AR20

CODE: 20CET310 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

ENVIRONMENTAL ENGINEERING

(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

			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Explain the importance and necessity of Protected water supply systems.	5	1	2
	b)	What are water borne diseases? Write the control measures.	5	1	2
		(OR)			
2.	a)	What do you mean by per capita demand? Explain various factors that affect per capita demand.	5	1	2
	b)	What are the variations in rate of demand of water?	5	1	2
		UNIT-II			
3.	a)	Draw the outline of water treatment units	5	2	2
	b)	Define sedimentation and describe different types of sedimentation tanks based on flow with neat sketch.	5	2	2
		(OR)			
4.	a)	Distinguish between slow sand filters and rapid gravity filters.	5	2	2
	b)	What are major requirements of a disinfectant?	5	2	2
		UNIT-III			
5.	a)	Describe the analysis of distribution networks and its merits and demerits of methods.	5	3	2
	b)	What are the requirements of a good water meter? Explain any one type of water meter with a neat sketch.	5	3	2
		(OR)			
6.	a)	Explain about dead end system with neat sketch.	5	3	2
	b)	Explain briefly about Scour valve, check valve and air valve with neat sketches.	5	3	2
		UNIT-IV			
7.	a)	The 5day 30°C BOD of sewage sample is 110mg/l. Calculate its 5 days 20°C BOD. Assume deoxygenation constant at 20°C, K_{20} as 0.1.	5	4	2
	b)	Describe (i) conservancy system, and (u) water carriage system. What are the relative advantages and disadvantages of the two systems?	5	4	2
		(OR)			
8.	a)	Explain characteristics of waste water.	5	4	2
	b)	Describe Various types of sewers based on material	5	4	2
		UNIT-V			
9.	a)	Explain about layout of sewage treatment plant with neat sketches.	5	5	2
	b)	Write short note on activated sludge processes.	5	5	2
		(OR)			
10.	a)	Write short note on grit chambers and skimming tanks.	5	5	2
	b)	Write about working principle of septic tanks with neat sketches.	5	5	2
		UNIT-VI			
11.	a)	Write about classification of air pollutants.	5	6	2
	b)	Write brief about working theory of Gravity settlers.	5	6	2
		(OR)			
12.	a)	Write any five steps to control Gaseous pollution.	5	6	2
	b)	Write brief about measurement of noise and control of noise pollution	5	6	2

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CODE: 20EET310 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

POWER ELECTRONICS

(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

			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Describe the different modes of operation of a thyristor with the help of its V-I characteristics.	5	1	Remember
	b)	By using two transistor analogy of SCR, justify the statement "Gate current losses control over the conduction of SCR once the SCR start conducting".	5	1	Understanding
		(OR)			
2.	a)	Explain the series operation of Thyristor and derive the necessary expressions.	5	1	Understanding
	b)	It is required to operate 250A SCR in parallel with 350 A SCR with their respective on-state voltage drops of 1.6V and 1.2V. Calculate the value of resistance to be inserted in series with each SCR so that they share the total load of 600 A in proportion to their current ratings.	5	1	Analysing
		UNIT-II			
3.	a)	Explain the operation of single-phase half-wave circuit with RL load with neat voltage and current waveforms.	5	2	Understanding
	b)	Derive the expression for power delivered to load of single-phase half-wave converter.	5	2	Understanding
		(OR)			
4.	a)	Derive an expression for i) Average load voltage ii) Average load current iii) RMS load voltage iv) input Power Factor of 1-phase half-controlled converter with R-load.	5	2	Understanding
	b)	A single phase two pulse bridge converter feeds power to RLE load with R= 6 Ω , L= 6mH, E = 60 V, AC Source voltage is 230 V, 50 Hz for continuous conduction. Find the average value of load current for a firing angle of 500.	5	2	Analysing
		UNIT-III			
5.	a)	Explain the operation of single phase fully controlled bridge rectifier with RL load with neat waveforms.	5	3	Understanding

