

H.T No:

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R18

Course Code: A30511



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Design & Analysis of Algorithms

(Common for CSE, IT, CSM, AID)

Date: 09.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

- | | |
|---|-----|
| 1. List out asymptotic notations. | 2 M |
| 2. List the characteristics of an algorithm. | 2 M |
| 3. Give the recurrence relation for divide & conquer. | 2 M |
| 4. Define fractional knapsack problem. | 2 M |
| 5. Define 8queens problem. | 2 M |
| 6. What is state space tree? | 2 M |
| 7. Define DFS with example. | 2 M |
| 8. Define prims algorithm. | 2 M |
| 9. Define NP-Hard and NP-Complete problems. | 2 M |
| 10. Define Game trees. | 2 M |

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

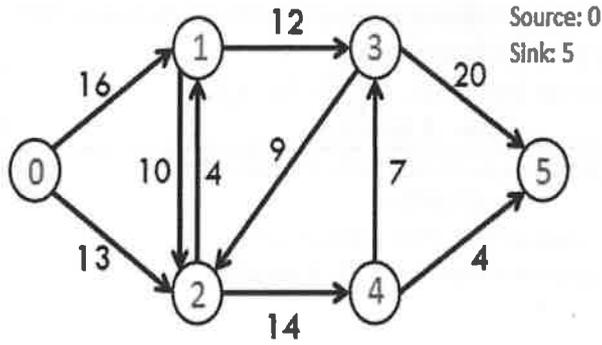
- | | |
|---|-----|
| 11.A). Define time and space complexity. Explain with examples. | 10M |
| OR | |
| 11. B). i) Give characteristics of an algorithm. | 3M |
| ii) Explain the Asymptotic notation in details. | 7M |
| 12. A). Explain job sequencing with deadlines algorithm and also find the solution for the instance $n=7, (p_1, p_2, \dots, p_7) = (3, 5, 20, 18, 1, 6, 30)$ and $(D_1, D_2, \dots, D_7) = (1, 3, 4, 3, 2, 1, 2)$ | 10M |
| OR | |
| 12. B). For the identifier set $(a_1, a_2, a_3, a_4) = (\text{cout}, \text{float}, \text{if}, \text{while})$ with $P(1)=1/20, P(2)=1/5, P(3)=1/10, P(4)=1/20, q(0)=1/5, q(1)=1/10, q(2)=1/5, q(3)=1/20, \text{ and } q(4)=1/20$ construct the OBST. | 10M |
| 13. A). Explain N quince problem using backtracking. | 10M |
| OR | |
| 13. B). Draw the portion of the state space tree generated by LCBB for the given knapsack problem instance. $N=5, (p_1, p_2, p_3, p_4, p_5) = (10, 15, 6, 8, 4), (w_1, w_2, w_3, w_4, w_5) = (4, 6, 3, 4, 2)$ and $m=12$. | 10M |
| 14. A). Define Transitive closer. Explain Floyd-Warshall (all pair shortest path) Algorithm with an example. | 10M |

(P.T.O..)

OR

14. B). Find maximum flow for the graph given.

10M



15. A). Discuss in detail about the class P, NP, NP-hard and NP-complete problems. Give examples for each class.

10M

OR

15. B). Explain Game trees concept with an example.

10M

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R18

Course Code: A30228



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Basic Electrical Engineering

(Common for CSE, IT, CSC, CSD & AID)

