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**R18**

Course Code: C30166



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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: **BUSINESS ETHICS & CORPORATE GOVERNANCE**

(Common for EEE, ECE, CSE, IT, CSC, CSM, CSD, AID & AIM)

Date: 07.08.2023 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. Can business ethics be taught and trained? 2 M
2. Write in short about moral development. 2 M
3. Ethics in HRM. 2 M
4. Ethics of health care services. 2 M
5. Cyber space. 2 M
6. Ethical dimensions of cyber crimes. 2 M
7. Does good governance really matters to corporations? 2 M
8. Write in short about Board committees. 2 M
9. Corporate risk. 2 M
10. Effective corporate governance frame work. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss the five myths about business ethics. 10M
- OR**
- 11.B). Explain the kohlberg's study and carol Gilligan's theory. 10M
- 12.A). Explain the ethics of finance and accounting professionals. 10M
- OR**
- 12.B). Elaborate the concept of ethics of media marketing and ethical dilemma. 10M
- 13.A). Discuss the social, political issues in the cyber space. 10M
- OR**
- 13.B). Discuss mindset and skills of hackers and other criminals. 10M
- 14.A). Explain the corporate governance in India-board structures. 10M
- OR**
- 14.B). Explain the process and evaluation of corporate governance. 10M
- 15.A). Discuss role of corporate governance in managing the risks. 10M
- OR**
- 15.B). Explain the internal auditing's role in corporate governance. 10M

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R18

Course Code: A30378



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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: WASTE TO ENERGY

(Common for EEE, ECE, CSE, CSD & AID)

Date: 07.08.2023 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. Explain different types of MSW. 2 M
2. Define incinerator. 2 M
3. Define Syngas. 2 M
4. Explain about process of pyrolysis. 2 M
5. Classify various types of gasifiers. 2 M
6. Explain about Updraft gasifiers. 2 M
7. Explain about Biomass Stove. 2 M
8. Briefly discuss various types of Combustors. 2 M
9. List out applications of biogas plants. 2 M
10. Explain briefly about Bio-Chemical Conversion. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss briefly about Agro based waste. 10M
- OR**
11. B). Explain various types of digestors for waste management briefly. 10M
12. A). Explain the manufacturing process of pyrolytic oils briefly. 10M
- OR**
12. B). Discuss Slow and Fast Pyrolysis methods. 10M
13. A). Draw Gasifier engine arrangement for production of Electric power and explain the methodology. 10M
- OR**
13. B). Explain the design, construction and operation of fluidized bed gasifier. 10M
14. A). Explain Design, Construction and Operation of Fixed bed combustor. 10M
- OR**
14. B). Explain the Design, Construction and Operation of Fluidized bed combustor with neat sketches. 10M
15. A). Discuss briefly about Biomass conversion processes. 10M
- OR**
15. B). Explain the operation of Inclined grate combustors. 10M

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**R18**

Course Code: A30557



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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: **WEB PROGRAMMING**

(Common for EEE, ME, ECE, CSD & AID)

Date: 07.08.2023 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 preserve white space in XHTML? 2 M
2. What is use of tag? 2 M
3. What are <div> and <span> tags? 2 M
4. What is an internal CSS? 2 M
5. Define instance of operator in Javascript. 2 M
6. What is the use of <noscript> tag? 2 M
7. What is XSLT? 2 M
8. Write the differences between XML and HTML. 2 M
9. What is Ajax? 2 M
10. Explain alert(), confirm() and prompt() methods of window object. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). What is a form? Explain form components with example. 10M
- OR**
11. B). Differentiate XHTML and HTML. 10M
12. A). Explain the basic table tags with the different attributes. 10M
- OR**
12. B). What are Design issues of CSS? Explain in detail. 10M
13. A). Explain various datatypes used in Javascript. 10M
- OR**
13. B). i) Explain about Javascript operators. 5M  
ii) Write a Javascript to find factorial of a given number. 5M
14. A). What do you mean by XML namespace? Explain in detail. 10M
- OR**
14. B). What is DTD? Explain internal DTD and external DTD. 10M
15. A). Explain about Ajax features. 10M
- OR**
15. B). Explain about the Dojo Toolkit and XMLHttpRequest object. 10M

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R18

Course Code: A30473



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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: **IMAGE PROCESSING**

