AR18

CODE: 18HST404 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B. Tech II Semester Regular Examinations, June, 2022

MANAGERIAL ECONOMICS AND MANAGEMET SCIENCE

(Civil Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss the nature and scope of Managerial Economics	6M
	b)	Define demand? Explain the law of demand with diagram	6M
		(OR)	
2.	a)	Define Elasticity of Demand? Explain the different types of Elasticity of Demand	6M
	b)	Differentiate between Survey methods and Judgmental approach	6M

UNIT-II

3.	a)	Define Production Function? Explain the Production Function with diagram	6M
	b)	Discuss the various types of Isoquants with help of diagram	6M
		(OR)	
4.	a)	Define Break-Even Analysis? explain the Break-Even point with graph.	6M
	b)	What you understand by explicit and Implicit costs? Explain with real time examples	6M

UNIT-III

5.	a)	Define pricing Strategy? Explain the importance of pricing Strategies with real time examples	6M
	b)	Define market competition? Discuss the various types of market competitions	6M
		(OR)	
6.	a)	Differentiate between Perfect competition and Monopolistic competition	6M
	b)	What do you understand by Monopoly? Explain in your own wards with examples	6M

UNIT-IV

7.	a)	Explain the importance of Management	6M
	b)	Discuss the Two-Factor Theory of Motivation	6M
		(OR)	
8.	a)	Discuss the Social responsibilities of Management	6M
	b)	Explain the various Functions of Management	6M

UNIT-V

9.	a)	Define Marketing Strategies? Explain the important of Marketing Strategies with examples	6M
	b)	Write a note on Job Evaluation and Merit Rating with examples	6M
		(OR)	
10.	a)	Discuss the nature of Distribution Channels and explain the different types of Distribution Channels	6M
	b)	Explain the difference between HRM and PMIR	6M

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AR18

CODE: 18EEE451 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular Examinations, June, 2022

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	List out various advantages and disadvantages of Electric Drives over Mechanical Drives.	6M
	b)	Derive an expression for the cooling time constant of an electric machine? State the assumptions made?	6M

(OR)

2.	a)	A motor fitted with a flywheel supplies a load torque of 100 N-m for 20 seconds. During the no-load period, the flywheel regains its original speed. The motor torque is required to be limited to 500 N-m. Determine the moment of inertia of the flywheel. The no-load speed of the motor is 500 rpm and it has a slip of 10% on full load.	6M
	b)	What is heating time constant? Explain how the rating of a motor is affected by the temperature rise.	6M

UNIT-II

3.	a)	What is dielectric heating? Derive the mathematical expression of power consumed in such process. List the important applications of dielectric heating.	6M
	b)	Describe the construction and operation of coreless induction furnace. Mention advantages of coreless type furnace.	6M

(OR)

4.	a)	Why projection welding is considered superior to spot welding?	6M
	b)	What is the fundamental difference between electric arc welding and resistance welding? Give their merits and demerits.	6M

UNIT-III

5.	a)	Explain the working principle of fluorescent lamp. Demonstrate the construction and operation of the fluorescent lamp with neat diagram.	6M
	b)	An illumination on working plane of the 75 lux is required in room 72 m X 15 m in size. The lamps are required to be hung 4 m above the work bench. Assuming a suitable space height ratio, Utilization factor of 0.5, a lamp efficiency of 14 lumens per watt and candle power depreciation of 20%, estimate the number, rating and disposition of lamps.	6M

(OR)

6. a) What are the aims of flood lighting and how are they achieved. 6M
   b) Discuss inverse square law and Lambert's cosine law of illumination. 6M

UNIT-IV

7. a) List out the advantages and disadvantages of electrical traction systems over non electrical traction systems. 6M
   b) Develop an expression for the maximum speed of a trapezoidal speed-time curve. 6M

(OR)

8. a) Discuss the merits and demerits of the dc and single phase ac systems for the main and suburban line electrification of the railways. 6M
   b) A Schedule speed with a 200 tonne train on an electrical railway system with stations 777 meters a part is 27.3 kmph and the maximum speed is 20% higher than average running speed. The breaking rate is 3.22 kmphps and duration of stop is 20 sec. Find the acceleration required. Assume a simplified speed time curve with free running at the maximum speed. 6M

UNIT-V

9. a) Deduce the expressions for tractive effort for the propulsion of train up gradient. 6M
   b) A 40 tonne train starts a gradient 1 in 75 at the rate of 1.6 kmphps. The tractive resistance is 66.75 Newton per tonne and allowance for rotational inertia is 10%. 6M
   Calculate:
   a) The energy in kWh usually employed in attaining in a speed of 48 kmph from rest.
   b) The specific energy consumption Wh per tonne-km when running at a steady speed of 56 kmph up this gradient if the overall efficiency of equipment is 70%.

