Hall Ticket Number :										

R-17

Code: 7G674

IV B.Tech. I Semester Supplementary Examinations May/June 2022

Disaster Management

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Define disaster and list out the important perceptions on disasters.	7M	CO1	L1
	b)	Explain the various hazards affecting the environment.	7M	CO1	L2
		OR			
2.	a)	Explain the relationship between hazard, disaster and vulnerability in detail.	7M	CO1	L2
	b)	Explain the risk factors of disaster.	7M	CO1	L2
		UNIT–II			
3.	a)	Explain in detail about the Tsunami.	7M	CO2	L2
	b)	Explain in detail about the Earthquakes.	7M	CO2	L2
		OR			
4.	a)	Differentiate between Natural Disasters and Manmade Disasters.	7M	CO2	L2
	b)	List a few major natural disasters that occurred in India.	7M	CO2	L1
		UNIT–III			
5.	a)	Explain in detail about the impacts of disaster on ecology.	7M	CO3	L2
	b)	List the impacts of human-induced disasters.	7M	CO3	L1
		OR			
6.	a)	Explain in detail about disaster impacts on psycho social environment.	7M	CO3	L2
	b)	Describe the trends in disaster management.	7M	CO3	L2
		UNIT–IV			
7.	a)	Discuss major issues involved in disaster preparedness.	7M	CO4	L3
	b)	Describe the different steps in relief distribution in disaster management.	7M	CO4	L2
		OR			
8.	a)	Describe structural and non-structural mitigation measures in disaster management.	7M	CO4	L2
	b)	Describe the important phases of disaster cycle.	7M	CO4	L2
		UNIT–V			
9.	a)	Discuss the environmental impacts of land use changes and urbanization	7M	CO5	L3
	b)	Explain the use of quick reconstruction technologies.	7M	CO5	L2
		OR			
10.	a)	Explain the factors to be considered while planning the rebuilding works after a major disaster due to earthquake.	7M	CO5	L2
	b)	Define sustainable development an what are the challenges of sustainable development in India	7M	CO5	L1

END

Hall Ticket Number :										

R-17

Code: 7G573

IV B.Tech. I Semester Supplementary Examinations May/June 2022

Finite Element Methods

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	Blooms Level
	UNIT-I			
1.	Derive the stress and equilibrium equations considering three dimensional elemental volume.	14M	CO1	L6
	OR			
2.	Consider the thin (steel) plate shown in Figure 1.. The plate has a uniform thickness t=12mm, Young's modulus $E=20x10^9 N/m^2$. a) Using the elimination approach, solve for the global displacement vector b) Evaluate the stresses in each element. c) Determine the reaction force at the support.			

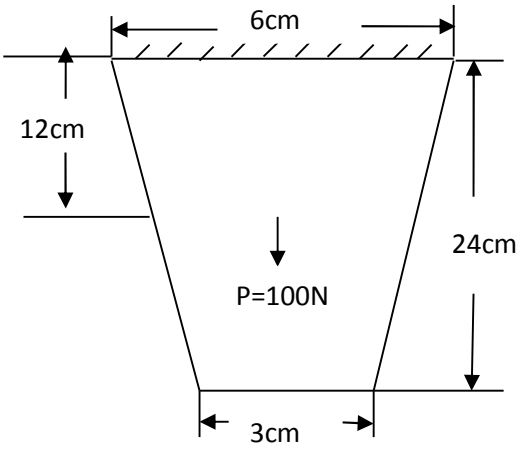

Figure 1

		14M	CO2	L3
	UNIT-II			
3.	For the two-bar truss shown in Figure 2, determine the displacements at node 1 and stress in element 1-3.			

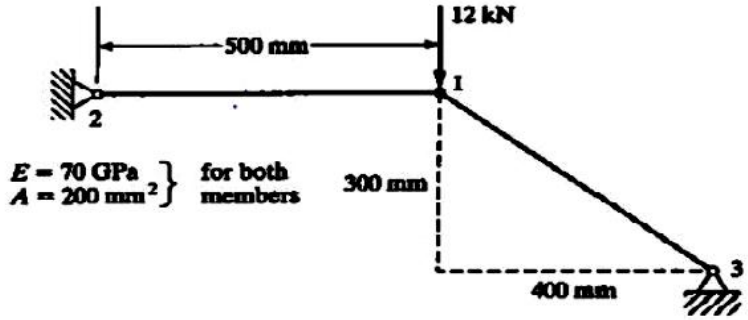

Figure 2

		14M	CO3	L3
	OR			

4. Derive the Element stiffness matrix for a Beam Element. 14M CO3 L6

UNIT-III

5. For the plane stress element shown in Figure 3, Evaluate stiffness matrix. Assume E = $210x10^3 N/mm^2$, Poisson's ratio= 0.25, thickness= 10 mm.

