

Hall Ticket Number :									
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<b>R-20</b>
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**Code: 20A370T**

IV B.Tech. I Semester Regular Examinations November 2023

**Total Quality Management**  
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

- |   |     |     |
|---|-----|-----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M ) | CO  | BL  |
| a) What is the relationship between 'quality' and 'price'?                | CO1 | BL1 |
| b) What is meant by Quality council?                                      | CO2 | BL1 |
| c) What is meant by Customer retention?                                   | CO3 | BL2 |
| d) How Benchmarking is considered in Quality management?                  | CO4 | BL1 |
| e) How Quality auditing is done?  | CO5 | BL1 |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

- |  | Marks | CO  | BL  |
|--|-------|-----|-----|
| <b>UNIT-I</b>  |       |     |     |
| 2. Explain the basic concepts of Quality management.                                     | 12M   | CO1 | BL4 |
| <b>OR</b>  |       |     |     |
| 3. What are Quality costs? Explain the various techniques of Quality costs.              | 12M   | CO1 | BL5 |
| <b>UNIT-II</b>   |       |     |     |
| 4. Discuss the importance of strategic planning in TQM.                                  | 12M   | CO2 | BL4 |
| <b>OR</b>  |       |     |     |
| 5. Describe the Barriers of TQM Implementation in detail.                                | 12M   | CO2 | BL5 |
| <b>UNIT-III</b>  |       |     |     |
| 6. What is meant by 'Quality Management'? Discuss the components of 'Quality Management' | 12M   | CO3 | BL4 |
| <b>OR</b>  |       |     |     |
| 7. Explain the seven basic principles of Quality Management.                             | 12M   | CO3 | BL4 |
| <b>UNIT-IV</b>   |       |     |     |
| 8. Explain in detail about 'Quality function deployment,                                 | 12M   | CO4 | BL5 |
| <b>OR</b>  |       |     |     |
| 9. Explain the various stages of FMEA process.   | 12M   | CO4 | BL5 |
| <b>UNIT-V</b>  |       |     |     |
| 10. Discuss the significance of ISO 9000: 2000 Quality System in Quality Management.     | 12M   | CO5 | BL4 |
| <b>OR</b>  |       |     |     |
| 11. Describe the Requirements and Benefits of Quality control systems.                   | 12M   | CO5 | BL4 |

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<b>R-20</b>
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**Code: 20A37ET**

IV B.Tech. I Semester Regular Examinations November 2023

**Non-Conventional Sources of Energy**

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two marks**.

3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

**(Compulsory question)**

- |   |     |    |
|---|-----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M ) | CO  | BL |
| a) Explain the term conversion effectiveness.                             | CO1 | L1 |
| b) List the various losses in a flat plate collector.                     | CO2 | L1 |
| c) Write down the advantages and limitations of the Wind power energy.    | CO3 | L1 |
| d) Discuss the principle of operation of geothermal system.               | CO4 | L1 |
| e) Explain the principle of direct energy conversion.                     | CO5 | L1 |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

**UNIT-I**

- |  |    |   |   |
|--|----|---|---|
| 2. a) Derive the expression for total radiation on an inclined surface. Show that a horizontal surface receives no ground-reflected radiation. | 6M | 1 | 2 |
| b) Define solar constant. What is its standard value   | 6M | 1 | 1 |

**OR**

- |   |    |   |   |
|---|----|---|---|
| 3. a) Define the following:<br>i) Latitude ii) Declination angle iii) Surface azimuth angle iv) Hour angle v) Zenith angle. | 6M | 1 | 1 |
| b) Write short notes on spectral distribution of extra-terrestrial radiation  | 6M | 1 | 2 |

**UNIT-II**

- |   |    |   |   |
|---|----|---|---|
| 4. a) Explain with classification the working of flat plate and concentrating solar collectors with the neat diagrams | 6M | 2 | 1 |
| b) Explain briefly the parameters affecting the performance of flat plate collectors.                                 | 6M | 2 | 1 |