Date: 17.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

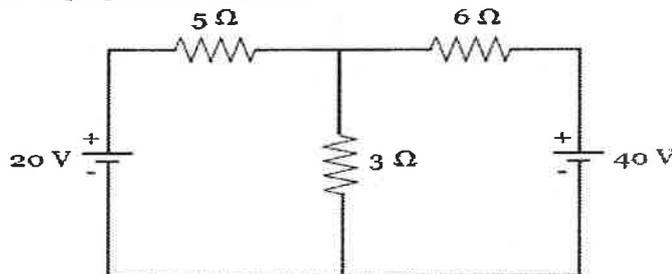
1. Explain ohm's law and write down its limits. 2 M
2. State and explain Kirchoff's laws. 2 M
3. Define RMS and average values of an alternating quantity. 2 M
4. What is phase sequence? Give relationship between line and phase voltage and currents for delta connection? 2 M
5. Explain principle and operation of DC motor. 2 M
6. With the help of neat diagram explain different types of DC generators. 2 M
7. What is a transformer? Explain its principle and operation. 2 M
8. Write short notes on efficiency and regulation of a transformer. 2 M
9. Explain the constructional details of three phase induction motor. 2 M
10. Explain the principle of operation of alternator. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

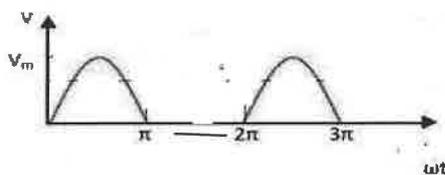
5x10=50M

- 11.A). List out the steps to solve the circuits using superposition theorem. Find the current through 3Ω resistor superposition theorem. 10M



OR

11. B). Derive Delta connection equations from a Star connected network and star connection equation from a delta connected network. 10M
12. A). i) Obtain RMS Value, Average Value, Form factor and peak factor of half wave rectified sine wave. 5M



- ii) Explain the significance of j operator 5M

(P.T.O.)

OR

12. B). Show that in three phase balanced voltage sources connected to form a delta, the sum of voltages around the loop so formed is zero and draw its phasor diagram. 10M

13. A). i) Derive the induced emf of a dc generator. 5M

ii) A 4 Pole DC generator, having wave-wound armature winding has 51 slots, each slot containing 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0 mWb ? 5M

OR

13. B). Derive the Torque equation of DC motor. 10M

14. A). A single phase 50Hz Transformer has 100 turns on the primary winding and 400 turns on the secondary. The Net cross sectional area of the core is 250cm square. If the primary winding is connected to a 230v, 50Hz supply, determine i) Emf induced in the secondary winding ii) Maximum flux density in the core. 10M

OR

14. B). Perform open circuit test on a single phase transformer. 10M

15. A). Explain in detail with neat sketches the constructional features of wound rotor and squirrel cage rotor induction motor. 10M

OR

15. B). Why single phase induction motor is not self starting? Explain various types of single phase induction motors. 10M

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R18

Course Code: A30525



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Softwaring Engineering

Branch : CSE/IT

Date: 27.01.2025 FN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. What is the changing nature of software? 2 M
2. Define Agile process. 2 M
3. What are the user requirements? 2 M
4. Define data model. 2 M
5. List out design concepts. 2 M
6. What is Use case diagram? 2 M
7. What is system Testing? 2 M
8. Outline the art of debugging. 2 M
9. Discuss Reactive Vs Proactive risk strategies. 2 M
10. List out Quality concepts. 2 M

PART-B

Answer any FIVE questions. One question from each unit either A or B (Compulsory)

Each question carries TEN Marks.

5x10=50M

-
11. A. Explain generic view of process with a neat sketch. 10M
 - OR
 11. B. Discuss various evolutionary process models. 10M
 12. A. Distinguish functional and non-functional requirements. 10M
 - OR
 12. B. Demonstrate behavioral models. 10M
 13. A. Elaborate Design concepts. 10M
 - OR
 13. B. Design and explain a sequence diagram for online purchase of items over an E-commerce website. 10M
 14. A. Briefly discuss black-box testing. 10M
 - OR
 14. B. What are the metrics for analysis model? Explain. 10M
 15. A. Explain the following
 - (i) Software Quality Assurance
 - (ii) Formal Technical Reviews10M
 - OR
 15. B. Discuss Software configuration management. 10M

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R18

Course Code: A30007



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Numerical Techniques & Probability Distributions
(Common for CE, ME, CSE, IT, CSC & CSD)

