AR18

CODE: 18HST404 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-2022

MANAGERIAL ECONOMICS AND MANAGERIAL STUDIES

(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 importance of Nature and Scope of Managerial Economics	6M
	b)	Write a note on Law of Demand with help of diagram	6M
		(OR)	
2.	a)	Explain the different types of Elasticity of Demand with diagram	6M
	b)	Differentiate between Demand Forecasting method and Statistical methods	6M

UNIT-II

3.	a)	What do you mean by Production Function? Explain the multiple Production Function with diagram	6M
	b)	Define MRTS? Explain the marginal rate of technical substitution with examples	6M
		(OR)	
4.	a)	Write a note on explicit costs and Implicit costs with help of real time examples	6M
	b)	Explain the Limitations of Break-Even Analysis.	6M

UNIT-III

5.	a)	What do you mean by market? Discuss the nature of Market Structure	6M
	b)	Discuss the concepts different Pricing Strategies with example	6M
		(OR)	
6.	a)	Briefly explain the features of Perfect competition market	6M
	b)	Differentiate between Monopolistic Competition and Monopoly with examples	6M

UNIT-IV

7.	a)	Explain the Functions of Management	6M
	b)	Briefly discuss the importance of Systems Approach to Management	6M
		(OR)	
8.	a)	Explain the nature of management	6M
	b)	Define management? Discuss the Social responsibilities of Management	6M

UNIT-V

9.	a)	Explain the importance of Human Resources Management	6M
	b)	Define marketing? Explain the various Function of Marketing	6M
		(OR)	
10.	a)	Explain the various Functions of HR Manager	6M
	b)	Write a note on Welfare Administration, Training and Recruitment	6M

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AR18

CODE: 18EEE451 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-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) Discuss various factors that govern the choice of motors. 6M
   b) Deduce the expressions for the temperature rise of an electric motor. State the assumptions made. 6M

(OR)

2. a) What do you understand by load equalization? 6M
   b) A 4 pole, 50Hz induction motor has a flywheel on its shaft. Total inertia at the motor shaft is 1,000 kg-m^2. Load torque is 100 N-m for 10 sec followed by a no load period along enough for the flywheel to regain its full speed. Motor has the slip of 6% at the torque of 50 N-m. Calculate the speed at the end of deceleration period. Assuming motor speed torque characteristics to be a straight line in the region of interest and neglect friction and windages. 6M

UNIT-II

3. a) Explain with the help of a neat sketch the working of Ajax-Wyatt vertical core type induction furnace. 6M
   b) A 50 kW, 3-phase, 440V, resistance oven is to provide nickel-chrome strip 0.3 mm thick, for three star connected heating elements. If the temperature of the wire is to be 15000^0 C and that of the charge is to be 10000^0 C. Calculate a suitable width of the strip. Take emissivity is 0.91, radiating efficiency is 0.6 and resistivity of the nickel-chrome strip material is 101.6 x 10^{-8} Ω -m. 6M

(OR)

4. a) Explain the basic difference between electric arc welding and resistance welding. 6M
   b) Compare A.C welding and D.C welding. 6M

UNIT-III

5. a) A lamp having a uniform C.P. of 300 in all directions is provided with a reflector which directs 60 percent of the total light uniformly on to a circular area of 12m diameter. The lamp is 5m above the area. Calculate: 6M
      a) The illumination at the center and edge of the surface with and without reflector.
      b) The average illumination over the area without the reflector.
   b) What are the aims of flood lighting and how are they achieved. 6M

(OR)

6. a) Explain the working principle of fluorescent lamp. Demonstrate the construction and operation of the fluorescent lamp with neat diagram. 6M

b) Explain with a neat diagram the principle of operation of a sodium vapour lamp. 6M

UNIT-IV

7. a) Draw and explain general speed-time curve of a train running between two stations. How can this curve be approximated for (a) main line service (b) suburban service? 6M

b) Define 'crest speed' and 'schedule speed' and discuss the factors which affect the schedule speed of a train. 6M

(OR)

8. a) What are the system of electric traction? Explain why single phase ac electrification is superseding the other types of system. 6M

b) A train is required to run between two stations 1.6 km apart at the average speed of 40 kmph. The acceleration, retardation during coasting and breaking are 2 kmphps, 0.16 kmphps and 3.2 kmphps respectively. Assuming quadrilateral approximation of speed-time curve, determine: 6M
(i) The duration of acceleration, coasting and breaking periods.
(ii) The distance covered during these periods.

UNIT-V

9. a) Deduce the expressions for tractive effort for the propulsion of a train on level track. 6M

b) An electrical train weight 200 tonne accelerates uniformly on the level track to a speed of 43 kmph in 20 sec. Power is then cutoff and train coast until the speed is 34 kmph when the brakes are applied the train is brought to rest in 10 seconds. Allowing a train resistance of 5 kg per tonne during acceleration and 6.5 kg per tonne during coasting and 12% for rotational inertia. 6M
Calculate:
i) The maximum Horse power developed at the driving axles.
ii) Specific energy output.

