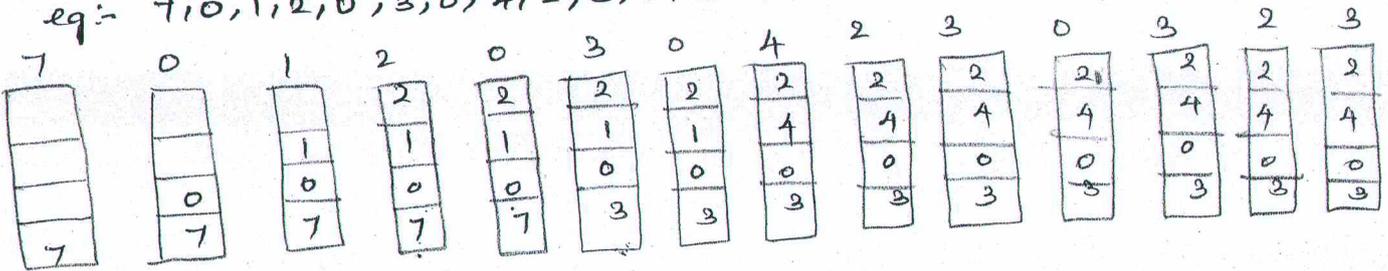


total page fault = 6.

OPR:-

In this algorithm, pages are replaced which would not be used for the longest duration of time in the future. It is the optimal page replacement.

eg:- 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3, 4

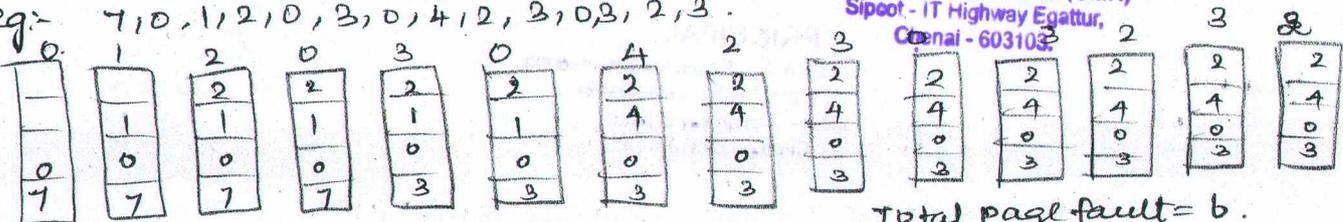


total page fault = 6.

LRU:-

It is the Least Recently used. In this algorithm, page will be replaced which is least recently used.

eg:- 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3.



total page fault = 6.

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2) Explain the basic concepts of segmentation in detail.

A process is divided into segments. The chunks that a program is divided into which are not necessarily all the exact sizes are called segments.

Types of segmentation:-

* virtual memory segmentation :- Each process is divided into a number of segments, but the segmentation is not done all at once. This segmentation may or may not take place at the run time of the program.

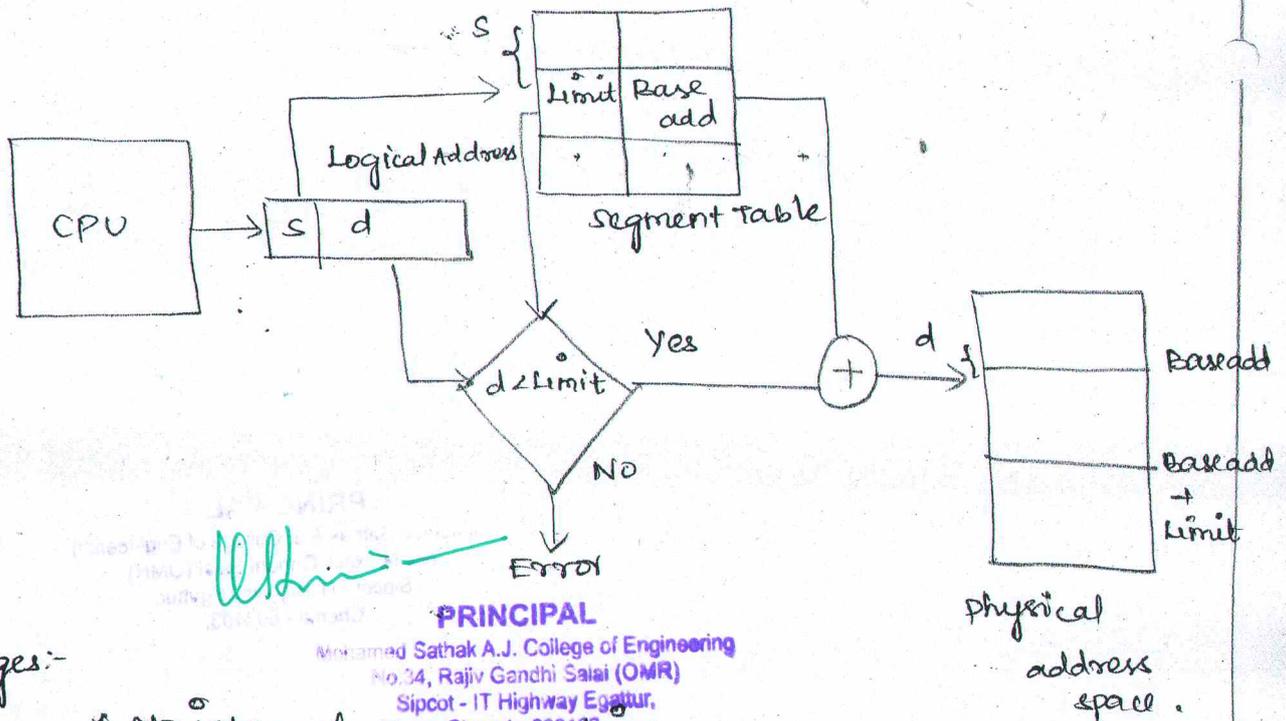
* simple segmentation : Each process is divided into a number of segments, all of which are loaded into memory at run time though not necessarily contiguously.

what is segment table?