(OR)

10. a) Discuss various factors affecting specific energy consumption in the electrical traction 6M
    b) A 250 tonne train with 10% rotational inertia effect is started with uniform acceleration and reaches a speed of 50 kmph in 25 sec on level road. Find the specific energy consumption if the journey is to made according to a simplified trapezoidal speed-time curve, the acceleration is 2 kmphps, breaking retardation is 3 kmphps and the distance between the two stations is 2.4 km, efficiency of the motor is 0.9, track resistance is 5 kg/tonne. 6M

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AR18

CODE: 18MEE451 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular Examinations, June, 2022

AUTOMATION IN MANUFACTURING

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Now a day's most of the industries are automated. Justify the statement with suitable reasons.	4M
	b)	Explain the following terms w.r.t hydraulics (i)Accumulator, (ii)Reservoir, (iii)Actuator, (iv)Pressure relief valve	8M
		(OR)	
2.		Classify automation and distinguish between each of them.	12M

UNIT-II

3.	a)	Enlist various types of transfer lines and briefly explain about each	6M
	b)	Distinguish between synchronous and power-and-free transfer mechanisms	6M
		(OR)	
4.	a)	Briefly explain essence of buffer storage in flow lines of automated production systems	6M
	b)	With mathematical relations explain following terms (i) Line efficiency and (ii)Down time	6M

UNIT-III

5.	a)	Classify assembly systems based on physical configurations and explain any two with neat sketches	6M
	b)	Explain the terms (i) line balancing (ii) precedence constraints (iii) line balancing efficiency, (iv) Proportion Downtime	6M
		(OR)	
6.	a)	Explain about Ranked positional weights method of line balancing with assuming an example	6M
	b)	Briefly discuss about Largest-candidate rule method of line balancing.	6M

UNIT-IV

7.	a)	Discuss advantages and disadvantages of any five storage equipments with their applications.	6M
	b)	Name various AGV's used in material transport. Discuss AGV guidance methods.	6M
		(OR)	
8.	a)	Distinguish between Deep-lane and Unit load AS/RS.	6M
	b)	Discuss about the advantages of automated storage systems for work-in-process	6M

UNIT-V

9.	a)	Discuss the advantages, applications and limitations of machine vision.	6M
	b)	Distinguish between gantry and bridge type CMM machines.	6M
		(OR)	
10.	a)	Explain the term 'Muda' in lean manufacturing and state how it is implemented.	6M
	b)	With a graphical representation show the time line of agile manufacturing.	6M

AR18

CODE: 18ECE443 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech.II Semester Regular Examinations, June, 2022

GLOBAL POSITIONINGSYSTEM

(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain how the satellite positions and distance to each satellite are determined.	6M
	b)	Illustrtate the trilateration method to estimate GPS receiver position in 3D.	6M
		(OR)	
2.	a)	Draw the block diagram of GPS system architecture and explain its working principle	6M
	b)	Discuss about the Development ofNAVSTAR GPS in detail.	6M

UNIT-II

3.	a)	Describe C/A code and P-code Generations with block diagrams.	6M
	b)	Discuss about Signal structureof GPS.	6M
		(OR)	
4.	a)	Discuss briefly about User segment, Control segment and Space segment.	6M
	b)	Explain about Anti spoofingconcept in GPS.	6M

UNIT-III

5.	a)	Discuss about Geodetic and Geocentric coordinate systems.	6M
	b)	Discuss about world geodetic system (WGS84) in detail.	6M
		(OR)	
6.	a)	Illustrate about GPS time.	6M
	b)	Write the equation for conversions of Cartesian or ECEF coordinate to geodetic coordinate frame	6M