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

Date: 07.08.2023 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 meant by sampling and quantization in an image?                                  | 2 M |
| 2. Find the 2D-DCT of the matrix $f(m, n) = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ . | 2 M |
| 3. What do you mean by point processing?  | 2 M |
| 4. Define spatial filtering.  | 2 M |
| 5. Draw the block diagram of degradation model and write the equation for it.               | 2 M |
| 6. What is meant by point spreading function in image degradation?                          | 2 M |
| 7. Why Laplacian of gaussian edge detector is preferred than other edge detectors?          | 2 M |
| 8. What is a hit-or-miss transform?   | 2 M |
| 9. What is the need for image compression?  | 2 M |
| 10. Mention the classification of image compression methods.                                | 2 M |

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- |   |     |
|---|-----|
| 11.A). Explain various neighbors, adjacency and distance measure between the pixels.  | 10M |
| <b>OR</b>   |     |
| 11. B). i) Mention the different properties of 2D-DFT.Explain any two of them.  | 6M  |
| ii) Compute the Hadamard Transform matrix for N=4.  | 4M  |
| 12. A). Justify the statement "Median filter is an effective tool to minimize salt-and -pepper noise" with suitable example | 10M |
| <b>OR</b>   |     |
| 12. B). i) Discuss about ideal high pass and Butter worth HPF.  | 6M  |
| ii) What is meant by image sharpening? Mention its types.   | 4M  |
| 13. A). Explain inverse filter used in image restoration. Mention its drawbacks.  | 10M |
| <b>OR</b>   |     |
| 13. B). Explain the iterative method of image restoration. Mention its advantages.  | 10M |
| 14. A). i) Explain about thresholding technique in image segmentation.  | 5M  |
| ii) Explain how regions are growing in region-based segmentation.   | 5M  |
| <b>OR</b>   |     |
| 14. B). i) Write the algorithms for Dilation and Erosion operations in image morphology.                                    | 5M  |
| ii) Mention the properties of opening and closing operations in image morphology.   | 5M  |

(P.T.O.)

15. A). A source emits four symbols {a, b, c, d} with the probabilities {0.4,0.2,0.1,0.3}. Construct arithmetic coding and decode the word 'DAD'. 10M

**OR**

15. B). Explain lossy predictive coding with suitable example. 10M

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R18

Course Code: A37302



## CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(UGC AUTONOMOUS)

B.Tech IV Semester Regular Examinations August-2023

Course Name: MATHEMATICS FOR MACHINE LEARNING

(Common for AID & AIM)

Date: 09.08.2023 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 Rank of a Matrix?                     | 2 M |
| 2.  | Define Manhattan Norm.                        | 2 M |
| 3.  | What do you mean by Eigenspace?               | 2 M |
| 4.  | Give an example of Taylor Series.             | 2 M |
| 5.  | Compare global minimum and local minimum.     | 2 M |
| 6.  | Write about Feature Map.                      | 2 M |
| 7.  | What is Marginal Likelihood?                  | 2 M |
| 8.  | Discuss about Principal Subspace computation. | 2 M |
| 9.  | What is the use of mixture model?             | 2 M |
| 10. | What is soft margin SVM?                      | 2 M |

### PART-B

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Discuss solving systems of linear equations and give an example for calculating an Inverse Matrix by Gaussian Elimination. 10M

OR

11. B). Compute the distance between 10M

$$\mathbf{x} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \quad \mathbf{y} = \begin{bmatrix} -1 \\ -1 \\ 0 \end{bmatrix}$$

using

a.  $\langle \mathbf{x}, \mathbf{y} \rangle := \mathbf{x}^\top \mathbf{y}$

b.  $\langle \mathbf{x}, \mathbf{y} \rangle := \mathbf{x}^\top \mathbf{A} \mathbf{y}$ ,  $\mathbf{A} := \begin{bmatrix} 2 & 1 & 0 \\ 1 & 3 & -1 \\ 0 & -1 & 2 \end{bmatrix}$

12. A). Write down the steps for computing singular value decomposition and find SVD of 10M

$$\mathbf{A} = \begin{bmatrix} 3 & 2 & 2 \\ 2 & 3 & -2 \end{bmatrix}.$$

OR

12. B). Discuss about backpropagation and automatic differentiation. 10M

(P.T.O..)