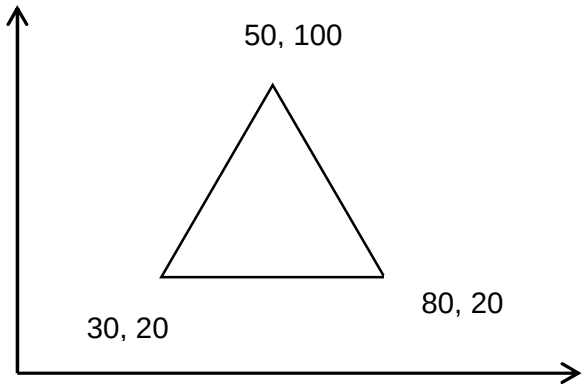

Figure 3 14M CO4 L3

OR

6. Derive the strain-displacement matrix of an axi-symmetric constant strain triangular element. 14M CO4 L6

UNIT-IV

7. a) Define Isoparametric element. 4M CO5 L2

   b) Using the Gaussian quadrature method evaluate the following integral and compare the results with the exact solution. $\int_{-1}^{+1}(6x - x^2)\,dx$ 10M CO5 L3

OR

8. A steel fin of diameter d=2cm, Length (L)= 5cm and thermal conductivity K=50W/m-$^{\circ}$C is exposed at one end to a constant temperature of 320^0C. The other end is in ambient air of temperature 20^0C with a convection co-efficient of h= $100W/m^2$ - $^{\circ}$C. Determine the temperature at the midpoint of the fin. 14M CO5 L3

UNIT-V

9. Determine the Eigen values and Eigen vectors of the bar shown in Figure 4. Take E=200 GPa, ρ = 2800 kg/m3, A=0.258 m2, and L=0.4 m.

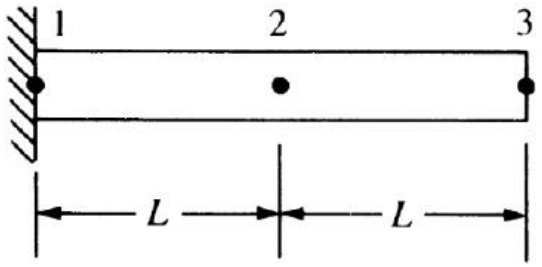

Figure 4 14M CO6 L3

OR

10. Derive the finite element equation for 1-dimensional fluid flow. 14M CO6 L6

****END****

Hall Ticket Number :										

R-17

Code: 7GA71

IV B.Tech. I Semester Supplementary Examinations May/June 2022

Human Resource Management

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Discuss various evolutionary phases outlining the specific characteristics of each phase in shaping the development of human resource management.	7M	1	1
	b)	Elucidate any three competitive challenges influencing human resource management.	7M	1,3	2
		OR			
2.	a)	Consider you are starting a new company. Being a human resource specialist, write in detail how would you set up an HR Department. Give focus to details of the various processes involved.	7M	1,4	5
	b)	Distinguish between managerial and competitive challenges influencing human resource management.	7M	1,4	3
		UNIT–II			
3.	a)	Explain various barriers to human resource planning.	7M	2,3	3
	b)	Define job analysis, job description and job specification. Analyze the job role of a project manager.	7M	1,3	4
		OR			
4.	a)	Paristo is a start-up E-commerce company which was incorporated recently with a vision of reaching 100 Crore turnover in the first 5 years. As a HR Manager, explain the steps involved in preparing human resource planning for the first five years to meet the 100 Crore turnover target.	7M	3,5	6
	b)	Present the factors that affect the job design.	7M	3,4	4
		UNIT–III			
5.	a)	Discuss the different types of recruitment practices followed in an organization?	7M	1,4	4
	b)	Compare any two selection tests and identify a better selection test for a sales person job considering the problem of bias in the selection tests.	7M	3,4	5
		OR			

6.	a)	Orienting employees to their workplaces and their jobs is one of the most neglected functions in many organizations. What happens when orientation to new employees is not carried effectively?	7M	4,5	6
	b)	What do you mean by social media recruiting? Evaluate the effectiveness of recruitment process through social media.	7M	4,5	5

UNIT–IV

7.	a)	Training like any other human resource function, should be evaluated to determine its effectiveness". Present various ways to evaluate training.	7M	3,4	5
	b)	Present various career stages for a job role of your choice in IT sector.	7M	1,4	5

OR

8.	a)	You are the HR Manager of the Zoyato company, which is a BPO. You have recently recruited HR trainees for the company. Carefully device Training plan for the new trainees.	7M	3,5	6
	b)	Compare the advantages and disadvantages of training.	7M	3,4	4