	b)	The dc voltage from a 1-phase fully controlled bridge converter with RL load is 110 V. The ac source voltage is 220 V rms. The load resistance, R = 0.5 Ω and load inductance, L is large enough to cause the load current to be essentially constant i) Determine the delay angle α ii) Estimate the power delivered to the load	5	3	Analysing
		(OR)			
6.	a)	Derive the expression average and RMS values of output voltages for R of fully controlled rectifier.	5	3	Understanding
	b)	A 1-phase fully controlled rectifier is fed from a 230 V, 50 Hz supply. The load current is constant and continuous with negligible ripple and firing angle is 45°. Determine the average output voltage, RMS load voltage and power factor.	5	3	Analysing
		UNIT-IV			
7.	a)	Explain the operation of 3-phase fully controlled converter with R and RL load for inverter operation.	5	4	Understanding
	b)	Derive the output voltage across R load of 3-phase fully controlled converter.	5	4	Understanding
		(OR)			
8.	a)	Explain the operation of three-phase full converter feeding R load with voltage and current waveforms for different firing angles.	5	4	Understanding
	b)	Explain the operation of single phase dual converter.	5	4	Understanding
		UNIT-V			
9.	a)	Explain the operation of ac voltage controller for RL load.	5	5	Understanding
	b)	A single-phase ac voltage controller is connected with a load of R = 10 Ω with input voltage of 230V, 50Hz supply. If the firing angle of SCR is 900, calculate rms value of output voltage, power delivered to load.	5	5	Analysing
		(OR)			
10.	a)	Describe principle of working of 1 – phase to 1 - phase step down midpoint type cyclo-converter for both continuous and discontinuous conductions. Draw voltage and current waveforms for both conditions	10	5	Analysing
		UNIT-VI			
11.	a)	What is time ratio control in dc choppers? Explain the use of TRC for controlling the output voltage in choppers.	5	6	Remembering
	b)	Describe sinusoidal PWM control of single-phase VSI with the help of suitable waveform.	5	6	Understanding
		(OR)			
12.	a)	Discuss the principle of operation of Buck-Boost converter.	5	6	Understanding
	b)	Explain in detail about 180^0 conduction mode of 3– ϕ voltage source inverters.	5	6	Analysing

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CODE: 20MET310 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

MANUFACTURING TECHNOLOGY - II

(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

			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Explain different types of chips produced in cutting with neat sketches.	5	1	Understanding
	b)	Explain the significance of cutting fluids and list out various cutting fluids used in machining.	5	1	Understanding
		(OR)			
2.	a)	What do you understand by the term "Tool Designation or Tool Signature"?	5	1	Remembering
	b)	If the taylor"s tool life constants for a given operation are specified as n = 0.5 and C = 400, what is the percentage increase in tool life when the cutting speed is reduced by half?	5	1	Analysing
		UNIT-II			
3.	a)	List the types of Work holding devices and Tool holding devices that are generally used in a turret lathe.	5	2	Remembering
	b)	Enumerate the purpose of various attachments used on a centre lathe.	5	2	Understanding
		(OR)			
4.	a)	Explain the salient features of an automatic screw machines.	5	2	Understanding
	b)	What are the various methods available for supporting long components and fragile components in a lathe?	5	2	Remembering
		UNIT-III			
5.	a)	State the differences between a vertical shaper and slotters.	5	3	Understanding
	b)	Explain the hydraulic drive mechanism of a horizontal shaper with Neat sketch	5	3	Understanding
		(OR)			
6.		Explain working principle of Slotter Machine with neat sketch.	10	3	Understanding
		UNIT-IV			
7.	a)	Explain the materials used for milling cutters.	5	4	Understanding
	b)	What is difference between reaming and boring?	5	4	Remembering
		(OR)			
8.		Explain working principle of horizantal Broaching Machine with neat sketch.	10	4	Remembering
		UNIT-V			
9.	a)	What is a grinding wheel explain the grinding wheel specifications?	5	5	Remembering
	b)	Explaine working principle of Surface grinding.	5	5	Remembering
		(OR)			
10.	a)	What the difference between lapping and grinding?	5	5	Remembering
	b)	What are the types of gear hobbing?	5	5	Remembering
		UNIT-VI			
11.	a)	What is the difference between hole basis system and shaft basis system?	5	6	Remembering
	b)	What is interchangeability and selective assembly?	5	6	Remembering
		(OR)			
12.	a)	What are go gauges and no go gauges explain?	5	6	Remembering
	b)	What is surface profile gauge?	5	6	Remembering