(OR)

10. a) Deduce the expressions for specific energy consumption on level track. 6M

b) An electric train weight 300 tonnes is accelerated from rest of a gradient 1 in 200 at a uniform rate of 0.8 kmphps until a speed of 64 kmph is attained. Power is then cut off and rain coast for one minute along level track. The breakings are now applied and brought to rest with retardation of 3.2 kmphps. Find specific energy consumption. Allows 10% rotational inertia and train resistance 5 kg/tonne. 6M

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AR18

CODE: 18ECE443 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-2022

GLOBAL POSITIONING SYSTEM

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

UNIT-II

3.	a)	Which PRN code characteristics are important for the GPS systems and why? Explain with neat diagram how the P-code is generated?	6M
	b)	Discuss about Signal structureof GPS.	6M
		(OR)	
4.	a)	Discuss briefly about User segment, Control segment and Space segment.	6M
	b)	Discuss about the anti spoofing concept.	6M

UNIT-III

5.	a)	Compare Geo-centric and Geodetic coordinate systems.	6M
	b)	Discuss about world geodetic system (WGS84) in detail.	6M
		(OR)	
6.	a)	What are the important satellite orbital parameters that are used in the satellite position computation in ECEF coordinate system.	6M
	b)	Write the equation for conversions of Cartesian or ECEF coordinate to geodetic coordinate frame.	6M

UNIT-IV

7.	a)	Explain how the satellite position is determined using Navigation message data parameters.	6M
	b)	Describe the steps involved in receiver position estimation using Least Squares Approximation method.	6M
		(OR)	
8.		Describe Receiver Independent Exchange format (RINEX) of GPS observation and navigation data	12M

UNIT-V

9.		Explain with the relevant equations, how the ionospheric error is eliminated in a two frequency GPS receiver	12M
		(OR)	
10.	a)	Discuss about different sources of GPS errors.	6M
	b)	Define the tropospheric delay	6M

AR18

CODE: 18CSE452 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-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.	a)	Explain the applications of Ad hoc networks	6M
	b)	Explain in detail about the characteristics and requirements of sensor networks	6M
		(OR)	
2.	a)	Differentiate cellular and ad hoc networks.	6M
	b)	Present the design issues of ad hoc networks,	6M

UNIT-II

3.		Discuss in detail about the contention based MAC protocols in ad hoc networks	12M
		(OR)	
4.		Discuss in detail about the contention based MAC protocols with reservation mechanism in ad hoc networks.	12M

UNIT-III

5.		Present the design issues of ad hoc wireless networks routing protocols.	12M
		(OR)	
6		Explain in detail about hybrid routing protocols.	12M

UNIT-IV

7.		Classify the sensor networks protocols.	12M
		(OR)	
8.	a)	Differentiate the ad hoc network and sensor network.	6M
	b)	Present the applications of sensor networks.	6M

UNIT-V

9.		Present the overview of MAC protocols in sensor networks.	12M
		(OR)	
10.		Appraise the QOS related measures in wireless sensor networks.	12M

AR16

CODE: 16CE4033 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-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)	Mention various functions and requirements of sleepers	7 Marks
	b)	Bring out the differences between flat footed and bull headed rails	7 Marks
		(OR)	
2.	a)	Mention various joints provided in a permanent way in detail	7 Marks
	b)	Compare various ballast materials stating their relative advantages disadvantages and their suitability	7 Marks

UNIT-II

3.	a)	Write a short notes on the following a) Ruling gradient b)widening of gauge on curves c) Importance of check rails on curves	7 Marks
	b)	With usual notation, derive the expression for super elevation for B.G, M.G and N.G track.	7 Marks
		(OR)	
4.	a)	An 8° curve branches off from 3° main curve in B.G. layout. If the speed on branch line is 40 Kmph, find the speed on main line. Cant deficiency is 7.61 cm.	7 Marks
	b)	Derive the length of transition curve on a railway track having a speed of 85kmph. Assume any other data required	7 Marks

UNIT-III

5.	a)	Define turnout and draw a neat sketch of left hand turnout and explain its component parts	8 Marks
	b)	Sketch and explain diamond and scissor crossing.	6 Marks
		(OR)	
6.	a)	Write a detailed note on various objectives and necessity of railway signalling	6 Marks
	b)	Write in brief note on classification of various signals used on a railway track	8 Marks

UNIT-IV

7.	a)	What are meant by zoning laws? Explain the necessity of implementing zoning laws while building an airport	6 Marks
	b)	An airport is planned at an elevation of 400 m above MSL. The monthly mean of maximum and average daily temperature for the hottest month at the site are 42° C and 26° C respectively. The effective gradient is 0.20 %. Determine the length of runway required at the proposed site if the basic runway length is 2000 m.	8 Marks
		(OR)	
8.	a)	Write a detailed note on Runway Lighting system	8 Marks
	b)	Explain the generation of Type II wind rose with a neat sketch	6 Marks