UNIT–V

9.	a)	As a HR Manager of an IT company device a suitable performance appraisal system considering the latest trends in IT industry.	7M	4,5	6
	b)	Define Collective bargaining process. Present any one case on collective bargaining.	7M	2,15	5

OR

10.	a)	Contrast any three performance appraisal methods and suggest a suitable appraisal method for a frontline service employees of ITC hotel.	7M	1,5	4
	b)	Explain how rewards increases employee motivation and performance.	7M	2,5	5

****END****

Hall Ticket Number :										

R-17

Code: 7G571

IV B.Tech. I Semester Supplementary Examinations May/June 2022

Operations Research

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	Blooms Level
	UNIT–I			
1. a)	Explain the characteristics and phases of Operations research	4M	1	2
b)	Solve the following Linear Programming Problem by graphical method. Maximize $Z=3X_1+5X_2$ Subject to the conditions $X_1 \le 4$ $2X_2 \le 12$ $3X_1 + 2X_2 \le 18$ and $X_1, X_2 \ge 0$	10M	1	3
	OR			
2.	Analyze the following LPP by Big M method. Maximize $Z=2X_1+3X_2$ Subject to the conditions $X_1 + X_2 \ge 2$; $X_1 + 2X_2 \le 8$; $X_1, X_2 \ge 0$	14M	1	4
	UNIT–II			
3.	Find the optimum transportation cost	14M	2	5

	D_1	D_2	D_3	D_4	Supply
S_1	5	2	4	3	22
S_2	4	8	1	6	15
S_3	4	6	7	5	8
Demand	7	12	17	9	

OR

4. Solve the assignment problem (allocate Jobs to the Persons) for minimum total cost — 14M, 2, 5

Persons ▼ **Jobs►**	**J1**	**J2**	**J3**	**J4**
A	**20**	**25**	**22**	**28**
B	**15**	**18**	**23**	**17**
C	**19**	**17**	**21**	**24**
D	**25**	**23**	**24**	**24**

UNIT–III

5. The following table represents the payoff matrix with respect to player A. Solve it optimally using dominance property. — 14M, 3, 4

	Player B				
Player A	4	6	5	10	6
	7	8	5	9	10
	8	9	11	10	9
	6	4	10	6	4

OR

6. For a particular type of light bulb, the following failure rates have been observed:

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

There are 1000 bulbs in use, and it costs Rs. 2 to replace an individual bulb that has burnt out. If all the bulbs were replaced simultaneously, it would cost 50ps per bulb. It is proposed to replace all the bulbs at fixed intervals, whether they have burnt out or not and to continue replacing burnt out bulbs as they fail. When should all the bulbs be replaced? 14M 4 5

UNIT–IV

7. In a railway marshalling yard, goods trains arrive at a rate of 30 per day. Assuming that the service time is 36 min. calculate (i) Average number of trains in system, (ii) probability that the queue size exceeds 10, (iii) Expected waiting time in queue. (iv) Average time a customer spends in the system 14M 5 5

OR

8. a) What is simulation? 4M 6 2

   b) Explain the phases, advantages, and disadvantages of simulations 10M 6 2

UNIT–V

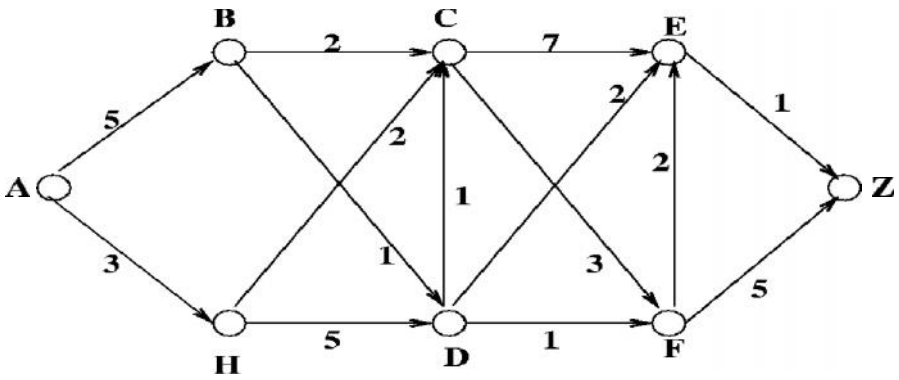
9. Minicomputer Company purchases a component for which it has a steady usage of 1,000 Units per year. The ordering cost is Rs 50/- per order. The estimated cost of money invested in inventory is 25 percent per year. The unit cost of the component is Rs 40/-. Calculate the optimal ordering policy and total cost of the inventory system, including purchase cost of the components. If, the component supplier agrees to offer price discounts of minimum lot supplies as per schedule given, reassess the decision on the optimal ordering policy and the total cost as before.