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CODE: 20ECT310 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

ANTENNAS AND WAVE PROPAGATION

(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

			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Explain the radiation mechanism from dipoles.	5M	1	Understanding
	b)	Describe any three antenna parameters.	5M	1	Understanding
		(OR)			
2.	a)	Calculate the radiation resistance of Hertzian dipole, linear dipole.	5M	1	Understanding
	b)	Derive the expression for magnetic field components of alternating current element.	5M	1	Understanding
		UNIT-II			
3.	a)	Derive the array factor of N-element isotropic linear uniform distributed Antenna.	5M	2	Understanding
	b)	Describe about phased arrays.	5M	2	Understanding
		(OR)			
4.	a)	An array contains 10 isotropic radiators with an inter element spacing of 0.5. It is required to produce broadside and end-fire beams. Find Null-to-Null beam width and half-power beam width in degrees.	5M	2	Apply
	b)	Explain about principle of pattern multiplication.	5M	2	Understanding
		UNIT-III			
5.	a)	Define parasitic elements. Explain the need of parasitic elements in Yagi-Uda antenna.	5M	3	Understanding
	b)	Explain the working principle of Helical antenna in normal mode.	5M	3	Understanding
		(OR)			
6.	a)	Write short notes on Non resonant radiators.	5M	3	Understanding
	b)	Define long wire antenna? Based on Equations, draw the radiation pattern of 2λ and 5λ length antennas?	5M	3	Understanding
		UNIT-IV			
7.	a)	Explain the following. i) Corner reflectors ii) Parabolic reflector	5M	4	Apply
	b)	Mention the design equations of a horn antenna.	5M	4	Understanding
		(OR)			
8.	a)	Explain different types of Horn antenna in detail.	5M	4	Understanding
	b)	Explain the working principle of lens antenna.	5M	4	Understanding
		UNIT-V			
9.	a)	Explain how earth's surface reflects radio waves?	5M	5	Understanding
	b)	Write short notes on Ground wave Propagation.	5M	5	Understanding
		(OR)			
10.	a)	Explain the formation of ionosphere layers.	5M	5	Understanding
	b)	Explain the following terms: (i) Skip distance (ii) refractive index.	5M	5	Understanding
		UNIT-VI			
11.	a)	Write short notes on Tropospheric wave propagation.	5M	6	Understanding
	b)	Discuss effective earth's radius.	5M	6	Understanding
		(OR)			
12.	a)	Explain about Directivity Measurement.	5M	6	Understanding
	b)	How do you Measure Radiation Pattern of an Antenna.	5M	6	Understanding

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CODE: 20CST310 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

COMPUTER NETWORKS

(Computer Science and 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

			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Define Computer Networks. Briefly explain about Network Hardware.	5	1	K2
	b)	Explain briefly about the layers in the OSI Reference Model.	5	1	K2
		(OR)			
2.	a)	Write the differences between OSI reference model and TCP/IP reference model.	5	1	K2
	b)	Explain about ARPANET.	5	1	K2
		UNIT-II			
3.	a)	Write about the services provided by data link layer to network layer.	5	2	K2
	b)	Briefly explain the following error detecting techniques with example (i) Single Parity Check (ii) Two-Dimensional Parity check	5	2	K2
		(OR)			
4.	a)	Explain about Error Correcting Codes.	5	2	K2
	b)	Write short note on Sliding Window Protocol.	5	2	K2
		UNIT-III			
5.	a)	Briefly explain about Dynamic Channel Allocation.	5	3	K2
	b)	Write short note on ALOHA.	5	3	K2
		(OR)			
6.	a)	Briefly explain about CSMA/CA.	5	3	K2
	b)	Define channelization. Briefly explain about FDMA.	5	3	K2
		UNIT-IV			
7.	a)	Write about network layer design issues	5	4	K2
	b)	Explain about shortest path routing algorithm.	5	4	K2
		(OR)			
8.	a)	Write the differences between congestion control and flow control.	5	4	K2
	b)	Explain Leaky Bucket Algorithm	5	4	K2
		UNIT-V			
9.	a)	Write the differences between connection less and connection oriented services.	5	5	K2
	b)	Write about operations and uses of UDP.	5	5	K2
		(OR)			
10.	a)	Briefly explain about UDP header format?	5	5	K2
	b)	Discuss in detail about TCP protocol and its segment header?	5	5	K2
		UNIT-VI			
11.	a)	Explain about Hierarchy of Name Servers.	5	6	K2
	b)	Write the differences between Static and Dynamic Web Pages.	5	6	K2
		(OR)			
12.	a)	Write about various messages of SNMP.	5	6	K2
	b)	Briefly explain about dynamic web documents?	5	6	K2