13. A). What is Gradient Descent? Compare and contrast Gradient Descent with Momentum and Stochastic Gradient Descent. 10M

**OR**

13. B). Explain how Regularization can be applied to reduce Overfitting problem using an example? 10M

14. A). Why do we need Maximum Likelihood estimation? Describe a geometric interpretation of Maximum Likelihood estimation as Orthogonal Projection. 10M

**OR**

14. B). Illustrate and discuss the key steps of PCA in practice and its applications. 10M

15. A). Explain EM algorithm for estimating the parameters of a GMM in detail. 10M

**OR**

15. B). What do you mean a kernel? Explain different kernel types with suitable examples in SVM. 10M

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**R18**

Course Code: A30511



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

B.Tech IV Semester Regular & Supplementary Examinations August-2023

Course Name: **DESIGN & ANALYSIS OF ALGORITHMS**

(Common for CSE, IT, CSM, AID & AIM)

Date: 11.08.2023 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 can we measure an algorithm's running time? 2 M
2. Define O-notation? Give one Example. 2 M
3. Find an optimal solution to the knapsack instance n=4 objects and the capacity of knapsack m=15, profits (10, 5, 7, 11) and weight are (3, 4, 3, 5). 2 M
4. State the Job – Sequencing Deadline Problem? 2 M
5. Give problem statement of graph coloring. 2 M
6. State the difference between FIFO and LC Branch and Bound algorithms. 2 M
7. Differentiate between breadth first search and Depth first search. 2 M
8. Give the problem statement of Prim's method and write Time complexity of Prim's Algorithm? 2 M
9. Differentiate between P and NP Classes. 2 M
10. Define NP Hard. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Using iteration method. 10M
- i) Solve  $T(n)=2T(n/2)+2$  if  $n>2$   
 $=1$  if  $n=2$
- ii) Solve  $T(n)=2T(\sqrt{n})+\log n$
- OR**
11. B). Solve using Masters theorem: 10M
- i)  $T(n)=2T(n/4)+n$
- ii)  $T(n)=7T(n/2)+n^2$
12. A). Construct the Huffman tree & resulting code word for the following set of values? Encode the words DAD & ADD. 10M

Character	A	B	C	D	--
Probability	0.35	0.1	0.2	0.2	0.15

**OR**

12. B). Let the dimensions of A,B,C,D respectively be 10X5, 5X15, 15X8, 8X20 generate matrix product chains that produces minimum number of matrix multiplications using dynamic programming. 10M

(P.T.O..)

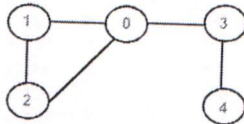


13. A). Write an algorithm to determine the Hamiltonian cycle in a graph using backtracking. 10M

OR

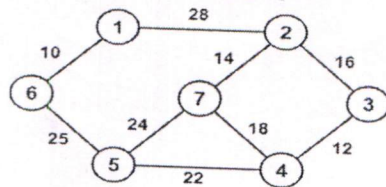
13. B). Explain the FIFO BB 0/1 Knapsack problem procedure with the knapsack instance for  $n=4$ ,  $m=15$ ,  $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ ,  $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$ . Draw the portion of the state space tree and find optimal solution. 10M

14. A). Consider the following graph. If there is ever a decision between multiple neighbor nodes in the BFS or DFS algorithms, assume we always choose the letter closest to the beginning of the alphabet first. In what order will the nodes be visited using a Breadth First Search and Depth First Search with start vertex as 0? 10M



OR

14. B). Write down Kruskal's Algorithm for finding the Minimum Spanning Tree of a connected graph. Execute your algorithm on the following graph. 10M



15. A). i) Define NP- Hard and NP – Complete Problems. 5M  
 ii) What are the steps used to show a given problem is NP-Complete? 5M

OR

15. B). i) Explain Satisfiability problem 5M  
 ii) Explain min-max Search with suitable example. 5M

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H.T No:

**R18**

Course Code: A37303



**CMR COLLEGE OF ENGINEERING & TECHNOLOGY**

(UGC AUTONOMOUS)

B.Tech IV Semester Regular Examinations August-2023

Course Name: ARTIFICIAL INTELLIGENCE

(Common for AID & AIM)

Date: 14.08.2023 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 four approaches of Artificial Intelligence 2 M
2. State incompleteness theorem. 2 M
3. Define Problem Formulation. 2 M
4. What is local beam search? 2 M
5. List out types of local search for CSP. 2 M
6. Define min-max algorithm. 2 M
7. Recall propositional logic. 2 M
8. State forward chaining 2 M
9. List out the components of well defined problem. 2 M
10. Define conditional probability. 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