**OR**

5. a) Describe solar pond for solar energy collection and storage. 6M 2 2
- b) With the neat diagram explain the working of the solar photovoltaic conversion system. Draw I-V characteristics. 6M 2 2

**UNIT-III**

6. a) Classify the wind energy systems and explain their working with neat sketch. 6M 3 1
- b) Explain, how do you calculate the wind power? 6M 3 1

**OR**

7. a) Discuss the various factors affecting the performance of digesters and with the sketch explain the working of Updraught, Downdraught and Cross draught gasifiers. 6M 3 1
- b) Discuss about Betz limit. 6M 3 1

**UNIT-IV**

8. a) Define Lamberts law. Explain the working of high-level reservoir machine and dolphin type machine. 6M 4 2
- b) Describe in detail the double basin system with the neat sketch. 6M 4 2

**OR**

9. a) Explain how ocean tides are generated and how the power can be tapped? Discuss the limitations of this method. 6M 4 1
- b) Describe the single basin arrangement in tidal power generation. 6M 4 1

**UNIT-V**

10. a) Define the following: Seebeck, Peltier and Joule Thomson effects. 6M 5 1
- b) Distinguish between Fuel cell and a Battery 6M 5 2

**OR**

11. a) Describe the working principle of operation of MHD generator with neat diagram 6M 5 1
- b) Discuss the advantages, disadvantages, and applications of Fuel Cells? 6M 5 1

\*\*\* End \*\*\*

Hall Ticket Number :														
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<b>R-20</b>
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**Code: 20A37AT**

IV B.Tech. I Semester Regular Examinations November 2023

**Operations Research**  
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

- |   |    |    |
|---|----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M )     | CO | BL |
| a) Show unboundedness for LPP using graphical method.                         | 1  | L2 |
| b) What are the differences between Transportation model and Assignment model | 2  | L1 |
| c) Briefly explain Two-persons Zero-sum game.                                 | 3  | L1 |
| d) What is Monte Carlo simulation technique                                   | 4  | L1 |
| e) State Bellman's Principle of optimality.                                   | 5  | L1 |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

<b>UNIT-I</b>
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2. A small manufacturer employs 5 skilled men and 10 semi-skilled men and makes an article in two qualities, a deluxe model and ordinary model. The making of a deluxe model requires 2 hours work by a skilled man and 2 hours work by a semi-skilled man. The ordinary model requires 1 hour work by a skilled man 3 hours work by a semi-skilled man. By union rules no man can work more than 8 hours per day. The manufacturer's clear profit of deluxe model is Rs 10/- and the ordinary model Rs 8/-. Formulate and solve by using graphical method to find maximum profit.
- 12M 1 L3

**OR**

3. Solve the following problem using Big-M method:
- Maximize  $Z = 4X_1 + 5X_2 + 2X_3$   
Subjected to  $2X_1 + X_2 + X_3 = 10$ ,  
 $X_1 + 3X_2 + X_3 = 12$   
 $X_1 + X_2 + X_3 = 6$ ,  
 $X_1, X_2, X_3 \geq 0$
- 12M 1 L3

<b>UNIT-II</b>
----------------

4. A product is produced by 4 factories A, B, C and D. The unit production costs in them are Rs 2, Rs 3, Re 1 and Rs 5 respectively. Their production capacities are: Factory A – 50 units, B – 70 units, C – 30 units and D – 50 units. These factories supply the product to 4 stores, demands of which are 25, 35, 105 and 20 units respectively. Unit transport cost in rupees from each factory to each store is given in the table below:

		stores			
		1	2	3	4
Factories	A	2	4	6	11
	B	10	8	7	5
	C	13	3	9	12
	D	4	6	8	3

Determine the extent of deliveries from each of the factories to each of the stores so that the total production and transportation cost is minimum.