UNIT-IV

7.	a)	Discuss about various GPS orbitalparameters.	6M
	b)	Describe Receiver Independent Exchange format (RINEX) of GPS observation and navigation data	6M
		(OR)	
8.		Explain how the satellite position is determined using Navigation and observation data files	12M

UNIT-V

9.	a)	What is the significance of troposphere and satellite clock error in correcting the pseudorange.	6M
	b)	What is multipath Error? How do you minimize in GPS position estimation	6M
		(OR)	
10.	a)	Discuss about different sources of GPS errors.	6M
	b)	Define the tropospheric delay.	6M

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AR18

CODE: 18CSE452 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular Examinations, June,2022

AD-HOC AND SENSOR NETWORKS

(Common to CSE & IT)

Time: 3 Hours **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.		Describe the characteristics, requirements, and applications of Ad hoc networks	12M
		(OR)	
2.	a)	Explain in detail about the MANET architecture	6M
	b)	Explain the design challenges in ad hoc networks.	6M

UNIT-II

3.		Discuss about the issues and goals in designing of MAC protocol for ad hoc networks	12M
		(OR)	
4.		Classify MAC protocols for ad hoc network and present an overview of the same in detail	12M

UNIT-III

5.		Discuss in detail about table driven routing protocols (DSDV, WRP) in ad hoc networks	12M
		(OR)	
6.		Discuss in detail about on demand routing protocols (DSR, AODV) in ad hoc networks	12M

UNIT-IV

7.		Discuss in detail about the architecture of wireless Sensor networks	12M
		(OR)	
8.	a)	Present the issues and challenges in designing a sensor networks	6M
	b)	List and explain the applications of sensor networks.	6M

UNIT-V

9.		Present the overview of localization in wireless sensor networks	12M
		(OR)	
10.		Discuss about the parameters of coverage & exposure to improve the quality sensor networks.	12M

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AR16

CODE: 16HS4005 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, June, 2022

MANAGERIAL ECONOMIC AND MANAGEMENT SCIENCE

(Common to CSE & IT)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain the Nature & chief characteristics of Managerial Economics.	7M
	b)	Explain the determinants of Demand?	7M
		(OR)	
2.	a)	What do you understand by elasticity of demand? Explain how you measure elasticity of demand. What is its significance?	7M
	b)	What is demand? What are the types of demand?	7M

UNIT-II

3.	a)	Define Iso-Quants and Iso-costs. Explain them with diagrams.	7M
	b)	Briefly explain various economies & diseconomies of scale.	7M
		(OR)	
4.	a)	Briefly explain various cost concepts used in cost analysis.	7M
	b)	From the following information to calculate i) P/V ratio ii) BEP in units iii) BEP in rupees iv) MOS if actual sales are 12,000 units. Fixed cost 5,00,000/-, variable cost P/U 50/-, sales price P/U 100/-.	7M

UNIT-III

5.	a)	Define Markets? How differently are Markets classified? What are the important features in any Market structure?	7M
	b)	Differentiate between perfect & imperfect markets.	7M
		(OR)	
6.	a)	What are the objectives of pricing?	7M
	b)	Explain any four important methods of pricing?	7M

UNIT-IV

7.	a)	Discuss the main components of Theory of Scientific Management.	7M
	b)	Explain 14 principles of management.	7M
		(OR)	
8.	a)	Bring out the contrast between Theory-X and Theory-Y.	7M
	b)	Name and describe the various levels of management with their functions.	7M

UNIT-V

9.	a)	What is Human Resource Management? Is it different from personnel management and Industrial Relations (PMIR)?	7M
	b)	Briefly explain the concept of selection. What are the different techniques of selection followed by a Personnel Manager, while employing the personnel in an organization?	7M
		(OR)	
10.	a)	"Consumer is a king" comment on the statement of marketing functions.	7M
	b)	Explain clearly product life cycle.	7M

AR16

CODE: 16CE4033 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, June, 2022

TRANSPORTATION ENGINEERING-II

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Draw a neat sketch of permanent way and explain its component parts	7M
	b)	Describe a detailed note on various concrete sleepers stating various advantages and disadvantages	7M
		(OR)	
2.	a)	Define creep and mention various theories relating to creep	8M
	b)	State various requirements and functions of rails	6M