It maps a two dimensional logical address into a one dimensional physical address. In each table entry has:

* Base address: It contains the starting physical address where the segments reside in memory.

* Segment Limit : Also known as segment offset. It specifies the length of the segment.



Advantages:-

- * No internal fragmentation
- * Segment table consumes less space

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Disadvantages:-

- * Extra External Fragmentation
- * Overhead.
- * complexity is more to implement.

Q) Describe indexed file, indexed sequential file organization.

Indexed file organization:-

This file stores the record sequentially depending on the value of the RECORD-KEY. RECORD KEY in an indexed file is a variable that must be part of the record/data. In the case of indexed file two types of files are created.

- Data file: It consists of the records in sequential order.
- Index file: It consists of the Record-Key and the address of the Record-Key in the data file.

Difference between Sequential, Indexed, Relative Files:

Sequential Files	Indexed Files	Relative Files
These Files can be Accessed only Sequentially.	These Files can be Accessed Sequential as well as randomly with the help of the record key	These Files can be accessed sequentially as well as randomly with help of their relative record number.
Records cannot be deleted and can only be stored at the end of the file.	It is possible to store the records in the middle of the file.	The records can be inserted at any given position.
It occupies less space.	It occupies more space.	It occupies more space.
There is no need to declare any KEY for storing and accessing the records.	one or more KEYS can be created.	only one unique KEY is declared.

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Explain About File Attributes, File operations and File types?

FILE ATTRIBUTES:

- File Name: The symbolic name is perhaps the only human readable File Attribute.
- FILE LOCATION: A pointer to a device to find a file.
- File size: The current size of a file.
- File protection: This is for Access-control.
- File Date, Time, Owner, etc....

FILE OPERATIONS:

File is an Abstract Data type.

Operating System must perform of these six basic File operations:

- Create a File
- Write a File
- Read a File
- Truncate a File
- Open a File a File
- Delete a File

FILE TYPES:

- Ordinary
- Directory
- Special

Ordinary - Under user control (Ex Notepad/Wordpad in windows)

Directory - to hold list of Files (like a folder in windows)

Special - Special

Example * Device Drivers

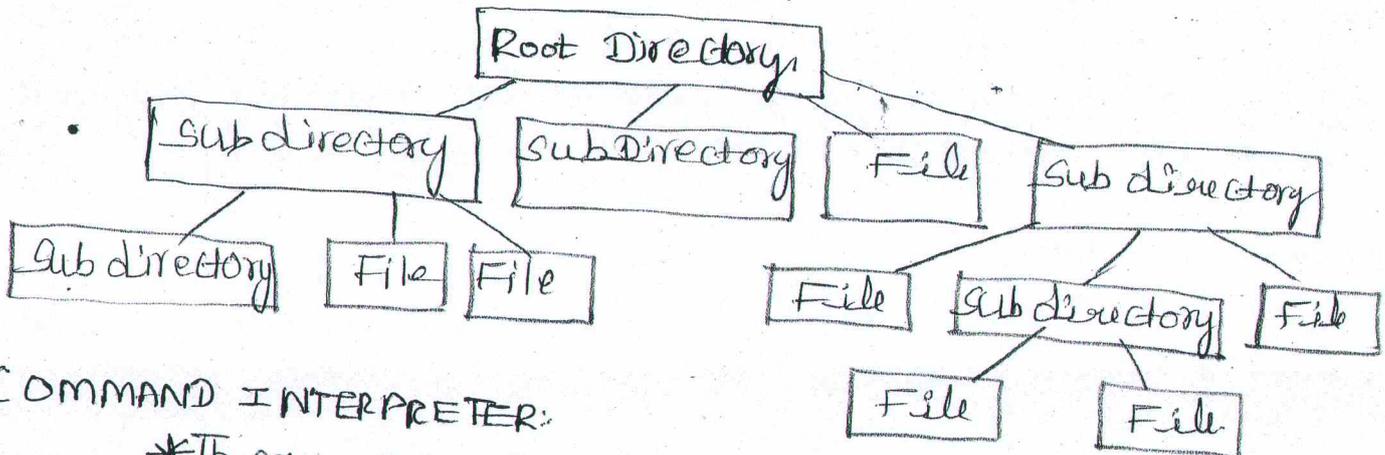
* Raw devices etc

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- ↳ Executable Program
- ↳ Programs data
- ↳ Stack and stack pointer
- ↳ Program counter

FILE MANAGEMENT:

- * Files are used for long-term storage.
- * File are used for both input and output



COMMAND INTERPRETER:

* There are several ways for users to interface with the operating system. One of the approaches to user interaction with the operating system through commands.