12M 2 L3

**OR**

5. A salesman wants to visit cities 1, 2, 3 and 4. He does not want to visit any city twice before completing the tour of all the cities and wishes to return to his home city, the starting station. Cost of going from one city to another in rupees is given in table. Find the least cost route.

		To City			
		1	2	3	4
From City	1	-	30	80	50
	2	40	-	140	30
	3	40	50	-	20
	4	70	80	130	-

12M 2 L3

<b>UNIT-III</b>
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6. The following mortality rates have been observed for a certain type of light bulbs:

Week	1	2	3	4	5
% of failure by week end	10	25	50	80	100

There are 1000 bulbs in use and it costs Rs 2 to replace an individual bulb which has burnt out. If all bulbs were replaced simultaneously, it would cost 50 paise per bulb. It is proposed to replace all the bulbs at fixed intervals, whether or not they have burnt out, and to continue replacing burnt out bulbs as they fail. At what intervals should all the bulbs be replaced?

12M 3 L3

OR

7. Solve the following 2 X 4 game by graphical method. Given matrix is pay off matrix of player A.

		Player B			
		1	2	3	4
Player A	1	3	3	4	0
	2	5	4	3	7

12M 3 L3

## UNIT-IV

8. A repair shop attended by a single mechanic has an average of 4 customers per hour who bring small appliances for repair. The mechanic inspects them for defects and quite often can fix them right away or otherwise render a diagnosis. This takes him 6 minutes on the average. Arrivals are Poisson and service time has the exponential distribution.

i. Find the proportion of time during which the shop is empty.

ii. Find the probability of finding at least one customer in the shop.

iii. The average number of customers in the system.

iv. The average time, including service, spent by a customer.

12M 4 L3

9. The arrival of customers and service times of customers are having the following distribution. Simulate this queueing system for 10 periods by using the following random numbers and calculate mean waiting time and mean queue length.

Inter arrival time (min)	Probability	Service time (min)	Probability
5	0.15	7	0.10
6	0.35	8	0.35
7	0.40	9	0.45
8	0.10	10	0.10

Random numbers for arrival: 36, 60, 82, 14, 14, 62, 62, 10, 55, 14

Random numbers for service: 34, 35, 31, 62, 48, 73, 88, 70, 19, 40.

12M 4 L3

## UNIT-V

10. The demand for a product is 2400 units over 360 days. The storage cost is 0.06% of the unit cost of the product and the ordering cost is Rs 35000/-. Find the optimal order quantity if the price breaks are as follows:

Quantity	Unit Cost
0 $q < 1000$	Rs 1000/-
1000 $q < 4000$	Rs 925/-
4000 $q$	Rs 850/-

12M 5 L3

OR

11. Use dynamic programming to solve the following LPP:

Maximize  $Z = 3X_1 + 5X_2$ ,

Subject to  $X_1 \leq 4$ ,  $X_2 \leq 6$   $3X_1 + 2X_2 \leq 18$

$X_1, X_2 \geq 0$

12M 5 L3

\*\*\* End \*\*\*

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<b>R-20</b>
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**Code: 20A37IT**

IV B.Tech. I Semester Regular Examinations November 2023

**Power Plant Engineering**  
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

**(Compulsory question)**

- |  |     |    |
|--|-----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M )            | CO  | BL |
| a) Write the different types of fuels used in the Thermal Power Plant.               | CO1 | L2 |
| b) Why cooling Towers are necessary in Thermal Power Plant?                          | CO2 | L2 |
| c) Explain Internal Combustion Engine  | CO3 | L2 |
| d) Examine the necessity of Nuclear power plant in India to make a Developed Nation. | CO4 | L4 |
| e) What do you mean by Pollution and Pollution Standard                              | CO5 | L2 |