UNIT-II

3.	a)	Define super elevation and derive an expression for super elevation of a railway track	7M
	b)	Determine the length of the transition curve on a railway track on a broad gauge having a speed of 80kmph.	7M
		(OR)	
4.	a)	A five-degree curve diverges from a main curve of 4º in an opposite direction in the layout of a B.G. yard. If the speed on the main curve is restricted to 54.53 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cm	7M
	b)	Define gradient? Mention and define various gradients used on a railway track.	7M

UNIT-III

5.	a)	What is turnout? Draw a neat sketch of Left hand and explain its component parts	7M
	b)	Explain semaphore signal with neat sketch	7M
		(OR)	
6.	a)	Explain sub split switches and straight cut switches with neat sketch	7M
	b)	Explain absolute block system of signal operation with neat sketch.	7M

UNIT-IV

7.	a)	Explain various factors affecting selecting suitable for airport	7M
	b)	Wite a detailed note on various aircraft characteristics	7M
		(OR)	
8.	a)	Explain Type-I wind rose with neat sketch	7M
	b)	Mention various corrections applied to basic runway length	7M

UNIT-V

9.	a)	Define harbour. Mention classification of harbours according to various strategies	7M
	b)	Write a short note on a) ware houses b) transit sheds	7M
		(OR)	
10.	a)	Define dock. Explain in detail the principle of working of a dry dock	7M
	b)	Explain the basic working principle of Light house with a neat sketch	7M

AR16

CODE: 16EE4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, June, 2022

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss the terms 'continuous', 'intermittent' and 'variable' loads with examples.	7M
	b)	A delta connected 415 V, 50 H.P., 750 rpm. Squirrel cage motor takes a full load current of 55 A and has a full load slip of 4.5 percent. The impedance per phase is 2.5 ohms. Determine the starting torque and the starting current taken from the supply if the motor is started by i) D.O.L. starter; ii) Star – Delta starter; iii) An auto transformer starter with 70 % tapping	7M

(OR)

2.	a)	Derive an expression for the temperature rise of an electric machine? state the assumptions made ?	7M
	b)	What is mean by "Individual drive" and "Group drive" explains their relative merits and demerits?	7M

UNIT-II

3.	a)	Distinguish in detail between Direct Resistance heating and Indirect resistance heating.	7M
	b)	Explain the basic principle of Induction heating along with the characteristics	7M

(OR)

4.	a)	Describe with neat sketches various methods of resistance welding.	7M
	b)	Compare DC and AC welding sets.	7M

UNIT-III

5.	a)	State and Explain laws of illumination?	7M
	b)	What are various sources of light? Write short notes on incandescent lamps.	7M

(OR)

6.	a)	What are discharge lamps? Explain	7M
	b)	Four lamps 15 m apart are arranged to illuminate a corridor. Each lamp is suspended at a height of 8 m above the floor level. Each lamp gives 450 CP in all directions below the horizontal; find the illumination at the second and the third lamp.	7M

UNIT-IV

7.	a)	Write the requirements of Traction motors?	7M
	b)	Explain the Mechanics of train movement?	7M

(OR)

8.	a)	Derive the expression for crest speed, acceleration and retardation for Trapezoidal speed-time curves?	7M
	b)	The distance between two stops is 1.2 km. A schedule speed of 40 kmph is required to cover that distance. The stop is of 18-s duration. The values of the acceleration and retardation are 2 kmphps and 3 kmphps, respectively. Then, determine the maximum speed over the run. Assume a simplified trapezoidal speed–time curve.	7M

UNIT-V

9.	a)	The average distance between stops on a level section of a railway is 1.25 km. Motor-coach train weighing 200 tonne has a schedule speed of 30 km/h, the duration of stops being 30 seconds. The acceleration is 1.9 km/h/s and the braking retardation is 3.2 km/h/s. Train resistance to traction is 45 N/t. Allowance for rotational inertia is 10%. Calculate the specific energy output in Wh/t-km. Assume a trapezoidal speed/time curve	7M
	b)	Explain and derive the necessary relation for the Total Tractive effort for the propulsion of the train	7M