Lot size (Units)	Price per unit
up to 149	Rs 40
150 – 499	Rs 39
500 or more	Rs 38

14M 8 5

OR

10. Find shortest path using Dynamic Programming.



14M 7 5

END

Hall Ticket Number :										

R-17

Code: 7G572

IV B.Tech. I Semester Supplementary Examinations May/June 2022

Automobile Engineering

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Explain the salient differences between rear wheel drive and front wheel drive with respect to their functioning, advantages and disadvantages.	7M	1	2
	b)	Explain crank case ventilation and its types.	7M	1	2
		OR			
2.		Explain the working principle of Bendix drive with the help of a neat sketch.	14M	1	2
		UNIT–II			
3.		Explain the working of Common rail diesel injection with the help of a neat sketch.	14M	2	2
		OR			
4.		Summarize the merits and demerits of hydrogen, LPG and CNG as alternate fuels in automobiles.	14M	2	2
		UNIT–III			
5.		Explain the construction and working of multiple plate clutch with the help of a neat diagram.	14M	3	2
		OR			
6.	a)	Explain the construction and purpose of torque tube drive.	7M	3	2
	b)	Explain the construction and purpose of differential.	7M	3	2
		UNIT–IV			
7.	a)	Define combined angle, toe-in and center point steering.	7M	4	1
	b)	Explain Independent suspension system.	7M	4	2
		OR			
8.	a)	Explain the working of Mechanical brake system with the help of a neat sketch.	7M	4	2
	b)	Explain the working of Pneumatic brake system with the help of a neat sketch.	7M	4	2
		UNIT–V			
9.		Explain how Antilock braking system provides safety to an automobile.	14M	5	2
		OR			
10.		Explain air bag restraint system with the help of a neat sketch.	14M	5	2

END

Hall Ticket Number :										

R-17

Code: 7G574

IV B.Tech. I Semester Supplementary Examinations May / June 2022

CAD/CAM

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Discuss at least three input and output devices with neat sketches.	7M	CO1	L2
	b)	Classify various types of productions with their applications.	7M	CO1	L4
		OR			
2.	a)	Explain translation in context to 2D and 3D transformations.	7M	CO1	L1
	b)	Outline the raster scan graphics system.	7M	CO1	L4
		UNIT–II			
3.	a)	Summarize the method of representing a parametric form of a line	7M	CO2	L4
	b)	Tell about analytical curves and categorize them in detail.	7M	CO2	L1
		OR			
4.		Why do the analytical and synthetics curves need to be represented mathematically? Justify with an example.	14M	CO2	L4
		UNIT–III			
5.	a)	Interpret the advantages and disadvantages of numerical control machine tools	7M	CO3	L2
	b)	Paraphrase the two approaches used in adaptive control of machining system.	7M	CO3	L2
		OR			
6.	a)	Illustrate at least five functions of G and M Codes used in CNC programming.	4M	CO3	L4
	b)	Write a manual part programming for the part shown in figure 1(all dimensions are in mm).			

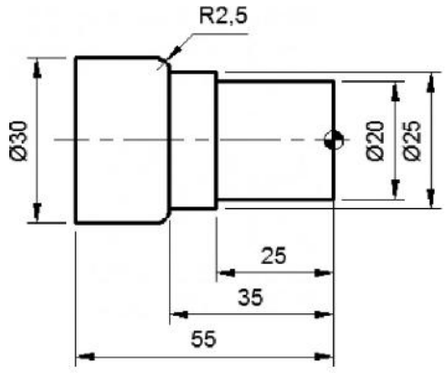

Figure 1 10M CO3 L1

		UNIT–IV			
7.	a)	Classify various CAPP processes and explain each of the processes in detail.	7M	CO4	L4
	b)	Explain various FMS layout configurations.	7M	CO4	L1
		OR			
8.	a)	Describe OPITZ coding system generally used in GT	4M	CO4	L2
	b)	Differentiate primary and secondary material handling systems and mention the advantages of Automated Guided Vehicle Systems (AGVS).	10M	CO4	L2
		UNIT–V			
9.	a)	Write a short note on MRP-I.	7M	CO5	L1
	b)	Classify various Contact and Non-contact inspection methods.	7M	CO5	L1
		OR			
10.	a)	Discuss at least one non-Contact type inspection method.	7M	CO5	L1
	b)	Explore the advantages and disadvantages of Computer Integrated Manufacturing Systems (CIMS).	7M	CO5	L2

****END****