**PART-B**

**Answer five questions by choosing one question from each unit ( 5 x 12 = 60 Marks )**

- |   | Marks | CO  | BL |
|---|-------|-----|----|
| <b>UNIT-I</b>   |       |     |    |
| 2. Explain Different type of Coal Handling systems of Thermal Power Plant.                  | 12M   | CO1 | L2 |
| <b>OR</b>   |       |     |    |
| 3. Coal is an important Fossil Fuel, Justify the Coal Storage System.                       | 12M   | CO1 | L3 |
| <b>UNIT-II</b>  |       |     |    |
| 4. Differentiate overfeed and underfeed fuel beds with it advantages.                       | 12M   | CO2 | L2 |
| <b>OR</b>   |       |     |    |
| 5. Illustrate the Spreader Stokers with its functional parameters.                          | 12M   | CO2 | L3 |
| <b>UNIT-III</b>   |       |     |    |
| 6. Describe the Plant lay out and functions of the components of diesel power plant.        | 12M   | CO3 | L2 |
| <b>OR</b>   |       |     |    |
| 7. Derive the Principles of working of open cycle gas turbine with diagram.                 | 12M   | CO3 | L4 |
| <b>UNIT-IV</b>  |       |     |    |
| 8. Explain with diagram typical layouts of Hydro Electric Power Plant.                      | 12M   | CO4 | L2 |
| <b>OR</b>   |       |     |    |
| 9. Illustrate breeding and fertile materials in context to Nuclear Power Plant.             | 12M   | CO4 | L3 |
| <b>UNIT-V</b>   |       |     |    |
| 10. Differentiate Vertical Axis Wind Turbine (VAWT) and Horizontal Axis Wind Turbine (HAWT) | 12M   | CO5 | L2 |
| <b>OR</b>   |       |     |    |
| 11. a) Examine and comments in your words necessity about power plant economics.            | 6M    | CO5 | L4 |
| b) Define the following i) Maximum demand ii) Average Load iii) Load factor.                | 6M    | CO5 | L2 |

\*\*\* End \*\*\*

Hall Ticket Number :

R-20

Code: 20A27MT

IV B.Tech. I Semester Regular Examinations November 2023

**Smart Grid**

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. In Part-A, each question carries **Two marks**.

3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

- |   |     |    |
|---|-----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M ) | CO  | BL |
| a) What is smart metering   | CO1 | 2  |
| b) What is the function of PMU?   | CO2 | 1  |
| c) Mention the applications of micro grid                                 | CO3 | 3  |
| d) List the types of electrical energy storage systems                    | CO4 | 1  |
| e) What is meant by neighborhood area network?                            | CO5 | 2  |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

- |  | Marks | CO  | BL |
|--|-------|-----|----|
| <b>UNIT-I</b>  |       |     |    |
| 2. a) Briefly explain the Evolution of Electric Grid                                     | 6M    | CO1 | 2  |
| b) Write the Need of Smart Grid  | 6M    | CO1 | 1  |
| <b>OR</b>  |       |     |    |
| 3. a) Give the comparison between conventional and smart grid.                           | 6M    | CO1 | 4  |
| b) Explain about the various components of smart meter.                                  | 6M    | CO1 | 2  |
| <b>UNIT-II</b>   |       |     |    |
| 4. a) What is GIS? Discuss how it is useful in smart grid.                               | 6M    | CO2 | 2  |
| b) Mention the applications of IED's in protection.                                      | 6M    | CO2 | 1  |
| <b>OR</b>  |       |     |    |
| 5. Write short note on<br>(i) Phasor measuring unit (ii) Smart storage                   | 12M   | CO2 | 2  |
| <b>UNIT-III</b>  |       |     |    |
| 6. a) Write a short note on plastic solar cells.   | 6M    | CO3 | 2  |
| b) Explain the concept on micro grid.  | 6M    | CO3 | 2  |
| <b>OR</b>  |       |     |    |
| 7. a) Explain about the control of micro grid.   | 6M    | CO3 | 2  |
| b) Discuss about the fuel cell technology.   | 6M    | CO3 | 4  |
| <b>UNIT-IV</b>   |       |     |    |
| 8. Give the technical comparison between various electrical energy storage technologies. | 12M   | CO4 | 4  |
| <b>OR</b>  |       |     |    |
| 9. Write short note on<br>(i) Double layer capacitor (ii) Thermal storage systems        | 12M   | CO4 | 2  |
| <b>UNIT-V</b>  |       |     |    |
| 10. a) Discuss about Neighborhood area network   | 6M    | CO5 | 2  |
| b) Explain the concept of cloud computing for smart grid.                                | 6M    | CO5 | 2  |
| <b>OR</b>  |       |     |    |
| 11. Explain in detail about the communication technologies in smart grid.                | 12M   | CO5 | 2  |