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CODE: 20ITT303 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, January-2023

OBJECT ORIENTED SOFTWARE ENGINEERING

(Information Technology)

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

			Marks	CO	Blooms Level
		UNIT-I			
1.		Differentiate between classical waterfall model with iterative waterfall model.	10	CO1	K2
		(OR)			
2.		Explain any two types of system models in detail.	10	CO1	K2
		UNIT-II			
3.		What are the Functional and Non-functional requirements of Software Requirements Engineering?	10	CO2	K1
		(OR)			
4.	a)	List five desirable characteristics of a good software requirements specification (SRS) document.	5	CO2	K1
	b)	Who are the different categories of users of the SRS document? In what ways is the SRS document useful to them?	5	CO2	K3
		UNIT-III			
5.		Define Coupling and Cohesion. Explain different types in it.	10	CO3	K2
		(OR)			
6.	a)	Brief the interface analysis in user interface design.	5	CO3	K4
	b)	Explain the basic concepts of object oriented Analysis & Design.	5	CO3	K3
		UNIT-IV			
7.		What is black box testing? Explain the different types of black box testing strategies with example?	10	CO4	K4
		(OR)			
8.	a)	Write a short note on Cyclomatic complexity measure.	5	CO4	K2
	b)	What is System Testing? What are various types in it.	5	CO4	K3
		UNIT-V			
9.	a)	Discuss about Statistical Software Quality Assurance (SSQA). Definition and explanation-5M	5	CO5	K2
	b)	Explain the following term in brief 1) Re-Engineering 2) Reverse Engineering	5	CO5	K2
		(OR)			
10.		Define software reliability and explain in detail about SEI .SEI Capability Maturity Model with neat sketch	10	CO5	K3
		UNIT-VI			
11.		Define Software Quality and explain various types of product metrics.	10	CO6	K3
		(OR)			
12.	a	Briefly explain the main differences between the original COCOMO estimation model and the COCOMO-II estimation model.	5	CO6	K1
	b	Why is a two-tier architecture not a practical client-server architecture? How does the three tier architecture overcome the problems of the two-tier architecture.	5	CO6	K3

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CODE: 18CET310 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January,2023

ENVIRONMENTAL ENGINEERING-I

(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)	State the importance of treatment of water for public water supply.	5 M
	b)	Explain different graphical methods of population forecasting. Also explain their advantages and disadvantages.	7 M
		(OR)	
2.	a)	Write a detailed note on population growth curve.	6 M
	b)	Explain the factors affecting water demand.	6 M

UNIT-II

3.	a)	Differentiate temporary and permanent hardness. Explain how they are removed from water.	6 M
	b)	Explain in detail the different forms of nitrogen compounds present in water.	6 M
		(OR)	
4.	a)	Compare the groundwater sources and surface sources with reference to their quality and quantity.	6 M
	b)	Explain characteristics of raw water also state IS quality standards of drinking water.	6 M

UNIT-III

5.	a)	Define detention time and surface overflow rate.	6 M
	b)	Draw a typical line sketch of water treatment plant and explain the function of each unit.	6 M
		(OR)	
6.	a)	Find the settling velocity of a particle of diameter 0.03 mm and specific gravity 2.7, settling from water whose coefficient of kinematic viscosity is $1x10^{-2}$ stokes.	6 M
	b)	Explain the sedimentation process used in a water treatment plant.	6M