Date: 07.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. If $h=1$ find $\Delta[x(x+1)(x+2)(x+3)]$ 2 M
2. Find real root of $x^4-x-10=0$ up to 2 approximations. 2 M
3. Solve $\frac{dy}{dx}=x+y$ given $y(1)=0$ find $y(1.1)$ using Taylor series. 2 M
4. Use Eulers method find $y(0.1)$, $y(0)=1$ $y'=(x^3+xy^2)$ 2 M
5. Find $L\{t \sin at\}$ 2 M
6. Find $L\{e^{-3t}t^4\}$ 2 M
7. Find $E(x)$ for 2 M

X	-3	6	9
P(x)	1/6	1/2	1/3
8. If X is a continuous random variable and $Y=aX+b$ show that $E(Y)=aE(x)+b$. 2 M
9. What is type I error? 2 M
10. Define level of significance. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Find the root of $x^3-x-4=0$ using False position method. 10M

OR

11. B). Using Lagrange's method fit a polynomial to the following data: 10M

X	-1	0	2	3
Y	-8	3	1	12

12. A). Evaluate $\int_0^{\pi} \sin x dx$ by dividing into 10 equal parts using Trapezoidal and Simpsons 1/3 rule. 10M

OR

12. B). Find $y(0.1), y(0.2)$ using Runge Kutta method given 10M
 $\frac{dy}{dx}=x+x^2y$ and $y(0)=1$

(P.T.O.)

13. A). Solve the differential equation $\frac{d^2x}{dt^2} + 9x = \sin t$ using Laplace transform given that $x(0)=1, x(\pi/2)=1$ 10M

OR

13. B). Using Convolution theorem find $L^{-1} \left\{ \frac{s}{(s^2 + a^2)^2} \right\}$ 10M

14. A). A population consists of five numbers 2,3,6,8,11 consider all possible samples of size 2 which can be taken with replacement and find 10M

- i) Mean of the population
- ii) Standard deviation of the population
- iii) Mean of the sampling distribution of means
- iv) Standard deviation of the sampling distribution of means

OR

14. B). 1000 students have written an examination the mean of the test is 35 and standard deviation is 5. Assuming the distribution to be normal find. 10M

- i) How many students marks lie between 25 and 40
- ii) How many students got more than 40
- iii) How many students got below 20
- iv) How many students got more than 50

15. A). i) the mean life time of a sample of 100 light bulbs produced by a company is found to be 1560 hrs with a standard deviation 90 hrs. Test the hypothesis that the mean life time of the bulbs produced by the company is 1580 hrs. 5M

ii) test the significant difference between the means of the sample from the following data 5M

	Sample size	mean	SD
Sample A	100	61	4
Sample B	200	63	6

OR

15. B). Memory capacity of 10 students were tested before and after training. State whether the training was effective or not from the following scores 10M

Before training	12	14	11	8	7	10	3	0	5	6
After training	15	16	10	7	5	12	10	2	3	8

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R18

Course Code: A36601



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Machine Learning

(CSM)

Date: 07.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. Define machine learning and provide one real-world example. 2 M
2. Identify two applications of regression in machine learning. 2 M
3. What is the main purpose of the utility theory? 2 M
4. What is the function of the Bayes' Estimator in classification? 2 M
5. Define the term mixture densities in clustering. 2 M
6. State the key difference between LDA and PCA. 2 M
7. What is the role of learning rules from data in decision trees? 2 M
8. Write two key differences between logistic discrimination and discrimination by regression. 2 M
9. What are the main limitations of the backpropagation algorithm? 2 M
10. What role do weak learners play in the boosting algorithm? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Illustrate the process of model selection in machine learning and its importance for generalization. 10M

OR

11. B). Explain the key steps in the supervised learning process and the role of training data. 10M

12. A). Compare and contrast the working of k-Nearest Neighbors (k-NN) and Support Vector Machines (SVMs). 10M

OR

12. B). Explain the importance of tuning model complexity in regression analysis. 10M

13. A). Illustrate the steps of Linear Discriminant Analysis (LDA) and discuss its application in classification problems. 10M

