

H.T No:

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**R18**

Course Code: A30516



**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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H.T No:

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R18

Course Code: A30007



**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  $L(t \sin 3t)$  5M  
 ii) Find  $L^{-1}\left\{\frac{3s-2}{s^2-4s+20}\right\}$  5M

OR

13. B). Using Laplace transform, solve  $(D^2 + 1)x = t \cos 2t$ , 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 Variance of  $X$ . 5M

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  
 $f(x) = \begin{cases} kx^2; & \text{for } 0 < x < 1 \\ 0; & \text{elsewhere} \end{cases}$ , then find 'k' and probability that the random variable takes on a value between  $\frac{1}{4}$  and  $\frac{3}{4}$ .

OR

14. B). i) A discrete random variable  $X$  has the mean 6 and variance 2. If the distribution is binomial, find the probability that  $5 \leq X \leq 7$  5M  
 ii) In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the mean and the standard deviation of the distribution. 5M

15. A). i) A sample of 400 items is taken from a population whose S.D is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval for the population. 5M  
 ii) Random samples of 400 men and 600 women were asked whether they would like to 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. 5M

OR

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

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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H.T No:

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**R18**

Course Code: A30513



**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 organizing a page table. 5M  
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 replacement algorithms which determine the page to be removed in case of full memory. 10M

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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      |
| <b>OR</b>  |          |
| 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      |
| <b>OR</b>  |          |
| 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      |
| <b>OR</b>  |          |
| 13. B). i) Develop a java program to count number of words, lines and characters in a given file.<br>ii) Develop a java program to create thread using Thread class. | 5M<br>5M |
| 14. A). Explain JDBC driver types in detail.   | 10M      |
| <b>OR</b>  |          |
| 14. B). Explain ArrayList and HashTable with suitable example.   | 10M      |
| 15. A). i) List Event Classes and Event Listeners.<br>ii) Explain various mouse events.  | 5M<br>5M |
| <b>OR</b>  |          |
| 15. B). Develop a java program to handle mouse events.   | 10M      |

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**R18**

Course Code: A30228



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**  
(UGC AUTONOMOUS)

B.Tech III Semester Regular & Supplementary Examinations Feb/March-2023

Course Name: **BASIC ELECTRICAL ENGINEERING**

(Common for CSM & AIM)

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

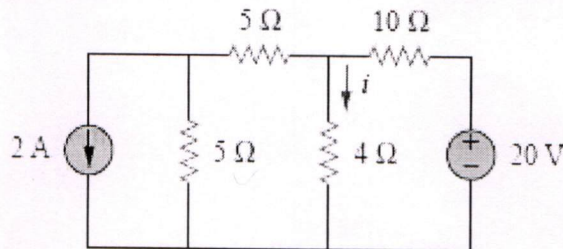
- |  |     |
|--|-----|
| 1. State Kirchhoff's voltage law.                                      | 2 M |
| 2. Mention the properties of inductor and capacitor.                   | 2 M |
| 3. Define phasor which represents a complex electrical quantity.       | 2 M |
| 4. Write the three voltage equations of a balanced three phase system. | 2 M |
| 5. Define Faraday's law of electro-magnetic induction.                 | 2 M |
| 6. Define efficiency of a DC generator.                                | 2 M |
| 7. What is an Ideal Transformer?                                       | 2 M |
| 8. List out different losses in a Transformers.                        | 2 M |
| 9. What are the types of three-phase Induction motors?                 | 2 M |
| 10. Classify different types of single-phase induction motors.         | 2 M |

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

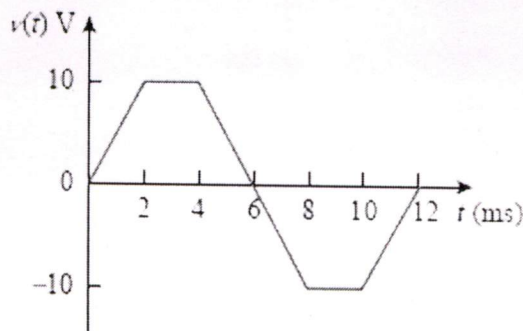
- 11.A). For the circuit shown below, use source transformation to find  $i$ . 10M



**OR**

11. B). State and explain the maximum power transfer theorem. 10M

12. A). Determine the effective value of the periodic waveforms shown below: 10M



(P.T.O..)

**OR**

12. B). Find the impedances, the total current and power factor of the following circuits. 10M  
i) Resistance R in series with inductance L.  
ii) Resistance R in series with capacitance C.

13. A). Explain with a neat sketch the constructional details of a DC Generator. 10M

**OR**

13. B). Explain the classification of dc generators with neat circuit diagrams. List few applications. 10M

14. A). Derive an EMF Equation of a Single-Phase Transformer. 10M

**OR**

14. B). Derive the condition for maximum efficiency of a single-phase transformer. 10M

15. A). Explain the Operating Principle of a three-phase induction motor, with neat circuit diagram. 10M

**OR**

15. B). Explain the construction and working of an alternator. 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 from traditional web applications. 10M

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