CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: OPERATING SYSTEMS
(Common for CSD, AID & AIM)

Date: 20.02.2023 AN   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.	Do time sharing differ from Multiprogramming? if so, how?	2 M
2.	What is turnaround time?	2 M
3.	What is Semaphore?	2 M
4.	Write the four situations under which CPU Scheduling decisions take place.	2 M
5.	State the four necessary condition for a deadlock situation to arise.	2 M
6.	Write short notes on message queues.	2 M
7.	Define Virtual Memory.	2 M
8.	Give an example of a situation where variable-size records would be useful.	2 M
9.	List the attributes of a file.	2 M
10.	Which disk scheduling algorithm would be best to optimize the performance of a RAM disk?	2 M

PART-B
Answer the following. Each question carries TEN Marks.   **5x10=50M**

11.A). Explain the important services of an operating system.   10M

OR

11. B). Discuss in detail the concept of virtual machines and types of system calls.   10M

12. A). Explain in detail about any two CPU scheduling algorithms with suitable examples.   10M

OR

12. B). Explain the differences in the degree to which FCFS, RR and Non-preemptive SJF scheduling algorithms, discriminate in favor of short process.   10M

13. A). i) What is a deadlock? What are the necessary conditions for a deadlock to occur?   5M
ii) How can a system recover from deadlock?   5M

OR

13. B). What is meant by critical section problem? What are the solutions for critical section problems?   10M

14. A). Explain the concept of paging in detail with necessary diagrams.   10M

OR

14. B). Explain the principles of segmented and paged implementation of memory with a diagram.   10M

15. A). Discuss the different file allocation methods with suitable example.   10M

OR

15. B). Write a detailed notes on various file access methods.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: NUMERICAL TECHNIQUES & PROBABILITY DISTRIBUTIONS
(Common for CSM, AID & AIM)

Date: 22.02.2023 AN   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. Find an interval which contains a real root of $x^3 - 2x - 5 = 0$.   2 M
2. If $f(x) = x(x-1)(x-2)$, then find $\nabla(f(x))$, with step length $h = 1$.   2 M
3. Differentiate between Simpson's 1/3 rule and 3/8 rule.   2 M
4. What is the drawback of Picard's method?   2 M
5. Find Laplace transform of the function $e^{2t} + 4t^3 - 2\sin 3t + 3\cos 3t$.   2 M
6. State first shifting property of Laplace transforms.   2 M
7. Define discrete random variable and continuous random variable.   2 M
8. A population consists of five numbers 2, 3, 6, 8, 11. Consider all possible samples of size 2 which can be drawn with replacement from this population. Find the mean of the population and mean of the sampling distribution of means.   2 M
9. Define Type-I and Type-II errors.   2 M
10. What are the conditions for applying chi-square test?   2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). i) Find a root of the equation $2x = \cos x + 3$ correct to three decimal places by Iterative method.   5M

ii) Find a real root of the equation $x^3 - 2x - 5 = 0$ by Regula-Falsi method and correct to three decimal places.   5M

OR

11. B). i) Find y(25), given that y(20) = 24, y(24) = 32, y(28) = 35 and y(32) = 40 using Gauss forward difference formula.   5M

ii) Using Lagrange interpolation formula find y(5) from the data in the following table.   5M

x	0	2	3	6
y(x)	648	704	729	792

12. A). Consider the function $f(x) = 2x^2 - x$. Calculate the integral of f(x) from x = 1 to x = 2 with step size of 10^{-1} using Trapezoidal rule.   10M

OR

12. B). Apply Runge-Kutta method to find an approximate value of y for x = 0.2 in steps of 0.1, if $\frac{dy}{dx} = x + y^2$ given that y = 1 when x = 0.   10M

(P.T.O..)

13. A). i) Find L(t sin3t)   5M

ii) Find $L^{-1}\{\frac{3s-2}{s^2-4s+20}\}$ 5M

OR

13. B). Using Laplace transform, solve $(D^2 + 1)x = t \cos2t$, given that $x = 0$, $\frac{dx}{dt} = 0$ at $t = 0$.   10M

14. A). i) A random variable X has the following probability function. Determine k, Mean and   5M
Variance of X.

x	0	1	2	3	4	5	6	7
P(x)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

ii) If the probability density of a random variable is given by   5M

$f(x) = \begin{cases} k\,x^2; & \text{for } 0 < x < 1 \\ 0; & \text{elsewhere} \end{cases}$, then find 'k' and probability that the random variable takes

on a value between ¼ and ¾.

