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R18

Course Code: A30007



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: NUMERICAL TECHNIQUES & PROBABILITY DISTRIBUTIONS
(Common for CE, ME, CSE, IT & CSC)

Date: 21.02.2023 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. Write down the condition for convergence of Newton Raphson Method for $f(x) = 0$. 2 M
2. Find the second degree polynomial through the points (0,2),(2,1),(1,0) using Lagrange's formula. 2 M
3. Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using Trapezoidal's rule. 2 M
4. What is the major drawback of Taylor's series method? 2 M
5. Find $L^{-1} \left[\frac{1}{(s+2)^2} \right]$. 2 M
6. State the first shifting theorem on Laplace transforms. 2 M
7. Test whether $f(x) = \begin{cases} |x|; & -1 \leq x \leq 1 \\ 0; & \text{otherwise} \end{cases}$ can be the probability density function of a continuous random variable. 2 M
8. If X and Y are two independent random variables with variances 2 and 3 find the variance of $3X+4Y$. 2 M
9. Define null hypothesis and alternative hypothesis. 2 M
10. What are the uses of 'F' - test? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Find the real root of the equation $\cos x = 3x - 1$ correct to four places of decimal using fixed point iteration method. 10M

OR

11. B). From the following table, of half-yearly premium for policies maturing at different ages, estimates the premium for policies maturing at age 46 and 63. 10M

Age	x:	45	50	55	60	65
Premium	y:	114.84	96.16	83.32	74.48	68.48

12. A). The velocities of a car running on a straight road at intervals of 2 minutes are given by 10M

Time(min)	0	2	4	6	8	10	12
Velocity(km/hr)	0	22	30	27	18	7	0

Using Simpson's $\frac{1}{3}$ rule find the distance covered by the car.

(P.T.O.)

OR

12. B). Using fourth order R-K method, Solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ with $y(0) = 1$ at $x = 0.2$ 10M

13. A). Apply the convolution theorem to find the inverse Laplace transform of the function $\frac{s^2}{(s^2+a^2)(s^2+b^2)}$. 10M

OR

13. B). Solve $(D^2 + 3D + 2)y = e^{-t}$, given that $y' = y = 0$, when $t = 0$. 10M

14. A). If the density function of continuous random variables X is given by 10M

$$f(x) = \begin{cases} ax, & 0 \leq x \leq 1 \\ a, & 1 \leq x \leq 2 \\ 3a - ax, & 2 \leq x \leq 3 \\ 0, & \text{elsewhere} \end{cases}$$

(i) Find the value of 'a'

(ii) Find the Cumulative Distribution Function of X

(iii) Compute $P[X \leq 1.5]$

OR

14. B). Six dice are thrown 729 times. How many times do you expect at least three dice to show a five or six? 10M

15. A). In a large city A, 20% of a random sample of 900 school boys had a slight physical defect. In another large city B, 18.5% of a random sample of 1600 school boys had the same defect. Is the difference between the proportions significant? (To calculate at 5% level of significance). 10M

OR

15. B). The theory predicts the proportion of beans in the 4 groups A, B, C and D should be 9:3:3:1. In an experiment among 1600 beans, the numbers in the 4 groups were 882, 313, 287 and 118. Does the experimental result support the theory? (To calculate at 5% level of significance). 10M

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Course Code: A36203



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: **CYBER SECURITY**

(CSC)

Date: 23.02.2023 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. Enlist the layers of security. 2 M
2. Differentiate Vulnerability, Threat. 2 M
3. Identify the role of international law with respect to Cyber Forensics. 2 M
4. List out the phases of digital forensics Lifecycle. 2 M
5. Relate the security Challenges Posed by Mobile Devices. 2 M
6. Conclude the security Implications for Organizations. 2 M
7. Assess the cost of Cybercrimes in organizational perspective. 2 M
8. Interpret security risks associated with social media marketing. 2 M
9. How intellectual property is related to cyberspace? 2 M
10. Identify various data Privacy Attacks. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Recall and give the details of all active attacks, passive attacks. 10M

OR
11. B). Explain the concept of cyber terrorism. 10M
12. A). Analyze and explain "The Indian Cyberspace". 10M

OR
12. B). Identify the special techniques for forensics auditing. Give details. 10M
13. A). Assess the different trends in Mobility. 10M

OR
13. B). Compile organizational security policies and Measures in Mobile Computing Era. 10M
14. A). Interpret the web threats for organizations. 10M

OR
14. B). Show how social computing is associated with challenges for organizations. 10M
15. A). Identify, explain the ethical dimension of cybercrimes. 10M

OR
15. B). Discuss privacy issues in medical domain. 10M

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Course Code: A30516



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: OPERATING SYSTEMS

(Common for CSC & CSM)

Date: 25.02.2023 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. What are Operating-System Services? 2 M
2. Draw the Layered structure of Operating system. 2 M
3. Define a thread. 2 M
4. What are the various operations performed on processes? 2 M
5. What is Process Synchronization? 2 M
6. What is Counting semaphore? 2 M
7. List the disadvantages of single contiguous memory allocation. 2 M
8. Differentiate between Logical and Physical address space. 2 M
9. Explain the bit vector representation of free space management. 2 M
10. Write the usage of read and write system calls. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Explain in detail about services provided by Operating System. 10M

OR

11. B). What is the purpose of system call? List out various types of system calls? 10M

12. A). Consider the following processes with the length of the CPU burst given in milliseconds. Calculate the Average Waiting Time and Average Turnaround Time for i) Non-preemptive SJF ii) Preemptive SJF 10M

Process	Arrival Time	Burst Time
1	0	8
2	1	4
3	2	9
4	3	5

OR

12. B). Discuss about various scheduling criteria for CPU Scheduling. 10M

13. A). What are the major activities of an operating system in regard to process management? Explain. 10M

OR

13. B). What is the need for synchronization? How is process synchronization achieved? 10M

(P.T.O..)