OR

13. B). How does dimensionality reduction help in mitigating the curse of dimensionality? 10M

14. A). Illustrate how regression trees handle continuous variables and provide a sample scenario. 10M

OR

14. B). Compare and contrast multivariate and univariate decision trees. 10M

15. A). Demonstrate the mathematical foundation and step-by-step implementation of the backpropagation algorithm for MLP. 10M

OR

15. B). Compare and contrast differences between Bagging and Boosting in ensemble learning? 10M

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R18

Course Code: A36203



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Cyber Security

(CSC)

Date: 09.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. Label the layers of security. 2 M
2. List the methods of Defense. 2 M
3. What is the Role of International Law in Cyber Security? 2 M
4. Write a small note on the need of computer forensic. 2 M
5. List the types of mobility and its implications. 2 M
6. Describe the Attacks on Mobile-Cell Phones. 2 M
7. Outline the ethical dimension of cybercrimes. 2 M
8. Describe the skills of Hackers. 2 M
9. Discuss the intellectual property in the cyberspace 2 M
10. Summarize the privacy issues in financial domain. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What is an attack? Explain various active and passive attacks. 10M
- OR**
11. B). What are cyber threats? Explain various cyber threats briefly. 10M
12. A). Explain in detail about FORENSICS ANALYSIS OF EMAIL. 10M
- OR**
12. B). Summarize the legal challenges of Digital Forensic science. 10M
13. A). Explain about Credit Card Frauds in Mobile and Wireless Computing Era. 10M
- OR**
13. B). What are the Security Implications for Organizations? Discuss about the Organizational Measures for Handling Mobile. 10M
14. A). Discuss about Insider Attack with "Blue Shield Blue Cross (BCBS)" case study. 10M
- OR**
14. B). Discuss various types of web threats for Organizations. 10M
15. A). Assess the ethical dimension of cybercrimes. 10M
- OR**
15. B). What is Data Privacy? Explain the following: 10M
 - i. Data Privacy Attacks,
 - ii. Data linking and
 - iii. Profiling,

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R18

Course Code: A30509



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Database Management Systems

(Common for CSM & AIM)

Date: 17.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. Explain about DDL and DML languages. 2 M
2. What are five main functions of database administrator? 2 M
3. Discuss about outer join. 2 M
4. What is meant by nested queries? 2 M
5. What is the Difference between 3NF AND BCNF? 2 M
6. Discuss in detail about properties relational algebra. 2 M
7. Write about transaction states. 2 M
8. When two schedules are conflict equivalent? What is Conflict Serializability schedule? 2 M
9. What is the main difference between ISAM and B+Tree indexes? 2 M
10. Give a brief note on Static Hashing. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What are the database languages? Explain with examples. 10M
- OR**
11. B). Give an overview of database Architecture with neat sketch. 10M
12. A). Interpret the importance of 'group by' and 'having' clauses in SQL with an example. 10M
- OR**
12. B). Consider the following relations: 10M
 Sailors(sid, sname, rating, age) Boats(bid, bname, color) Reserves(sid, bid, day)
 Write the statements in relational Algebra, Relational calculus, Domain Relational calculus and SQL for the following.
 i) Find the names of sailors who have reserved a Red boat.
 ii) Find the names of sailors who have reserved at least one boat.
 iii) Find the names of sailors who have reserved Red and Green boat.
 iv) Find the names of sailors who have reserved Red or a White boat.
 v) Find the names of sailors who have reserved all boats.
13. A). Discuss in detail about properties relational algebra. 10M
- OR**
13. B). Explain the problems caused by redundancy. 10M
14. A). Explain failure with loss of nonvolatile storage. 10M
- OR**
14. B). Why is recoverability of schedules desirable? 10M
15. A). Why tree-structure indexes are good for searches, especially range selections? 10M
- OR**
15. B). Explain how insert and delete operations are handled in static hash index. 10M

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R18

Course Code: A36201



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: **Object Oriented Programming Through JAVA**
(CSD)