* Command Interpreter provides a command-line interface.

SYSTEM CALLS:

↳ System calls are available for the following

- * Process Management
- * Memory Management
- * File operation
- * I/O operation.

Advantages:

- ↳ Computing Source and Resource Sharing
- ↳ User-Friendly interface.

Dis Advantages:

- ↳ Expensive
- ↳ Virus Threats.

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13. a) Give overview of mass storage structure in detail.

In this tutorial, we will learn about mass storage structure in operating systems. We know that there are different types of storage device which are present in the operating systems.

Primary Memory:-

A processor or computer initially or directly access primary memory while using a computer. It enables a processor to access programs and services that are now in use and temporarily stored in a particular area of memory.

Secondary Memory:-

secondary memory is non-volatile, permanent computer memory that is not directly accessible by a computer or processor. Data that can be quickly and easily retrieved, transmitted, and utilized by apps and services can be stored by the user and then used in this manner.

The mass storage structure devices are,

- i, Magnetic Disk
- ii, solid state disks
- iii, magnetic tape.

Magnetic Disks:-

The process of magnetization is used to write, rewrite and access data on a magnetic disk, a storage device. This process is known as Magnetic Disk. It is coated magnetically and has tracks, spots and sectors for storing data.

eg:- Floppy Disks, Hard Disks, Zip Disks.

Solid state Disks:-

Old technologies are frequently employed in new ways as economic conditions and technology evolve. The growing usage of solid state drives or SSDs, is one illustration of this.

Magnetic Tape:-

prior to the advent of hard disk drives, magnetic tape were frequently utilized for secondary storage.

2) Explain different free space management techniques in detail.

* Bit map requires extra space. Eg

$$\text{block size} = 2^{12} \text{ bytes}$$

$$\text{disk size} = 2^{30} \text{ bytes}$$

$$n = 2^{30} / 2^{12} = 2^{18} \text{ bits (or } 32\text{K of bytes)}$$

* Easy to get contiguous files

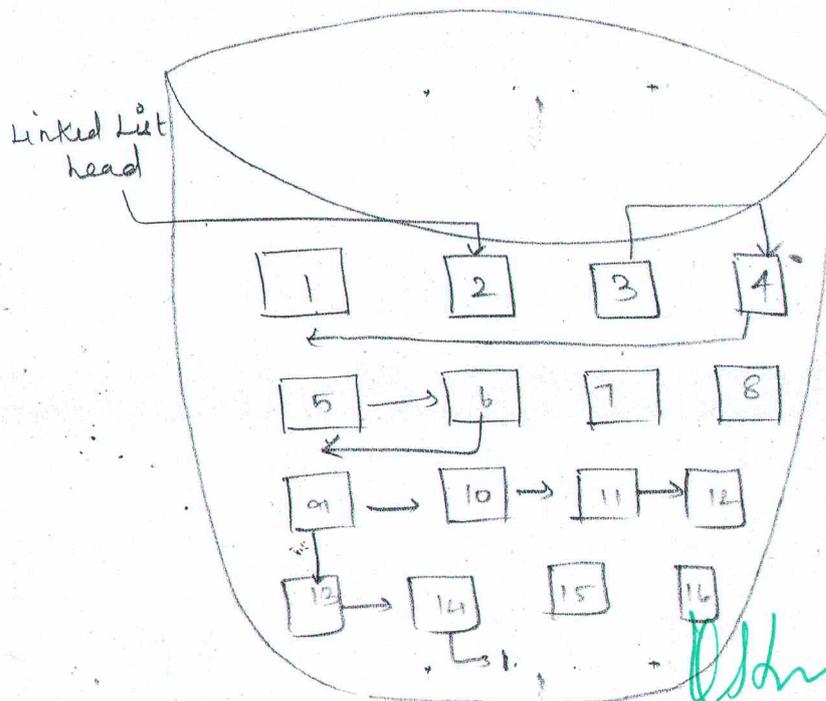
* Linked list

→ cannot get contiguous space easily

→ No waste of space

* Grouping

* counting:



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PART-C

Discuss the objectives for File Management Systems.

Ans: * File Management is one of the fundamental and crucial components of an operating system.

* The operating system manages computer system files. Operating systems control all files with various extensions.

* File Management is formally defined as manipulating files in a computer system.

Features of File Management;

1. Provide Security to System and Application Software.
2. Memory Management
3. Disk Management
4. I/O operation etc.

Function of File Management:-

* It is responsible for creating new files in the computer system and placing them in specific locations.

* It is responsible for locating the existing files in the computer system.

Objectives of File Management:-

- File retrieval
- Data Security
- Data sharing
- File Encryption.
- File organization
- File Backup.


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Advantages of File Management:

- * It keeps data organized and Easy to Find.
- * Saves Storage space by Compressing Files.

DISADVANTAGES OF FILE MANAGEMENT:

- * Data Redundancy.
- * Limited User Access.
- * Lack of Transaction.

2) Explain the basic concepts of Segmentation in detail.

COMPONENTS OF OPERATING SYSTEM:-

- * An Operating System is an interface between users and the hardware of a computer system.
- * The operating system manages resources of system software and computer hardware resources.