\*\*\* End \*\*\*



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<b>R-20</b>
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**Code: 20A37MT**

IV B.Tech. I Semester Regular Examinations November 2023

**Additive Manufacturing**  
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

- |  |    |    |
|--|----|----|
| 1. Answer <b>all</b> the following short answer questions ( 5 X 2 = 10M )                                    | CO | BL |
| a) State the advantages of rapid prototyping over conventional prototyping                                   | 1  | 2  |
| b) "Stereolithography requires support structures, whereas Selective laser sintering does not" Explain why"? | 2  | 4  |
| c) Provide examples of industries and applications where SLS has found significant utility                   | 3  | 2  |
| d) What is the role of scanner in Reverse Engineering  | 4  | 1  |
| e) State the common pre-processing errors in RP technologies   | 5  | 1  |

**PART-B**

Answer **five** questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

**UNIT-I**

- |   |    |   |   |
|---|----|---|---|
| 2. a) What are various processes used for rapid prototyping? Explain any two of them in brief                   | 6M | 1 | 1 |
| b) Differentiate between Additive Manufacturing and Subtractive Manufacturing. Explain when do you choose what. | 6M | 1 | 3 |

**OR**

- |   |    |   |   |
|---|----|---|---|
| 3. a) What is the importance of reduction of the time to market? Present your analysis how rapid prototyping helps in this aspect | 6M | 1 | 4 |
| b) "Additive manufacturing reduces the weight of the component" Analyse the process and justify the statement                     | 6M | 1 | 4 |

**UNIT-II**

- |  |     |   |   |
|--|-----|---|---|
| 4. Explain Solid Ground Curing Process with a neat sketch along with merits, demerits and applications | 12M | 2 | 2 |
|--|-----|---|---|

**OR**

- |   |     |   |   |
|---|-----|---|---|
| 5. Explain the process of producing components by Fusion Deposition Modelling with a neat sketch. Compare various filament materials based on strength, melting temperatures etc. | 12M | 2 | 2 |
|---|-----|---|---|

**UNIT-III**

- |  |    |   |   |
|--|----|---|---|
| 6. a) Explain the fundamental principle and step-by-step process of Selective Laser Sintering (SLS). | 6M | 3 | 2 |
|--|----|---|---|

- b) Discuss the advantages of SLS, particularly in terms of material choices, design complexity, and production speed. Also, analyze the limitations and challenges associated with SLS technology. 6M 3 2

**OR**

7. a) Assess the advantages of EBM technology in terms of material properties, speed, and precision. Also, discuss the limitations and challenges that EBM users may encounter in their applications 6M 3 4
- b) Describe the core principle and the step-by-step process of Laser Engineered Net Shaping (LENS), highlighting the unique features that differentiate it from other AM methods, 6M 3 2

**UNIT-IV**

8. a) Define direct and indirect tooling methods in the context of rapid tooling. Discuss the scenarios in which each approach is most suitable and the implications for manufacturing. 6M 4 3
- b) Differentiate between soft and hard tooling methods in rapid tooling. Describe the materials and processes associated with each method, and discuss when one is preferable over the other 6M 4 2