Date: 20.01.2025 AN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. Define polymorphism. 2 M
2. What are the characteristics of Object-Oriented programming language? 2 M
3. How does the declaration of a local inner class differ from the declaration of an anonymous inner class? 2 M
4. Write a program for try and catch exception. 2 M
5. Compare Input stream and Reader classes. 2 M
6. What is multithreading? 2 M
7. Name the types of JDBC drivers. 2 M
8. What is the difference between Array List and Vector classes in collection framework? 2 M
9. What is the lifecycle of an applet? 2 M
10. List some Layout Managers supported by Swing. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What is inheritance? Explain with an example the different types of inheritance in JAVA. 10M
- OR**
11. B). How packages are used to resolve naming conflicts in java? With an example show to add classes to packages and how to import packages in classes. 10M
12. A). Define inner classes. How to access object state using inner classes? Give an example. 10M
- OR**
12. B). Define exception. Why is it needed? Explain the different types of exceptions and the exception hierarchy with appropriate examples using Java. 10M
13. A). Using an example, explain inter-thread communication in java. 10M
- OR**
13. B). What is Input Stream? Present an outline of the methods defined by Input Stream. 10M
14. A). Develop a program to show generic class and methods with example. 10M
- OR**
14. B). What is JDBC Connection? Explain steps to get JDBC database connection in a simple Java program. 10M
15. A). Discuss in detail about swing components. 10M
- OR**
15. B). Discuss mouse listener and mouse motion listener. Give an example program. 10M

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R18

Course Code: A30473



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Image Processing

(Common for All)

Date: 25.01.2025 FN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions

Each question carries TWO marks.

10x2=20M

1. Define 4-Connectivity, 8-Connectivity and m-Connectivity between the pixels. 2 M
2. Mention the properties of Hadamard Transform. 2 M
3. What is meant by Grey Level Slicing? 2 M
4. Write the steps involved in frequency domain filtering. 2 M
5. When will a constrained least square filter reduces to inverse filter? 2 M
6. List the properties of image degradation model. 2 M
7. Write the masks used for detecting horizontal, vertical and $\pm 45^\circ$ slanting lines. 2 M
8. What is the role of morphology in image processing? 2 M
9. Mention the classification of redundancy in images. 2 M
10. Name a few principal modes of JPEG standards. 2 M

PART-B

Answer any FIVE questions. One question from each unit either A or B (Compulsory)

Each question carries TEN Marks.

5x10=50M

11. A. Discuss different components used in digital image processing system. 10M

OR

11. B. (a) State and prove the translation and scaling property of 2D-DFT. 6M

- (b) Obtain the Haar Transform matrix for N=4. 4M

12. A. (a) What are the effects of Low pass and High pass filtering of images 5M

- (b) What is image smoothing. what are the types available? 5M

OR

12. B. Explain linear and non-linear gray level transformations in image enhancement with example. 10M

13. A. What are the algebraic approaches to image restoration in detail? 10M

OR

13. B. Explain constrained least square filter in image restoration. 10M

14. A. Explain how isolated points, lines and edges are detected in an image with suitable masks. 10M

OR

(P.T.O.)

14. B. (a) Explain Opening and Closing operations in image morphology. 4M

(b) Mention the properties of dilation and erosion in image morphology. 6M

15. A. Obtain the Huffman code for the word "COMMITTEE". Also determine the entropy and efficiency. 10M

OR

15. B. Explain transform-based compression with neat block diagram. 10M

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R18

Course Code: A30516



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Operating Systems

Branch : CSC/CSM

Date: 27.01.2025 FN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

1. List the Operating System services 2 M
2. Define the following: 2 M
 - i. Simple Batch
 - ii. multi-programmed
3. Define Fork system call. 2 M
4. What is a process state and mention the various states of a process? 2 M
5. How to prevent the deadlock? 2 M
6. Define the following: 2 M
 - i. Monitor
 - ii. Semaphores
7. What is paging and demand paging? 2 M
8. Given five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB (in order). How would the best fit algorithm place processes of 212K, 417K, 112K, and 426K (in order). 2 M
9. Mention the file types and their extension. 2 M
10. Choose various methods for accessing file 2 M

PART-B

Answer any FIVE questions. One question from each unit either A or B (Compulsory)

Each question carries TEN Marks.