Important components of the operating system:

- Process Management
- Files Management
- Command Interpreter
- System calls
- Signals
- Network Management
- I/O Device Management
- Secondary Storage Management



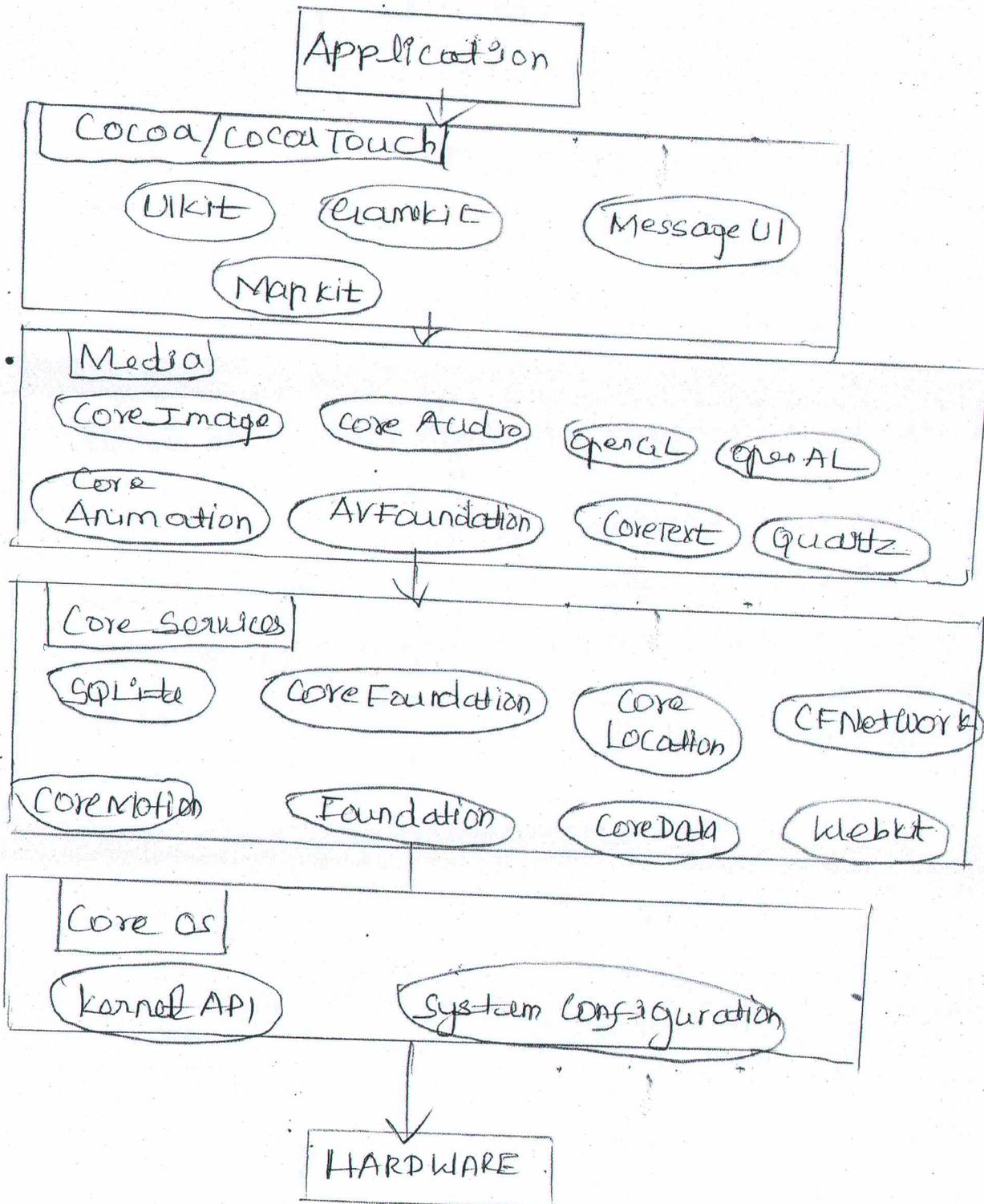
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PROCESS MANAGEMENT:

A process is a program in Execution.

It consists of the following:

Explain the Architecture of iOS operating system.



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INDIVIDUAL SUBJECT MARK SHEET - IAT I

Department of Civil Engineering

Sub.Code/Sub.Name: ME3351 Engineering Mechanics

Year/Sem: II/III

Name of the Faculty: Mr.Mohan S R

Date of exam: 19-10-2023 FN

Sl. no.	Reg No.	Name	Question No.										Quiz	Other activities	Total (60)	Signature
			PART A					PART B								
			7 X 2 = 14					3 X 12 = 36								
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1	311822103001	KAMALESH J	2	2	2		2	2			12	12			34	J. K. J.
2	311822103002	MOHAMED NIYAS A	2	0	0	1	1	0			12		10		26	M. N. A.
3	311822103003	RAHMAN KHAN R	2	2	2	2	2	2		12	12	12	12		60	R. K. R.
4	311822103004	SYED MASTHAN S													A	S. M. S.

