AR16

CODE: 16CE4033 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

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)	Write in detail about concrete sleepers. Also state various advantages and disadvantages of concrete sleepers	6 Marks
	b)	Bring out comparison between flat footed and bull headed rails	8 Marks

(OR)

2.	a)	Mention various causes of creep. State various measures that are helpful to reduce creep.	8 Marks
	b)	Define the following i) Adzing of Sleepers ii) Sleeper density iii)ballast iv) sleeper v) permanent way	6 Marks

UNIT-II

3.	a)	Write short note on i) cant deficiency ii) degree of curve c)safe speed on curve	6 Marks
	b)	Discuss about various gradients used in case of railways	8 Marks

(OR)

4.	a)	Write short note on i) Extra clearance on curves ii) widening of gauge on curves iii) check rails on curves.	7 Marks
	b)	A 6^o branches of from 3^o main curve in opposite direction in the layout of a broad gauge yard. If the speed of branch line is restricted to 36kmph. Find the speed on main line if tha allowable cant deficiency is 7.6cm	7 Marks

UNIT-III

5. a) Draw a neat sketch of right hand turnout and explain its component parts — 8 marks
   b) Draw a neat sketch of acute angle crossing and indicate (i) actual,(ii) theoretical nose of crossing — 6 marks

(OR)

6. What is signalling? What are various objectives of signalling? Explain - semaphore signalling system for controlling train movement — 14 marks

UNIT-IV

7. a) List and explain various aircraft characteristics which affect planning and design of airports — 8 marks
   b) Define wind rose diagram. Explain type-1 wind rose diagram with neat sketch — 6 marks

(OR)

8. a) Explain various factors affecting location of exit taxiway — 8 marks
   b) Determine the corrected length of runway for an airport using the following data — 6 marks
      (i) Basic run way length=2600 metres
      (ii) Airport elevation=500 metres
      (iii) Airport reference temperature=21^{o}C
      (iv) Runway effective gradient=0.2%

UNIT-V

9. a) What is dry dock? Explain the construction and uses of dry dock. — 8 marks
   b) Draw a neat sketch of artificial harbour and explain its component parts. — 6 marks

(OR)

10. a) Compare with sketches wall type break water and mound type break water. — 6 marks
    b) Write a detailed note on the following i) ware houses ii) transit sheds. — 8 marks

AR16

CODE: 16EE4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

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) Derive an expression for temperature raise of an electric motor. 8M
   b) The heating time constant of 80-KW motor is 60 minutes. The temperature raise is 65^0 C when runs continuously on full load. Find the half-hour rating of motor for the same temperature raise. Assume that the losses are proportional to the square of the load and the motor cools to ambient temperature between each load cycle. 6M

(OR)

2. a) Discuss the various factors that govern the rating of a motor for particular service. 6M
   b) A motor has the following load cycle. Load rising uniformly from 100 to 200KW in 5s. Continuous load 50KW for 10 s. Idle for 2s. The cycle repeated indefinitely. Draw the load cycle. Find the size of continuously rated motor for the duty. 8M

UNIT-II

3. a) Give advantages of electric heating. 6M
   b) Explain with neat sketch the working principle of core type induction furnace. 8M

(OR)

4. a) Explain the working of spot welding with neat diagram. Give applications 8M
   b) Compare ac and dc welding. 6M

UNIT-III

5. a) Describe the construction and working of a gas filled filament lamp. 8M

   b) A small light source with uniform intensity is mounted at a height of 10m above a horizontal surface. Two points A and B lie on the surface with point A directly beneath the source. How far is 'B' from 'A' if the illumination at B is only 1/15 as that at A? 6M

(OR)

6. a) What do you understand by polar curves? Explain Rousseau's construction for calculating MSCP of a lamp. 8M

   b) List out the properties should be possessed by the filament material 6M

UNIT-IV

7. a) What are different systems of railway electrification? Which one is being commonly adopted in our country and why? 7M

   b) Compare the speed-time curves for different types of services. 7M

(OR)