14. A). Discuss Segmentation in detail with hardware implementation and compare it with paging. 10M

OR

14. B). Compute the number page faults for optimal page replacement strategy for the given reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8, 9,5,4,5,4,2 with 4 page frames. 10M

15. A). List out the various methods for free-space management and explain them in detail. 10M

OR

15. B). Explain free space management techniques in detail. 10M

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Course Code: A30228



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: **BASIC ELECTRICAL ENGINEERING**

(Common for CSE, IT & CSC)

Date: 28.02.2023 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. Define Resistance. 2 M
2. State super position theorem. 2 M
3. What is power? 2 M
4. What is the relation between phase and line voltage in star connection? 2 M
5. What is commutator? 2 M
6. What are the losses in DC Machine? 2 M
7. List the applications of Transformer. 2 M
8. What is ideal and practical transformers? 2 M
9. What is slip of an induction motor? 2 M
10. Why is the stator core of Alternator laminated? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Draw and explain the V-I Relations for passive elements 10M
OR
11. B). State and prove the super position theorem. 10M
12. A). Define Average value, RMS value, Peak value and Form factor. 10M
OR
12. B). Derive voltage and current response for series RL circuit. 10M
13. A). Classify the losses in DC Generator and explain them. 10M
OR
13. B). Write the applications of DC Motor. 10M
14. A). Explain the construction and working principle of single phase Transformer. 10M
OR
14. B). In a 25-kVA, 2000/200 V, single-phase transformer, the iron and full-load cop per losses are 350W and 400 W respectively. Calculate the efficiency at unity power factor on full load. 10M
15. A). Describe the constructional details of three phase slip ring induction motor. 10M
OR
15. B). Explain the Torque slip characteristics of induction motor. 10M

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Course Code: A30473



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: **IMAGE PROCESSING**

(Common for CSE, IT, CSC & CSM)

Date: 04.03.2023 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. List the basic steps involved in image processing. 2 M
2. Mention the properties of 2D DFT. 2 M
3. List the uses histogram for the image enhancement. 2 M
4. What is the difference between spatial and frequency domains in filtering. 2 M
5. What is an order statistics filter? List the different statistics filters. 2 M
6. Mention the Possible classification of restoration methods. 2 M
7. Define opening and closing operation. 2 M
8. Explain Region oriented segmentation. 2 M
9. List and define different redundancies. 2 M
10. Compare Lossless and Lossy compression. 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). With a neat block diagram, explain the components of image processing system. 10M
- OR**
11. B). Determine Hadamard matrix for N=4. 10M

12. A). Perform histogram equalization of the 5x5 image whose data is shown in Table shown below. 10M

Gray level	0	1	2	3	4	5	6	7
Number of pixels	0	0	0	6	14	5	0	0

OR

12. B). Explain the smoothing of images in frequency domain using: 10M
i) Ideal high pass filter and ii) Butterworth high pass filter.

13. A). Explain in brief, the inverse filtering approach and its limitations. 10M

OR

13. B). Write a short note on Weiner filtering and inverse filtering. 10M

(P.T.O..)

14. A). Discuss in detail the hit or miss Transformation method. 10M

OR

14. B). What are the derivative operators useful in image segmentation? Explain their role in segmentation? 10M

15. A). With neat diagram, explain transform based compression method. 10M

OR

15. B). Derive the code for string "went." Comprising characters with probability of e = 0.3, n = 0.3, t = 0.2, w = 0.1, . = 0.1 using Arithmetic coding. 10M

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Course Code: A30514



CMR COLLEGE OF ENGINEERING & TECHNOLOGY
(UGC AUTONOMOUS)

B.Tech IV Semester Supplementary Examinations Feb/March-2023

Course Name: **COMPUTER NETWORKS**

(CSC)

Date: 08.03.2023 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. What is network software? 2 M
2. What is the advantage of coaxial cable compare to twisted wire? 2 M
3. What the advantages are of slotted ALOHA over ALOHA? 2 M
4. What are collision free protocols? 2 M
5. What is tunneling in Internetworking? 2 M
6. What is Flooding algorithm? 2 M
7. Draw the header format of TCP. 2 M
8. What are the advantages of multiplexing in transport layer? 2 M
9. What is the use of HTML in application layer? 2 M
10. What are different fields in HTTP header format? 2 M

PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss TCP/IP reference model. 10M
- OR**
11. B). Explain briefly guided transmission media. 10M
12. A). Describe Go-Back-N and selective repeat protocol. 10M
- OR**
12. B). Explain wireless LANs along with advantages compare to wired LAN. 10M
13. A). Discuss Hierarchical routing and distance vector routing. 10M
- OR**
13. B). Explain the quality of service in network layer. 10M
14. A). Discuss addressing, connection establishment and connection release in transport protocol elements. 10M
- OR**
14. B). Explain UDP in transport layer. 10M
15. A). Explain the concept of electronic mail in application layer. 10M
- OR**
15. B). Describe the DNS protocol in application layer. 10M