Total no. of students:	4
No of students present:	3
No. of students absent:	1
No. of students pass:	2
No. of students fail:	0
Pass percentage:	66.67

*Mark "A" for absent

Subject in-charge

Format no: RA 01

Rev.no. 1.0

Rev. Date: 04.01.21

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INDIVIDUAL SUBJECT MARK SHEET - IAT I

Department of Mechanical Engineering

Sub.Code/Sub.Name: ME3351 Engineering Mechanics

Year/Sem: II/III

Name of the Faculty: Mr.Mohan S R

Date of exam: 19-10-2023 FN

Sl. no.	Reg No.	Name	Question No.										Quiz	Other activities	Total (60)	Signature
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2	311822114002	AHAMED SUHAIB A													A	Suhaib?
3	311822114007	BUHARI NAVEETH.M	1	1	2	0	1	0		12	5				22	B.
4	311822114008	DINESH KUMAR.S													A	
	311822114009	FAIZAL M.		0	0	1	1	2	0	4		2			10	Faizal.
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7	311822114014	MOHAMMED SARHAN. K	1	2	0	1	1	0	9	0	3	0			17	Sarhan
8	311822114015	MOHAMED UBAIS. J			0	0	1		0	0	2				3	Ubais
9	311822114017	MOHANA SUNDARESHWAR.A	1		0		1	2		9	7	1			21	A.mohana sundar
10	311822114019	SULTHAN MASHUD G	1	0	0	0	1		9	4	0				15	Sulthan
11	311822114022	NIYAZ AHAMED. M				0	1	0	4	5	1				11	Niyaz
12	311822114301	MANOHAR C	1	0		1	1		3	5					11	Manohar
13	311822114302	MOHAMED AATHIF R													A	Aathif

*Mark "A" for absent

Total no. of students:	13
No of students present:	10
No. of students absent:	3
No. of students pass:	1
No. of students fail:	9
Pass percentage:	10

Subject in-charge

Format no: RA 01

HOD

Rev.no. 1.0

Rev. Date: 04.01.21

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INDIVIDUAL SUBJECT MARK SHEET - IAT II

Sub.Code/Sub.Name: GE3251 ENGINEERING GRAPHICS

Name of the Faculty: Mr. MOHAN S R

Year/Sem: I / II SEC - C

Date of Exam: 14-06-2023(AN)

S.No	Reg No.	Name	PART A				Total (60)	Signature
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			1	2	3	4		
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3	311822104043	Sankara Narayanan.S	7	4	0	13	24	S. N.
4	311822104044	Santhosh Mahara	15	7	10	15	47	Santhosh
5	311822104045	Sathis Kumar .V	13	8	14	15	50	V. S. K.
6	311822104046	Shahid Sharif	15	9	14	15	53	Shahid Sharif
7	311822104047	Shajaneshwar.M.S	12	9	10	15	46	S. J.
8	311822104048	Suhaib.I	11	5	14	4	34	Suhaib I.
9	311822104049	Suhail Ahamed	13	13	8	5	39	Suhail A.
10	311822104050	Surya S	14		13	15	42	S. S.
11	311822104051	Syed Aahil R	1	5	11	13	30	A. R.
12	311822104052	Syed Aahkil R	2	4	4	5	15	Syed Aahkil R
13	311822104053	Vignesh.V	4	1	7		12	V. V.
14	311822104054	Vinoth.P	10	10	2	14	36	P. V.
15	311822104056	Zakir Hussain.A	13	8	4	15	40	Zakir
16	311822205039	Mohamed Zavith.Z	12	10	5	15	42	Z. V.
17	311822205040	Mohammed Afrith.S	15	10	4	15	44	M. A.
18	311822205041	Mohammed Hamza.K	14	14	4	15	47	M. H.
19	311822205042	Mohammed Iyad.K	12	12	8	5	37	M. I.
20	311822205043	Mohammed Salman.R	10	5	7	14	36	M. S.
21	311822205044	Mohamed Sami.S		9	14	13	36	M. S.
22	311822205045	Nafees.A	13	8	13	15	49	N. A.
23	311822205046	Nithiesh.S	13	8	13	15	49	N. S.

PRINCIPAL
 Mohamed Sathak A. J. College of Engineering
 No.34, Rajiv Gandhi Salai (OMR)
 Chennai - 603103.

S.No	Reg No.	Name	PART A				Total (60)	Signature
			15	15	15	15		
			1	2	3	4		
24	311822205047	Pavithra	13	10	13	7	43	<i>Pvf</i>
25	311822205048	Pooja.P.R	13	7	15	15	50	<i>Hay</i>
26	311822205049	Pradeep Kumar		4	7	13	24	<i>Pradeep</i>
27	311822205050	Raj Kumar.P..K	10	6		14	30	<i>Raj</i>
28	311822205051	Rakshana	13	14	15	15	57	<i>Rakshana</i>
29	311822205052	Rithvik Rakaventhra .D	5	0	6		11	<i>Rithvik</i>
30	311822205053	Saiyadu Fazuludeen.K	2		7	9	18	<i>K. fazuludeen</i>
31	311822205054	Salman Faris.K.M	13	9	12	15	49	<i>R.M. Faris</i>
32	311822205055	Sanjay Kumar		4	12	13	29	<i>Sanjay</i>
33	311822205056	Saranya	13	10	15	15	53	<i>Saranya</i>
34	311822205057	Shalif Umar.S	13	10	6	8	37	<i>Shalif</i>
35	311822205058	Sharmi Sri	13	13	15	15	56	<i>Sharmi</i>
36	311822205059	Yogesh	15	11	15	15	56	<i>Yogesh</i>

Total no. of students:	36
No of students present:	36
No. of students absent:	0
No. of students pass:	29
No. of students fail:	7
Pass percentage:	80.56%

*Mark "A" for absent

[Signature]
16/6/23
Subject in-charge

[Signature]
16/6/23
HOD

PRINCIPAL

Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chennai - 603103.