8. a) An electric train has an average speed of 42 kmph on a level track between stops 1400m apart. It is accelerated at 1.7 kmphps and is braked at 3.3 kmphps. Draw the speed-time curve for the run. 8M

   b) Explain various characteristics that an ideal traction motor should possess. 6M

UNIT-V

9. a) Derive an expression for specific energy output on level track using a simplified speed-time curve. 8M

   b) An electric train maintains a schedule speed of 40kmph between stations situated at 1.5 km apart. It is accelerated at 1.7 kmphps and braked at 3.2 kmphps. Draw the speed time curve for the run. Estimate the energy consumption at the axles of the train. Assume tractive resistance constant at 50 N/tonne and allow 10% for the effect of rotational inertia. 6M

(OR)

10. a) Explain the terms 'dead weight', 'adhesive weight' and 'accelerating weight'. 6M

    b) What is coefficient of adhesion? How does it affect slipping of the driving wheels of the traction unit? 8M

AR16

CODE: 16ME4034 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

PRODUCTION PLANNING AND CONTROL

(Mechanical 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)	What are the objectives and explain the need of Production Planning and Control	7M
	b)	Distinguish Production Planning and Production Control	7M

(OR)

2.	a)	Discuss about long term and short term forecasting	7M
	b)	Why forecasting is necessary in production function? Discuss weighted moving average technique of forecasting	7M

UNIT-II

3.	a)	Explain various aggregate production planning strategies	7M
	b)	What are the objectives and explain the need of capacity planning	7M

(OR)

4.	a)	What is Master Production Schedule and explain MPS with an example	7M
	b)	What is assembly line balancing and explain how it is done	7M

UNIT-III

5.	a)	ABC manufacturing company purchases 9000 parts of a machine for its annual consumptions ordering one month usage at a time. Each part costs Rs 20. The ordering cost per order is Rs15 and the inventory carrying cost are 15 percent of the average inventory per year. You have been asked to suggest a more economic purchasing for the company. What advice would you offer and how much would it save the company per year	7M
	b)	Explain ABC analysis of inventory control	7M

(OR)

6.	a)	Explain basic elements of JIT	7M
	b)	What is MRP? Explain the flow of information in MRP	7M

UNIT-IV

7.	a)	What is MTTF and MTBF? Describe them briefly	7M
	b)	What are the factors effecting the reliability and briefly discuss reliability as function of time	7M

(OR)

8.	a)	Write about the Objectives of Business Process Re-engineering	7M
	b)	Explain the need for Business Process Re-engineering with suitable examples	7M

UNIT-V

9.	a)	What is routing and explain the factors affecting routing	7M
	b)	What is bill of materials and explain it with suitable example	7M

(OR)

10.	a)	Explain dispatching procedure	7M
	b)	What is expediting and discuss why it is an important function of PPC	7M

AR16

CODE: 16EC4035 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

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)	Explain the trends in cellular radio and personal communications.	7M
	b)	Explain how a Cellular Telephone Call is made.	7M
		(OR)	
2.		Discuss the following Examples of Wireless Communication Systems in detail. a) Paging Systems b) Cordless telephone Systems c) Cellular Telephone Systems.	14M

UNIT-II

3.	a)	Explain in detail the TDMA & FDMA multiple access techniques.	7M
	b)	Explain about CSMA protocol	7M
		(OR)	
4.	a)	A normal GSM has 3 start bits, 3 stop bits(also called as trailing bits), 26 tarining bits for allowing adaptive equalization, 8.25 guard bits and 2 bursts of 58 bits of encrypted data which is transmitted at 270.833kbps in the channel. Find i) Number of overhead bits per frame, b_{oh}. ii) Total number of bits/frame iii) Frame rate. iv) Time duration of a slot. v) Frame efficiency.	7M
	b)	Explain in detail about CDMA.	7M

UNIT-III

5.	a)	Discuss the evolution from 1G to 2G, 2.5G in case of cellular network based on TDMA. Discuss the strategies adopted by different network operators while migrating towards third generation system	7M
	b)	Discuss about 3G air interface technologies.	7M
		(OR)	
6.		Discuss the 4G evolution, objectives, advantages, applications and limitations.	14M