UNIT-V

9.	a)	Write a short note on the following a) classification of ports b) requirements of good port	8 Marks
	b)	Write a note on how do you decide size and shape of a harbour	6 Marks
		(OR)	
10.	a)	Bring out the differences between dry docks and wet docks of a harbour	8Marks
	b)	Mention various navigational aids that are used in a harbour with neat sketch	6 Marks

AR16

CODE: 16EE4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-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)	State and explain the different factors that affect the selection of a motor for Industrial applications	7M
	b)	Explain about the load equalization?	7M
		(OR)	
2.	a)	Derive an expression for temperature rise of an electrical machine. State the assumptions made	7M
	b)	List the advantages of Electric drive and classification of Electric drive?	7M

UNIT-II

3.	a)	Explain about the resistance heating?	7M
	b)	A slab of insulating material 150 cm^2 in area and 1 cm thick is to be heated by dielectric heating. The power required is 400 W at 30 MHZ. Material has relative permittivity of 5 and p.f. of 0.05. Determine the necessary voltage. Absolute permittivity = 8.854×10^{-12}F/m	7M
		(OR)	
4.	a)	Explain in detail about the following with respect to Welding i) Spot welding ii) Seam welding	7M
	b)	Compare A.C and D.C Welding?	7M

UNIT-III

5.	a)	Define the following terms :(i) Illumination (ii) Lumen (iii) Luminous intensity (iv) Lamp efficiency.	7M
	b)	Discuss about sodium vapour lamp with neat diagram?	7M
		(OR)	
6.	a)	Compare Tungsten filament lamp and Fluorescent lamp?	7M
	b)	The illumination at a point on a working plane directly below the lamp is to be 60 lumens/m^2. The lamp gives 130 CP uniformly below the horizontal plane. Determine: 1) The height at which lamp is suspended. 2) The illumination at a point on the working plane 2.8 m away from the vertical axis of the lamp.	7M

UNIT-IV

7. a) Discuss the advantages of 25KV AC system over D.C. System of electrification. 7M
   b) Define average speed, Maximum Speed, and schedule speed of train and what are the factors affecting schedule speed? 7M

(OR)

8. a) What are the special features of an traction motor? 7M
   b) An electric train has a schedule speed of 25 kmph between stations 800 metres apart. The duration of station stop is 20 seconds, the maximum speed is 20 percent higher than the average running speed and the braking retardation is 3 kmphps. Calculate the rate of Acceleration required operating this service? 7M

UNIT-V

9. a) Derive an expression for the tractive effort developed by a train unit? 7M
   b) A goods train weighing 500 tonne is to be hauled by a locomotive up an ascending gradient of 2% with an acceleration of 1 km/h/s. If coefficient of adhesion is 0.25, train resistance 40 N/t and effect of rotational inertia 10%, find the weight of locomotive and number of axles if load is not to increase beyond 21 tonne/axle 7M

(OR)

10. a) Explain about the factors affecting specific energy consumption? 7M
    b) 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

AR16

CODE: 16HS4005 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, August-2022

MANAGERIAL ECONOMICS 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)	Managerial Economics is the discipline which deals with the application of economic theory to business Management?	7M
	b)	State and Explain "Law of demand"? Explain its exceptions & Assumptions?	7M
		(OR)	
2.	a)	What do you understand demand forecasting? Explain the different methods of demand forecasting.	7M
	b)	What is the role of a Managerial Economist in Decision making activities?	7M

UNIT-II

3.	a)	Explain the Meaning & Importance of production function? Determine Cobb-Douglas production function.	7M
	b)	Explain the operation of the law of diminishing returns & its business implications.	7M
		(OR)	
4.	a)	Define cost function and also discuss cost-output relation in the short-run.	7M
	b)	Define Break-even point & How do you determine it. Show graphical presentation of Break Even Analysis.	7M

UNIT-III

5.	a)	What are the causes for the emergence of Monopoly?	7M
	b)	Elaborate how price output decisions can be taken by a Monopolist?	7M
		(OR)	
6.	a)	What is equilibrium? What are the conditions under which a competitor can reach equilibrium point in perfect competition?	7M
	b)	What are the characteristics of Oligopoly?	7M

UNIT-IV

7.	a)	What is the significance of Hawthorne experiments for management?	7M
	b)	State & describe the Fayol's principles of management.	7M
		(OR)	
8.	a)	Explain the Maslow's Theory of Hierarchy of Human Needs.	7M
	b)	Explain the contributions of Frederick W. Taylor in the area of Scientific management and its utility to modern managers	7M

UNIT-V

9.	a)	What are the key functions of a Human Resource Manager?	7M
	b)	'The success of an organization to a greater extent depends on how the HRD acts'- Substantiate.	7M
		(OR)	
10.	a)	What do you understand by 'marketing mix'?	7M
	b)	Describe the various stages of product life cycle.	7M