S.no	Reg. No.	Name of the Students	ENG	Tamil	PHY	SNM	BEEE	Pro C	EG	No of Subjects failed
			HS3252	GE3252	PH3256	MA3251	BE3251	CS3251	GE3251	
1	311823104001	ABDUL AZEEZ JAILANI. M	63	11	7	50	5	30	31	5
2	311823104002	ABDUR RAHMAN.S	41	7	8	23	2	7	14	7
3	311823104003	ABU BAKKAR SIDDIQ. A	64	62	AB	50	30	52	44	3
4	311823104004	AHAMED RAIYAN. S	44	8	8	AB	0	11	17	7
5	311823104005	AHMED UVAIZ S.M	70	55	20	50	8	50	59	2
6	311823104006	ALLU GANESH	59	42	13	58	0	52	50	3
7	311823104007	AMEER SHAHITH.M	63	34	65	59	30	58	42	3
8	311823104008	ANANDHAN. V	41	73	33	AB	26	63	AB	5
9	311823104009	ASIF ALIS	17	A	AB	16	2	1	17	6
10	311823104010	AYYAPPAN.J	75	22	12	24	4	33	36	6
11	311823104011	DHIKSHITHA. R	78	70	87	89	62	66	64	0
12	311823104012	FAISAL YUSUF. M	50	56	50	58	16	7	8	3
13	311823104013	HANURAM.P.R	61	32	50	75	55	82	76	1
14	311823104014	JAFFER SIDDIQUI. N	45	18	7	17	6	16	28	7
15	311823104015	JYOTSANA PRIYA G.S	70	76	63	89	50	87	74	0
16	311823104016	KALAIYARASAN. K	64	50	51	50	14	54	62	1
17	311823104017	KASHIBA JEHAANE. K	79	62	20	23	19	51	42	4
18	311823104018	KISHORE. P	33	7	0	36	AB	2	AB	7
19	311823104019	LAVANYA M.L	60	52	1	3	7	23	10	5
20	311823104020	MADHAN RAJ. K	54	55	66	75	54	83	64	0
21	311823104021	MOHAMED ANAS	54	57	9	61	18	57	59	2
22	311823104022	MOHAMED KASIM SULTHAN. M	15	30	AB	40	26	11	18	7
23	311823104023	MOHAMED MUNTHASIR	79	54	4	58	31	55	56	2

S.no	Reg. No.	Name of the students	ENG	Tamil	PV	SNM	BEEE	Pro C	EG	No of Subjects failed
			HS3252	GE3252	PH3256	MA3251	BE3251	CS3251	GE3251	
24	311823104024	MOHAMED THAKA.M	51	A	AB	32	3	20	AB	5
25	311823104025	MOHAMED UA WAIS. A	22	A	22	55	14	18	38	5
26	311823104026	MOHAMED YASEEN. M	56	62	3	50	40	53	31	3
27	311823104027	MOHAMED AAKIL SIHAB..S	34	43	41	50	22	50	34	5
28	311823104028	MOHAMMED NABES. H	45	14	48	54	9	53	17	5
29	311823104029	MOHAMMED SHAFIQ YUSUF.S	50	4	1	31	0	0	4	6
30	311823104030	MOHAMMED SHAYAAN AARIZ	58	85	73	57	44	68	71	1
31	311823104031	MOHAMMED YUSUF HUSSAIN.S	53	A	AB	32	AB	AB	AB	5
32	311823104032	MOHAMMED ZAIYAAN.T	39	25	1	30	8	11	12	7
33	311823104033	MUKILAN. M	AB	A	AB	AB	AB	AB	AB	6
34	311823104035	NAVANEETHAKRISHNAN. A	72	43	62	78	51	72	79	1
35	311823104036	NIVETHA. V	AB	A	AB	AB	AB	AB	AB	6
36	311823104037	MOHAMED ANSARI. N	74	50	31	36	33	37	52	4
37	311823104038	PARTHIBAN. A	57	42	9	AB	AB	13	AB	6
38	311823104039	PRADEEPAN. F	AB	AB	AB	14	AB	AB	AB	7
39	311823104040	PRAGATHA. M	62	60	50	54	52	27	80	1
40	311823104041	RAAFIYA SULTANA. A	81	63	51	78	58	69	91	0
41	311823104042	RASMEEN HASANA	73	65	61	78	32	60	57	1
42	311823104043	REYHAN. S	73	61	36	35	18	57	51	3
43	311823104044	SALMAN KHAN. M	AB	A	AB	AB	AB	AB	AB	6
44	311823104045	SANTHOSH. G	13	10	1	36	3	2	16	7
45	311823104046	SHAHID AHMED.S	81	62	50	61	23	69	62	1
46	311823104047	SHARMINI.S	69	67	25	16	14	50	28	4
47	311823104048	SHIVAM VISHWAKARMA.S	74	76	57	56	30	60	50	1
48	311823104049	SIKKANDER BASHA AASIF	73	AB	AB	AB	AB	AB	AB	6
49	311823104050	SORNA VELAN. B	50	40	37	70	42	20	74	4
50	311823104051	THAHA MAHMOODHA. A	57	61	36	61	29	51	16	3

PRINCIPAL

Mohamed Sathak A.J. College of Engineering
No 34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chennai - 603103.