UNIT-IV

7.	a)	Explain different WLAN topologies.	7M
	b)	Compare different IEEE standards.	7M
		(OR)	
8.		Explain about Wireless PANs and Hyper LAN.	14M

UNIT-V

9.	a)	Explain about MANETs and RFID.	7M
	b)	Explain about ZigBee and IEEE 802.15.4	7M
		(OR)	
10.	a)	Explain about WiMAX and IEEE 802.16	7M
	b)	Explain about Bluetooth protocol architecture	7M

AR16

CODE: 16HS4005 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

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)	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)	Define Price-elasticity of demand. What are the various degrees of price elasticity? Illustrate graphically.	7M
	b)	What is demand forecasting? Explain statistical methods of demand forecasting.	7M
		UNIT-II	
3.	a)	Explain the Meaning & Importance of production function? Determine Cobb-Douglas production function.	7M
	b)	Briefly explain various cost concepts used in cost analysis.	7M
		(OR)	
4.	a)	State and explain law of returns with a neat diagram.	7M
	b)	How do you determine least cost combination of inputs.	7M
		UNIT-III	
5.	a)	What are the characteristics of Monopolistic competition?	7M
	b)	How is market price determined under conditions of monopoly competition?	7M
		(OR)	
6.	a)	Explain important methods of pricing?	7M
	b)	What are the causes for the emergence of Monopoly?	7M
		UNIT-IV	
7.	a)	Discuss the leadership styles with examples which Indian managers follow. Can you suggest a best style for them? How?	7M
	b)	State & describe the Fayol's principles of management.	7M
		(OR)	
8.	a)	What are the managerial functions in any service providing organization like Bharat Sanchar Nigam Limited (BSNL), Life Insurance Corporations of India etc.,	7M
	b)	Discuss the main components of Hertzberg two factor theory of motivation.	7M
		UNIT-V	
9.	a)	"Marketing should aim at meeting a given consumer need rather than selling a given product." Comment.	7M
	b)	What do you understand by Channels of distribution? Explain the levels of it.	7M
		(OR)	
10.	a)	What is Human Resource Management? Is it different from personnel management and Industrial Relations (PMIR)?	7M
	b)	What is performance appraisal? What are the steps involved in performance appraisal?	7M

AR13

CODE: 13EE4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, July-2021

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) List any two factors governing the selection of motors.
   b) "If a high degree of speed control is required, d.c. is preferable to a.c. for an electric drive" -Justify.
   c) Write any two advantages of coreless induction furnaces.
   d) Write any two properties of heating element.
   e) Define Illumination?
   f) What is Lamp Efficiency?
   g) Define waste light factor.
   h) Write any two advantages of diesel electric traction.
   i) Define the term braking retardation.
   j) Define Dead weight.

PART-B

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

UNIT-I

2. a) Classify various types of electric drives and discuss their merits and demerits. 6M
   b) Draw and explain the speed torque characteristics of DC shunt motor. 6M

(OR)

3. Explain the procedure for achieving load equalization in electrical industry with necessary expressions under both peak load and light load conditions. 12M

UNIT-II

4. a) Compare the performance of Ajax Wyatt and Core-less furnaces. 6M
   b) A low frequency induction furnace has a secondary voltage of 15V and takes 500 KW at 0.6 p.f. when the hearth is full. If the secondary voltage is maintained at 15V, determine the power absorbed and the p.f. when the hearth is half full. Assume the resistance of the secondary circuit to be thereby doubled and the reactance to remain the same. 6M

(OR)

5. a) Explain the comparison between AC and DC welding. 6M
   b) Describe the principle of Carbon Arc welding. 6M

AR13

CODE: 13EE4029 SET-1

UNIT-III

6. a) Define: 6M
   i) Light ii) Illumination iii) Luminous Intensity
   b) Derive an expression for illumination at a point due to a perfectly diffusing a strip of height h and width W. 6M

(OR)