(OR)

10.	a)	What are the factors affecting specific energy consumption?	7M
	b)	Define the Dead Weight, Accelerating Weight, Adhesive weight, and Coefficient of adhesion:	7M

AR16

CODE: 16EC4035 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, June, 2022

WIRELESS COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss the evaluation of mobile radio communication system	7M
	b)	Compare Various wireless systems	7M
		(OR)	
2.	a)	Discuss the difference between Paging system and Cordless system.	7M
	b)	Consider a wired point-to-point network. List some performance measures.	7M

UNIT-II

3.	a)	Explain about CDMA	7M
	b)	Describe about OFDM	7M
		(OR)	
4.	a)	Explain power control algorithm	7M
	b)	Explain FDMA in detail	7M

UNIT-III

5.	a)	What is the difference between 3G and 4G?	7M
	b)	Discuss TDMA-based 2G standards	7M
		(OR)	
6.	a)	Write about Generations of wireless communication	7M
	b)	Write short notes on 3G Air interface technologies	7M

UNIT-IV

7.	a)	What are the different topologies in wireless local area networks	7M
	b)	Explain Wireless PANs	7M
		(OR)	
8.	a)	Explain the various fields in a IEEE 802.11 MAC frame.	7M
	b)	What are the advantages and disadvantages in wireless local area networks	7M

UNIT-V

9.	a)	Write a short notes on IEEE 802.15.4	7M
	b)	Write a short notes on IEEE 802.16	7M
		(OR)	
10.	a)	Discuss about Zigbee technology	7M
	b)	Explain RFID in detail.	7M

AR13

CODE: 13CE4031 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, June, 2022

FINITE ELEMENT METHODS

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Write the applications of FEM.
   b) Write any three assumptions in theory of elasticity problems.
   c) What is an interpolation function? Explain with an example.
   d) Distinguish between Area coordinates and volume coordinates.
   e) What is meant by element?
   f) Write the shape function for a two noded bar element.
   g) Define strain displacement relationship.
   h) Distinguish between CST & LST.
   i) Define Isoparametric elements.
   j) What are natural coordinates? Why numerical integration?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Write the advantages and disadvantages of FEM over Finite difference method 4M
   b) Find out deflection at centre of a simply supported beam of length (L) subjected to a concentrated load W. Use Rayleigh Ritz method. Take EI is constant. 8M

(OR)

3. a) Derive the equations of equilibrium in case of a three dimensional stress system. 6M
   b) Explain the terms 'Plane stress' and 'Plane strain' problems. Give constitutive laws for these cases. 6M

UNIT-II

4. Derive the general equation for determining the stiffness of an element with usual notations in the form 12M

$[k]_e = \iiint [B]^T[D][B]dV$ $[k]_e = \iiint [B]^T[D][B]dV$

(OR)

5. a) Derive the expression for shape function for a two noded bar element taking natural coordinate ς as varying from -1 to 1. 6M
   b) Distinguish between natural coordinate system, global coordinate system and local coordinate system. 6M

UNIT-III

6. Derive the stiffness matrix for a three noded constant strain triangle element 12M

(OR)

7. Develop a strain-displacement matrix for four noded rectangle element 12M

UNIT-IV

8. a) Explain the isoparametric elements and their advantages. 6M
   b) Using Lagrange polynomial find shape functions for Two noded bar element. Sketch the shape function. 6M

(OR)

9. Derive the shape functions for a 4 node rectangular element using serendipity method. 12M

UNIT-V

10. Explain the axisymmetric problem with suitable examples using FEM 12M

(OR)

11. Describe briefly about static condensation 12M

AR13

CODE: 13EE4029 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, June, 2022

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define the term "intermittent rating"?
   b) Define the term candle power?
   c) What is a polar curve?
   d) What are the applications of resistance welding?
   e) Define adhesive weight?
   f) What is meant by welding electrode?
   g) What is meant by dielectric heating?
   h) Define the term "short time rating"?
   i) What is meant by the term specific energy consumption?
   j) Define the term tractive effort?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. Derive expression for acceleration time of an electric drive under the condition constant motor and load torque. 12M

(OR)