**MOHAMED SATHAK
A.J. COLLEGE OF ENGINEERING**
34, Rajiv Gandhi Salai (OMR), SIPCOT IT Park, Chennai - 603 103



DEPARTMENT OF SCIENCE AND HUMANITIES

DAY-4 Date: 30.05.2024

I-YEAR-EPC SCHEDULE

Sections	Subjects	Faculty Incharge	Supporting Staff
Sec A	MATHS	Mr.K.Senthilkumar	Mrs.Rajeshwari
Sec B	BEEE	Mrs.Ajeetha	Dr.A.Nazeema
Sec C	MATHS	Dr.A.Ammu Qudsiya	Mrs.S.Sudha Dr.Kavitha
Sec D	CA	Mr.Venkatesh	Dr.Amudha
Sec E	PHY	Mrs.V.Shobana Dr.M.Muthumari Mr.B.Bhasker	
3 & Above Arrear Students	BEEE	Ms.Omana Dr.Sivaranjani Mrs.Kavitha	K.Saipriya

(Handwritten signature in green ink)

PRINCIPAL

Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
SIPCOT - IT Highway Egattur,
Chennai - 603103.



MOHAMED SATHAK
A.J. COLLEGE OF ENGINEERING
24, Rajiv Gandhi Salai (OMR), Siruseri IT Park, Chennai - 603 103.



DAY-8 **Date: 05.06.2024**

I-YEAR-EPC SCHEDULE

Sections	Subjects		Faculty Incharge	Supporting Staff
	FN	AN		
Sec A	Prog in C	Tamil	Mr. T. Dinesh	Mrs.K.Saipriya
Sec B	Maths	Prog in C	Mrs.S.Sudha	Mr. T. Dinesh
Sec C	Physics	Tamil	Mrs.V.Shobana	Mr.B.Baskar
Sec D	Physics	Tamil	Dr.M.Muthumari	Dr.S.Amudha
Sec E	Cyber	Prog in C	Mr. T. Dinesh	Dr.A.Nazeema
	EEE	CA	Mr.C. Venkatesh	
	Mech	Physics	Mrs.Rajeshwari	
3 & Above Arrear Students	CSE,IT & Cyber	Prog in C	Mr. T. Dinesh	Mr. K. Senthilkumar
	AI&DS & CSBS	DSD	Dr. kalaiselvi	
	EEE & ECE	CA	Mr.C. Venkatesh	
	Mech	Maths		
	Civil	Maths	Dr. J. Kavitha	

PRINCIPAL

Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chennai - 603103.



MOHAMED SATHAK
A.J. COLLEGE OF ENGINEERING
34, Rajiv Gandhi Salai (OMR), Siruseri IT Park, Chennai - 603 103.



DAY-6 **Date: 03.06.2024**

I-YEAR-EPC SCHEDULE

Sections	Subjects	Faculty Incharge	Supporting Staff
Sec A	EG	Mr.K.K.Vinoth kumar	Mrs.K.Saipriya
Sec B	EG	Mr.S.R.Mohan	Mr.B.Baskar
Sec C	EG	Mr.L.Tharani kumar	Dr.M.Muthumari
Sec D	MATHS	Dr.J.Kavitha	Mrs.S.Rajeshwari
Sec E	EG	Dr.S.Prasath	Dr.A.Nazeema
3 & Above Arrear Students	EG	Mr.K.K.Vinoth kumar Mr.S.R.Mohan Mr.L.Tharani kumar Dr.S.Prasath	

PRINCIPAL

Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (OMR)
Sipcot - IT Highway Egattur,
Chennai - 603103.

LACK OF ATTENDANCE REPORT

Ref No: Mech / 2023-24

Date: 15/4/24

Greeting From Mohamed Sathak A J College of Engineering,

Your Son / Daughter Mr. / Ms

..... Niyaz Ahamed : M (Reg. No. 311822114022) Studying in..... II Year..... IV semester in the Department of..... Mechanical Engineering....., have attendance percentage as on 3/4/24..... is 60.87%. As per the norms of the Anna University, Chennai, all you aware that a minimum of 75% of attendance is mandatory for appearing the end semester examination, failing which, He / She may not be eligible to appear for the University Exams. Hence, you are advised to contact the HoD immediately without fail.



முகமது சதக் ஏ ஜே பொறியியல் கல்லூரியின் வாழ்த்துக்கள்
உங்கள் செல்வன்/செல்வி..... Niyaz Ahamed : M (Reg. No. 311822114022) இயந்திரவியல்.....
எண் 311822114022).....
துறையில் 2nd ஆண்டு 4 வது செமஸ்டர் படித்து வருகிறார்.
3/4/24 தேதியின்படி அவருடைய வருகைப்பதிவு சதவீதம் 60.87%
உள்ளது. சென்னை அண்ணா பல்கலைக்கழகத்தின் விதிமுறைகளின்படி,
குறைந்தபட்சம் 75% வருகைப்பதிவு செமஸ்டர் தேர்வு எழுதுவதற்கு
கட்டாயமாகும், என்பது உங்களுக்குத் தெரியும். வருகைப்பதிவு 75% க்கு
குறைவு எனில், செமஸ்டர் தேர்வு எழுதுவதற்கு தகுதியற்றவர் ஆவார்.
ஆகையால் தாங்கள் உடனடியாக துறைத்தலைவரை தொடர்பு கொள்ளவும்.