7. a) Describe the construction and principle of operation of fluorescent lamp. 6M
   b) A building measuring 30 m x 20 m is to be floodlit on the front side with brightness of 25 lumen/sq. metre. Co-efficient of reflection of building surface is 0.25. Lamps of 500 W having lumens output of 6000 each are used. Assuming beam factor as 0.6, waste light factor 1.3 and maintenance factor as 0.75, determine the number of lamps required. 6M

UNIT-IV

8. For a quadrilateral speed-time curve of an electric train, derive expression for the distance between stops and speed at the end of the coasting period. 12M

(OR)

9. a) Describe the mechanism of train movement with necessary expressions. 6M
   b) A 200/tonne motor coach train has four motors each developing a shaft torque of 5000 N-m during the acceleration period. The gear ratio of motors is 3.6:1 and gear efficiency 90%. The wheel diameter is 91.5 cms, train resistance 40 Newton per tonne and allow 10 % for the effect of rotational inertia. Determine the time taken by the train to attain a speed of 40 km. p.h. starting from rest on a gradient 1 in 200. 6M

UNIT-V

10. a) Derive the expression for energy output from the driving Axles. 6M
    b) Describe the factors affecting specific energy consumption. 6M

(OR)

11. a) Explain the concept of coefficient of Adhesion in detail with necessary expressions. 6M
    b) A goods train weighing 300 tonnes is to be hauled by a locomotive up a gradient of 2% with an acceleration of 1.0 Kmphps coefficient of adhesion 20% track resistance 45 Newton/tonne and effective rotating masses 10% of dead weight. If axle load is not to exceed 20 tonnes, determine the weight of locomotive and number of axles. 6M

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AR13

CODE: 13EC4036 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Supplementary Examinations, July-2021

CELLULAR AND MOBILE COMMUNICATIONS

(Electronics and Communication Engineering)

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

PART-A

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

1. a) Write any one limitation of conventional mobile telephone system
   b) Define Grade of Service
   c) Draw the shape of coverage area in cellular communication
   d) What do you mean by seven cell reuse
   e) Why antenna diversity is required in cellular mobile communication?
   f) Differentiate Soft handoff and Hard handoff in one sentence
   g) Write one control channel number and one voice channel number from frequency management chart
   h) What do you mean by dynamic channel assignment
   i) Abbreviate GSM in cellular communication.
   j) Abbreviate FDMA in cellular communication.

PART-B

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

UNIT-I

2. a) Explain operation of cellular system. 6M
   b) Demonstrate the limitations of conventional mobile systems. 6M

(OR)

3. a) Develop the C/I ratio for omnidirectional antenna in mobile radio environment. 6M
   b) Demonstrate the limitations of conventional mobile systems. 6M

UNIT-II

4. a) Develop the relation between power transmitted and received of cell site and mobile antenna in flat terrain 6M
   b) Develop the relation between power transmitted and received of cell site and mobile antenna in over water surface. 6M

(OR)

5. a) Explain different Measurement methods for Interferences in brief. 6M

   b) Explain Co-Channel Interference in mobile cellular environment 6M

AR13

CODE: 13EC4036 SET-1

UNIT-III

6.	a)	Explain different cell site antennas in cellular communications	6M
	b)	Define directional antenna. Explain directional antenna in mobile communications	6M
		(OR)	
7.	a)	Elaborate the Omni and Non-Omni directional antennas in mobile cellular communications.	6M
	b)	Summarize how antennas in cellular system effect voice quality in cellular communications.	6M

UNIT-IV

8.	a)	Explain numbering of channels in cellular communications.	6M
	b)	Explain dynamic and static channel assignment techniques in cellular communications.	6M
		(OR)	
9.	a)	Show the frequency management chart and explain it	6M
	b)	Explain set up channels and control channels and voice channels	6M

UNIT-V

10.	a)	Explain GSM channels and registers in architecture.	6M
	b)	Explain how capacity can be increased using TDMA than CDMA	6M
		(OR)	
11.	a)	Explain the operation of CSMA technology in wireless communications	6M
	b)	Explain the operation of TDMA technology in wireless communications	6M

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