5x10=50M

- 11.A). Elaborate the history of Artificial Intelligence. 10M
- OR**
11. B). Illustrate in detail about the structure of agents. 10M
12. A). Discuss in detail about uniformed search strategies. 10M
- OR**
12. B). Explain the local beam search in detail with an example. 10M
13. A). Evaluate how to solve constraints satisfaction problem with local search algorithm. 10M
- OR**
13. B). Evaluate how to achieve optimal decisions in multiplayer games. 10M
14. A). Analyze the process of constructing a knowledge-base in first-order logic. 10M
- OR**
14. B). Analyze the working of agents based on propositional logic in detail. 10M
15. A). Implement the algorithm for planning with state space search. 10M
- OR**
15. B). Apply the model of Bayesian networks in artificial intelligence. 10M

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R18

Course Code: A30228



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

B.Tech IV Semester Regular/Supplementary Examinations August-2023

Course Name: BASIC ELECTRICAL ENGINEERING

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

Date: 16.08.2023 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

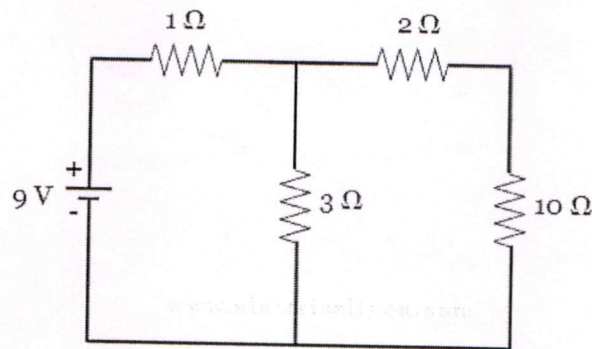
1. Define KVL. 2 M
2. Two resistors of 5 and 10 ohms are connected in parallel. Find the equivalent resistance. 2 M
3. The phase difference between voltage and current in a pure capacitor is \_\_\_\_\_. 2 M
4. Define peak factor. 2 M
5. Name the different types of DC motors. 2 M
6. What is the DC generator principle? 2 M
7. Define transformation ratio. 2 M
8. What is the purpose of using breather in transformer? 2 M
9. Draw the torque slip characteristics of 3-phase induction motor. 2 M
10. A 4 pole 50 Hz induction motor is running at 1400 rpm. What is the synchronous speed and slip? 2 M

**PART-B**

Answer the following. Each question carries TEN Marks.

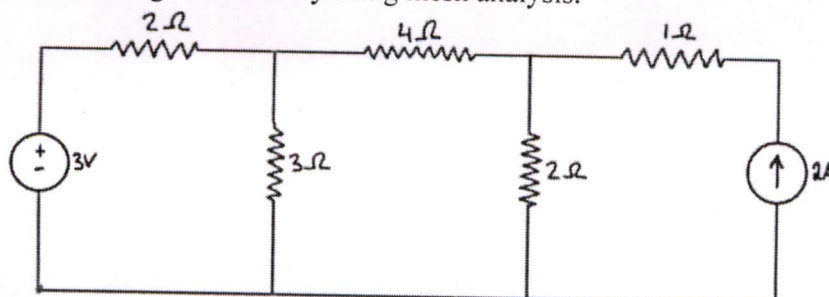
5x10=50M

- 11.A). Solve the given circuit to find the current through  $10\ \Omega$  using Thevenin's Theorem. 10M



**OR**

11. B). Find the current through resistors by using mesh analysis. 10M



(P.T.O..)



12. A). Derive the relation between phase and line quantities in case of three phase delta connected system. 10M

**OR**

12. B). Derive the RMS and average value of alternating quantity. 10M

13. A). Explain the construction of DC machine. 10M

**OR**

13. B). Derive the EMF equation of DC generator. 10M

14. A). A 400 kVA transformer has a primary winding resistance of 0.5 ohm and a secondary winding resistance of 0.001 ohm. The iron loss is 2.5 Kw and the primary and secondary voltages are 5 kV and 320 V respectively. If the power factor of the load is 0.85, determine the efficiency of the transformer (i) on full load and (ii) on half load. 10M

**OR**

14. B). Explain the operation and principle of single phase transformer. 10M

15. A). Explain the construction of three phase induction motor. 10M

**OR**

15. B). Explain capacitor start and run induction motor and shaded pole induction motor. 10M

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