PRINCIPAL
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi Salai (GMR)
SIPCOT - IT Highway, Chennai
Chennai - 603103.

நன்றி


இப்படிக்கு,
துறைத்தலைவர்
Head of the Department

DEPARTMENT OF MECHANICAL
Mohamed Sathak A.J. College of Engineering
Rev. Date: 04/01/21
SIPCOT IT Park, Chennai - 603 103

LACK OF ATTENDANCE REPORT

Ref No: Mech / 2023-24

Date: 15/4/24

Greeting From Mohamed Sathak A J College of Engineering,

Your Son / Daughter Mr. / Ms

Naresh P

No. 311821114012 (Reg. No. 311821114012) Studying in 3rd Year VI semester in the Department of Mechanical Engineering, have attendance percentage as on 3/4/24 is 64.33%. As per the norms of the Anna University, Chennai, all you aware that a minimum of 75% of attendance is mandatory for appearing the end semester examination, failing which, He / She may not be eligible to appear for the University Exams. Hence, you are advised to contact the HoD immediately without fail.



PRINCIPAL

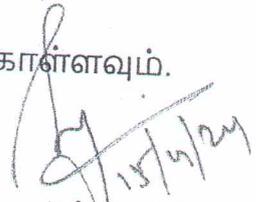
Mohamed Sathak A.J. College of Engineering
No.34, Rajiv Gandhi (Rajiv) Park
Sipcot - IT Highway Egattur,
Chennai - 603103.

முகமது சதக் ஏ ஜே பொறியியல் கல்லூரியின் வாழ்த்துக்கள்,
உங்கள் செல்வன்/செல்வி Naresh P
எண் 311821114012

துறையில் 3-ஆம் ஆண்டு 6 வது செமஸ்டர் படித்து வருகிறார்.
3/4/24 தேதியின்படி அவருடைய வருகைப்பதிவு சதவீதம் 64.33%

உள்ளது. சென்னை அண்ணா பல்கலைக்கழகத்தின் விதிமுறைகளின்படி,
குறைந்தபட்சம் 75% வருகைப்பதிவு செமஸ்டர் தேர்வு எழுதுவதற்கு
கட்டாயமாகும், என்பது உங்களுக்குத் தெரியும். வருகைப்பதிவு 75% க்கு
குறைவு எனில், செமஸ்டர் தேர்வு எழுதுவதற்கு தகுதியற்றவர் ஆவார்.
ஆகையால் தாங்கள் உடனடியாக துறைத்தலைவரை தொடர்பு கொள்ளவும்.

நன்றி



இப்படிக்கு,
துறைத்தலைவர்

Head of the Department

DEPARTMENT OF MECHANICAL

Mohamed Sathak A J College of Engineering
Siruseri IT Park, Chennai - 603 103

LACK OF ATTENDANCE REPORT

Ref No:..... Mech / 2023-24.....

Date: 15/4/24.....

Greeting From Mohamed Sathak A J College of Engineering,

Your Son / Daughter Mr. / Ms.

..... Mohamed Saifrees (Reg.
 No. 311821114011) Studying in II Year VI semester in the
 Department of Mechanical Engineering , have attendance percentage as on
 .. 3/4/24 is .. 66.67 %. As per the norms of the Anna University, Chennai, all you
 aware that a minimum of 75% of attendance is mandatory for appearing the end semester examination,
 failing which, He / She may not be eligible to appear for the University Exams. Hence, you are advised
 to contact the HoD immediately without fail.

முகமது சதக் ஏ ஜே பொறியியல் கல்லூரியின் வாழ்த்துக்கள்,
 உங்கள் செல்வன்/செல்வி Mohammed Saifrees
 எண் 311821114011) இயந்திரியல்
 துறையில் 3-ஆம் ஆண்டு 6 வது செமஸ்டர் படித்து வருகிறார்.
 .. 3/4/24 தேதியின்படி அவருடைய வருகைப்பதிவு சதவீதம் 66.67 %
 உள்ளது. சென்னை அண்ணா பல்கலைக்கழகத்தின் விதிமுறைகளின்படி,
 குறைந்தபட்சம் 75% வருகைப்பதிவு செமஸ்டர் தேர்வு எழுதுவதற்கு
 கட்டாயமாகும், என்பது உங்களுக்குத் தெரியும். வருகைப்பதிவு 75% க்கு
 குறைவு எனில், செமஸ்டர் தேர்வு எழுதுவதற்கு தகுதியற்றவர் ஆவார்.
 ஆகையால் தாங்கள் உடனடியாக துறைத்தலைவரை தொடர்பு கொள்ளவும்.

நன்றி

இப்படிக்கு,

துறைத்தலைவர்
Head of the Department

DEPARTMENT OF MECHANICS
 Mohamed Sathak A.J. College of Engineering
 Brundarpet Road, Chennai - 603 103