3. Compare DC and AC drives. Discuss the advantage of electric drives. 12M

UNIT-II

4. Explain the principle of electric spot welding and seam welding. 12M

(OR)

5. Describe briefly the various types of arc welding process used in industry. 12M

UNIT-III

6. Derive the expressions for the illumination on a surface (i) when it is normal and (ii) when it is inclined to the axis of a beam of incident light. 12M

(OR)

7. Describe the construction and working of a filament lamp. 12M

UNIT-IV

8. Sketch the typical speed–time curves for (i) Main line service and (ii) Suburban service with electric traction. 12M

(OR)

9. An electric train is to have acceleration and braking retardation of 0.8 km/h/s and 3.2 km/h/s respectively. If the ratio of maximum to average speed is 1:3 and time for stops 26 sec. find schedule speed for a run of 1.5km. assume simplified trapezoidal speed – time curve. 12M

UNIT-V

10. What are the advantages and disadvantages of the D.C and 1-single phase A.C systems for the main and suburban line electrification of the railways? 12M

(OR)

11. 400 tonnes goods train is to be hauled by a locomotive up a gradient of 2% with acceleration of 1km/h/s. Coefficient of adhesion is 20%, track resistance 40 N/tonne and effective rotating masses 10% of the dead weight. Find the weight of the locomotive and number of axies if the axle load is not to increase beyond 22 tonnes. 12M

AR13

CODE: 13ME4033 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech II Semester Regular & Supplementary Examinations, June-2022

PRODUCTION PLANNING AND CONTROL
(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) What is job-order production?
   b) Define forecasting.
   c) What is capacity planning?
   d) What is meant by aggregate planning?
   e) Define inventory.
   f) What is MRP?
   g) What is flow-shop scheduling?
   h) Define loading.
   i) What is meant by dispatching?
   j) Define expediting.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the various functions of Production Planning and Control. **[8 M]**
   b) Describe any two types of production systems along with their characteristics. **[4 M]**

(OR)

3. a) Describe 'Exponential Smoothing Method' of sales forecasting. State its advantages and limitations. **[6 M]**
   b) The Super Snow paint shop has recorded the demand for a particular colour during the past six weeks as shown below – **[6 M]**

Week	Demand in Litre
First	19
Second	17
Third	22
Fourth	27
Fifth	29
Sixth	33

   i. Calculate a 3-week moving average for the data to forecast demand for the next week.
   ii. Calculate a weighted average forecast for the data, using a weight of 0.6 for the most recent data and weights of 0.3 and 0.1 for successive older data.

UNIT-II

4. a) Explain aggregate planning and its strategies. **[8 M]**
   b) What are the determinants of effective capacity? **[4 M]**

(OR)

5. a) What is Assembly Line Balancing? State its objectives. **[6 M]**
   b) Explain functions of Master Production Schedule. **[6 M]**

UNIT-III

6. a) Explain the various functions of inventories. **[4 M]**
   b) A television centre is a dealer of SAMSUNG TV sets. It has observed that the annual demand is about 768 sets and that the annual cost of holding a TV set in stock is Rs 30/- while an order placed for the sets costs Rs 20/-. Using this information, determine – **[8 M]**
      i. Economic order quantity.
      ii. Optimum number of orders to be placed in a year's time.
      iii. Total variable cost associated with economic order quantity.

(OR)

7. a) Explain MRP-I with flow diagram. **[6 M]**
   b) Explain the concept of JIT and KANBAN system. **[6 M]**

UNIT-IV

8. a) Explain Johnson's algorithm for scheduling of '*n*' jobs on two machines. **[8 M]**
   b) Explain the various steps of Line of Balance technique. **[4 M]**

(OR)

9. a) What is job shop scheduling? Explain its characteristics. **[6 M]**
   b) Consider the following single machine scheduling problem. **[6 M]**

Job (j)	1	2	3	4	5
Processing time (t_j)	20	8	7	10	9

Find the optimal sequence which will minimize the mean flow time. Also, determine the minimum flow time.

UNIT-V

10. a) Explain Routing procedure. **[6 M]**

    b) What are the types of dispatching? Enumerate its advantages in production control **[6M]**

(OR)

11. a) Explain about the dispatching procedure. **[6 M]**
    b) Explain the various types of expediting. **[6 M]**

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