OR

14. B). i) A discrete random variable X has the mean 6 and variance 2. If the distribution is   5M
binomial, find the probability that $5 \le X \le 7$

ii) In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the   5M
mean and the standard deviation of the distribution.

15. A). i) A sample of 400 items is taken from a population whose S.D is 10. The mean of the   5M
sample is 40. Test whether the sample has come from a population with mean 38. Also
calculate 95% confidence interval for the population.

ii) Random samples of 400 men and 600 women were asked whether they would like to   5M
have a flyover near their residence. 200 men and 325 women were in favour of the
proposal. Test the hypothesis that proportion of men and women in favour of the proposal
are same at 5% level.

OR

15. B). Two horses A and B were tested according to the time (in seconds) to run a particular   10M
track with the following results.

Horse A	28	30	32	33	33	29	34
Horse B	29	30	30	24	27	29	---

Test whether the two horses have the same running capacity?

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: COMPUTER ORGANIZATION & ARCHITECTURE
(Common for CSE, IT, CSC, CSM, AID & AIM)

Date: 24.02.2023 AN	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.	How Digital modules are built?	2 M
2.	Define instruction set.	2 M
3.	What is purpose of carry save multiplier?	2 M
4.	Mention the purpose of ripple carry adder.	2 M
5.	What are the differences between synchronous and Asynchronous transfer?	2 M
6.	What is an interrupt?	2 M
7.	What is the difference between super pipeline, super scalar pipeline.	2 M
8.	What is cache coherency?	2 M
9.	What is the significance of initializing cache? How is it done?	2 M
10.	Define address space and memory space.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   **5x10=50M**

11.A).	What is an instruction? With example explain three, two, one, zero address instructions.	10M

OR

11. B).	i) Explain about General register organization with seven registers	5M
	ii) Describe the Addressing Modes: a) Direct, b) Relative and c) Register with example.	5M

12. A).	i) Dividend A=01110 Divisor B=10001. Explain and perform division restoring algorithm with flowchart.	5M
	ii) Explain the Booth's algorithm for multiplication of signed two's complement numbers.	5M

OR

12. B).	i) Distinguish between fixed point representation and floating point representation.	5M
	ii) Perform the (+21)+(-16) and (-23)+(+13) arithmetic operations using 2's complement representation for negative numbers.	5M

13. A).	Explain the following modes of transfer in brief	10M
	(i) Interrupt initiated I/O	
	(ii) DMA	

OR

13. B).	i) Distinguish Hardwired control Vs Micro programmed control.	5M
	ii) Write short note on Interrupt driven I/O.	5M

(P.T.O..)

14. A). Write in brief about   10M

      (i)   Pipeling

      (ii)   Comparison between RISC and CISC

OR

14. B).   i) Mention the categories of multiprocessors? List the major MIMD Styles.   5M

        ii) Discuss about Array Processors.   5M

15. A).   i) Why page-table is required in a virtual memory system? Explain different ways of   5M
organizing a page table.

        ii) What do you mean by memory hierarchy? Describe in detail.   5M

OR

15. B).   What is a page fault? What does a page fault signify? Explain the different page   10M
replacement algorithms which determine the page to be removed in case of full memory.

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common for CSC, CSM, AID & AIM)

Date: 27.02.2023 AN	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 any four features of java.	2 M
2.	What is classpath variable?	2 M
3.	Name the keywords used in Exception Handling.	2 M
4.	List the uses of Inner classes.	2 M
5.	Define multithreading.	2 M
6.	Classify the types of streams.	2 M
7.	List the steps to connect database using JDBC.	2 M
8.	What are Generics and its uses?	2 M
9.	What is AWT?	2 M
10.	Define JApplet.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).	What is Inheritance? Explain Method Overriding with suitable example.	10M

OR

11. B).	Define package. Explain the procedure for creating and accessing a package with an example.	10M

12. A).	Develop a java program to read input from the user. If the input is –ve number then program should raise a user defined exception.	10M