5x10=50M

11. A. What is an operating system? What are the functions of Operating System? 10M
- OR
11. B. What is the system call? Explain various types of system calls provided by Operating System. 10M
12. A. Describe scheduling criteria, Explain Multiple processor scheduling 10M

OR

(P.T.O.)

12. B. Consider the set of 5 processes whose burst time are given below:

Process	Burst time
P1	10
P2	3
P3	1
P4	3
P5	4

Draw Gantt charts that illustrates the execution of these processes using:

i. FCFS

ii. SJF scheduling algorithms

What is turnaround time and waiting time of each process of each of the scheduling algorithms?

10M

13. A. What is dining philosopher problem? Explain its solution with semaphore.

10M

OR

13. B. Consider the following snapshot of a system:

Allocation					Max.					Available				
	A	B	C	D	A	B	C	D	A	B	C	D		
P1	0	0	1	3	0	0	1	2	1	5	2	0		
P2	1	0	0	0	1	7	5	0						
P3	1	3	5	4	2	3	5	6						
P4	0	6	3	2	0	6	5	2						

Use Banker's algorithm to find:

i. What is the content of the matrix need

ii. Determine is the system is in safe state or not

10M

14. A. Illustrate the following algorithm with example:

i. FIFO (First-In-First-Out) Algorithm

ii. LRU (Least Recently Used) Algorithm

iii. Optimal Page Replacement Algorithm

10M

OR

14. B. Demonstrate with neat sketch how the demand paging is implemented in Virtual Memory Systems.

10M

15. A. What is file? Explain the file attributes in detail.

10M

OR

15. B. Explain the implementation of directory structure in detail.

10M



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations January-2025

Course Name: Big Data Processing

Branch : CSD

Date: 27.01.2025 FN

Time: 3 hours

Max.Marks: 70

(Note: Assume suitable data if necessary)

PART-A

Answer all TEN questions (Compulsory)

Each question carries TWO marks.

10x2=20M

- | | |
|---|-----|
| 1. List the Big Data Platforms. | 2 M |
| 2. Write Differentiate between SQL vs NoSQL. | 2 M |
| 3. What are the advantages of Hadoop? | 2 M |
| 4. What is the role of Name Node in an HDFS cluster? | 2 M |
| 5. List the main feature of Map Reduce. | 2 M |
| 6. Interpret the various methods in Map Reduce job class. | 2 M |
| 7. Write the data types used in Hive with example. | 2 M |
| 8. Write various types of data structures available in R. | 2 M |
| 9. List the components of Cassandra data models. | 2 M |
| 10. Write differences between HBase and Hive. | 2 M |

PART-B

Answer any FIVE questions. One question from each unit either A or B (Compulsory)

Each question carries TEN Marks.

5x10=50M

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|---|-----|
| 11. A. Define big data. Why is big data required? How does traditional BI environment differ from big data environment. | 10M |
| OR | |
| 11. B. What do you understand by NoSQL Databases ?List the different types of NoSQL databases and explain usage of NoSQL in industry. | 10M |
| 12. A. Explain the Master and Slave components of Hadoop Cluster. | 10M |
| OR | |
| 12. B. What is a Block and how it is formed? Explain about Block replacement using Rack Awareness Algorithm. | 10M |
| 13. A. Explain "Shuffle and Sort ' Phase and "Reducer phase" in Map Reduce. | 10M |
| OR | |
| 13. B. Explain interacting with Hadoop Ecosystem with neat diagram. | 10M |
| 14. A. Discuss the various Hive services with an examples. | 10M |
| OR | |
| 14. B. How many ways to create tables in HIVE Explain each one with own example. | 10M |
| 15. A. Explain HBase architecture with neat diagram. | 10M |
| OR | |
| 15. B. Explain the Features of Cassandra and Discuss about the Cassandra clients. | 10M |