**OR**

9. a) Define reverse engineering and explain its importance in various industries. Discuss how RE is applied in product development and improvement. 6M 4 2
- b) Describe the role of point processing in reverse engineering, including the capture and manipulation of data points. Furthermore, explain how this data is used to develop geometric models for applications in product design and analysis. 6M 4 2

**UNIT-V**

10. a) Explain the common processing errors that can arise during specific RP technologies like SLA and SLS. Detail the factors contributing to these errors and their effects on the final prototype. 6M 5 2
- b) Discuss the challenges associated with post-processing errors in RP. Provide examples and explain how addressing these errors is essential for producing accurate and functional prototypes 6M 5 2

**OR**

11. a) Discuss the application of RP techniques in planning, Explain how RP technology can streamline the planning process and lead to better outcomes. 6M 5 2
- b) Evaluate the advantages of using RP techniques in rapid tooling. Describe the role of RP in tool and mold development 6M 5 2

\*\*\* End \*\*\*

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**R-20 (SS)**

**Code: 20A363T**

IV B.Tech. I Semester Regular Examinations November 2023

**CAD/CAM**

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. In Part-A, each question carries **Two marks**.  
3. Answer **ALL** the questions in **Part-A** and **Part-B**

**PART-A**

(Compulsory question)

1. Answer all the following short answer questions ( 5 X 2 = 10M )
- |  |     |     |
|--|-----|-----|
|  | CO  | BL  |
| a) Write any two reasons for implementing CAD.                               | CO1 | BL1 |
| b) Define Geometric Modeling.  | CO2 | BL2 |
| c) What are M03, M30 codes stands for in NC Programming?                     | CO3 | BL2 |
| d) State the need of Group Technology?                                       | CO4 | BL2 |
| e) Mention the difference between contact and noncontact inspection methods? | CO5 | BL2 |

**PART-B**

Answer *five* questions by choosing one question from each unit ( 5 x 12 = 60 Marks )

Marks CO BL

**UNIT-I**

2. a) Briefly explain the conventional process of the product cycle in conventional manufacturing environment. 8M CO1 BL2  
b) Write short notes on i) Stroke writing ii) Raster Scan 4M CO1 BL2

**OR**

3. What is meant by Concatenation Matrix? Demonstrate how translation; scaling and rotation operations can be performed simultaneously on a graphic element using Concatenation Matrix. 12M CO1 BL3

**UNIT-II**

4. a) Differentiate between solid modeling and surface modelling methods. 6M CO2 BL2  
b) With the help of neat sketches, describe the most commonly used solid entities. 6M CO2 BL3

**OR**

5. a) What do you mean by blending function? Explain reparameterization of a surface. 6M CO2 BL3
- b) Why the sweep representations are useful in creating solid models of 2D objects? 6M CO2 BL3

<b>UNIT-III</b>
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6. a) List and give the meaning of any five G and M codes functions. 6M CO3 BL2
- b) Explain the principle of CNC system with a block diagram. 6M CO3 BL2

**OR**

7. a) Write the procedure for writing computer assisted part programming? 6M CO3 BL2
- b) Discuss any two types of statements used in APT part programming 6M CO3 BL3

<b>UNIT-IV</b>
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8. a) What are the main objectives of MRP (Manufacturing Resource Planning)? Explain them briefly. 6M CO4 BL3
- b) Write a short note on Retrieval type and Generative type of CAPP. 6M CO4 BL2

**OR**

9. a) Discuss how part classification is done in the context of GT. What are the essential attributes such a coding system should take care of? 6M CO4 BL2
- b) Elaborate briefly the MICLASS system of codification. 6M CO4 BL2

<b>UNIT-V</b>
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10. Describe any two methods of non-contact type of computer aided testing. 12M CO5 BL3

**OR**

11. a) Mention the objectives of CAQC. Explain the different computer aided inspection methods. 6M CO5 BL2
- b) Summarize the enterprise resource planning and capacity requirements planning? 6M CO5 BL3

\*\*\* End \*\*\*