OR

12. B).	What are the different types of a Inner classes? Explain Anonymous Inner Class with an example.	10M

13. A).	Explain wait(), notify() and notifyAll() methods for thread communication with example.	10M

OR

13. B).	i) Develop a java program to count number of words, lines and characters in a given file.	5M
	ii) Develop a java program to create thread using Thread class.	5M

14. A).	Explain JDBC driver types in detail.	10M

OR

14. B).	Explain ArrayList and HashTable with suitable example.	10M

15. A).	i) List Event Classes and Event Listeners.	5M
	ii) Explain various mouse events.	5M

OR

15. B).	Develop a java program to handle mouse events.	10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
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B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: DATABASE MANAGEMENT SYSTEMS
(Common for CSE, IT, CSC, CSD & AID)

Date: 01.03.2023 AN   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.	How to represent the strong entity set and weak entity set in E-R Model?	2 M
2.	What are the limitations and goals of DBMS?	2 M
3.	Define the terms: Relational Databases, Tables	2 M
4.	Explain Integrity constraints over relations.	2 M
5.	What do you mean by Normalization and note it's needy?	2 M
6.	Define Fifth Normal Form.	2 M
7.	What is Multiple Granularity?	2 M
8.	What do you mean by Locking protocol?	2 M
9.	Differentiate Indexing and Hashing.	2 M
10.	Discuss about Primary Indexes.	2 M

PART-B

Answer the following. Each question carries TEN Marks.   5x10=50M

11.A). i) Explain Conceptual design with E-R model.   5M
ii) Explain in detail about DDL and DML with an example.   5M

OR

11. B). List the Merits and Demerits of E-R model? Draw an E-R Diagram for any Banking Enterprise System.   10M

12. A). Explain the following Operators in SQL with examples: i) SOME, ii) IN, iii) EXCEPT, iv) EXISTS and v) UNION.   10M

OR

12. B). What are Integrity constraints? Define the terms Primary key constraints and Foreign key constraints. How are these expressed in SQL.   10M

13. A). Explain in detail about 2NF, 3NF and BCNF with example.   10M

OR

13. B). Explain Tuple Relational Calculus and Domain Relational Calculus with suitable examples.   10M

(P.T.O..)

14. A).   i) Define Transaction? Explain ACID properties.   5M
               ii) Give an overview of Timestamp Based Protocol.   5M

<div align="center">OR</div>

14. B).   Explain the concept of Serializability and Recoverability with example.   10M

15. A).   Explain Hash Based Indexing and Tree Based Indexing with example.   10M

<div align="center">OR</div>

15. B).   Explain in detail about Indexed Sequential Access Methods.   10M

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)
B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023
Course Name: WEB PROGRAMMING
(Common for CSD, AID & AIM)

Date: 03.03.2023 AN   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.	Write the structure of HTML Program.	2 M
2.	What are the different types of lists in HTML?	2 M
3.	What is external style sheet?	2 M
4.	Apply color property red to \<H1> tag using internal style of CSS?	2 M
5.	What is JavaScript? What are the features of JavaScript?	2 M
6.	What is DATE object in Java script?	2 M
7.	Define XML Schema.	2 M
8.	Define XML. What are the advantages of XML?	2 M
9.	What is synchronous request in AJAX?	2 M
10.	List any two advantages and disadvantages of AJAX.	2 M

PART-B
Answer the following. Each question carries TEN Marks.   5x10=50M

11.A).   Construct a HTML Document for Bank Registration Page.   10M

OR

11. B).   Design the static web page that display a marks table with three rows and four columns as shown below: 10M

Marks1	Marks2	Marks3	Total
55	66	87	208
96	85	88	269

12. A).   What are the advantages of using CSS and Explain How to include CSS in the webpage?   10M

OR

12. B).   List and explain the Font and Text element properties and values used CSS.   10M

13. A).   List and explain in detail about various java script objects?   10M

OR

13. B).   Write a java script to validate a form consisting of a hall ticket number as username and mobile number as password. Also navigate to another web page after validation.   10M

(P.T.O..)

14. A). Explain the various types of XML schema data types and their applications. 10M

OR

14. B). What is DOM? Draw the detailed DOM objects structure. Explain its usage. 10M

15. A). Explain about AJAX Web Application Model with Example. 10M

OR

15. B). What is Ajax? Explain with an example, how is Ajax different form traditional web applications. 10M

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