UNIT-IV

7.	a)	Write a short note on ozonation.	4 M
	b)	Explain the working of slow sand filter with a help of neat sketch.	8 M
		(OR)	
8.	a)	Explain the operation and backwashing of rapid sand filter and draw a neat sketch.	8 M
	b)	Find the length and width of slow sand filter required to handle 2 MLD of water with a rate of filtration of 200 lit/hr/m^2. Assume L:B = 1:2.	4 M

UNIT-V

9.	a)	What is a service reservoir? Give its importance in distribution system.	6 M
	b)	What are the functions of a service reservoir?	6 M
		(OR)	
10.		Explain different layouts of water distribution system with neat sketches	12 M

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CODE: 18EET310 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January,2023

POWER ELECTRONICS

(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)	With a proper circuit diagram and wave forms explain the method of UJT triggering, for the gate of a thyristor that produces pulses for every positive half cycle of AC supply voltage.	6M
	b)	SCRs with a rating of 100V and 200A are available to be used in a string to handle 6*KV* and 1*KA*.Calculate number of series and Parallel units required in case derating factor is (a) 0.1 and (b)0.2	6M
		(OR)	
2.	a)	Draw and explain V-I characteristics of SCR.	6M
	b)	Explain voltage and current ratings of SCR	6M

UNIT-II

3.	a)	Illustrate the operation of single phase Half Wave controlled converter with RL load and derive the expression for average load voltage .	6M
	b)	Explain the operation of single phase fully controlled converter with R-load.	6M
		(OR)	
4.	a)	Analyze the operation of single-phase fully controlled converter using centre tap transformer with *RL* load in continuous conduction mode with a suitable circuit diagram and relevant waveforms.	6M
	b)	Calculate the average load current where resistance is of 100Ω is connected to in series with a large inductance across the single-phase fully controlled bridge converter supplied with 220V,50Hz when the firing angle is 60^o	6M

UNIT-III

5.	a)	Explain the operation of Three Phase Full converter with highly Inductive load and also derive the expression for average output voltage and rms output voltage.	12M
		(OR)	
6.	a)	A three-phase fully controlled bridge converter is connected to three-phase A.C supply of 400 V, 50 Hz and operates with a firing angle $\alpha = \pi/4$. The load current is maintained constant at 10A and the load voltage is 360V. Calculate: (i) Source inductance, Ls (ii) Load resistance, R	6M
	b)	Describe the operation of 3-phase dual converter with non-circulating current mode along associated waveforms and circuits.	6M

UNIT-IV

7. a) Briefly explain Modes of operation of TRIAC 6M
   b) Draw the circuit of a single phase midpoint type step down cycloconverter and sketch the relevant waveforms for fo=1/5f_s for RL load in discontinuous mode. 6M

(OR)

8. a) Draw the circuit of single phase voltage controller with anti parallel connection of two thyristors and explain the operation of Integral cycle control of AC voltage regulator. 6M
   b) A single phase voltage controller has input voltage of 230 V, 50 Hz and a load of R=15 Ω.For 6 cycles on and 4 cycles off, Identify (i) rms output voltage (ii) input pf and(iii) average and rms thyristor currents 6M

UNIT-V

9. a) Analyze the working principle of buck-boost converter with necessary circuit and waveforms. 6M
   b) Discuss various voltage control techniques employed in inverter circuits 6M

(OR)

10. a) Illustrate the operating principle of a step down chopper with RL-Load and derive the expressions for average voltage, average and RMS values of load current. 6M
    b) A single phase half bridge inverter feeds a resistive load of 10Ω,with a dc voltage source of 70V,determine (i) rms value of the fundamental component of output voltage (ii) output power (iii) average and peak currents of thyristor. 6M

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CODE: 18MET311 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January,2023

MANUFACTURING TECHNOLOGY - II

(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) Which are the suitable tool wear criteria that are generally practised in the industry? Explain your answers with examples. [4]
   b) The orthogonal cutting of steel with a 10° rake tool with a depth of cut of 2 mm and feed rate of 0.20 mm/rev. The cutting speed is 200 m/min. The chip thickness ratio is 0.31. The vertical cutting force is 1200 N, and the horizontal cutting force is 650 N. Calculate from the merchant's theory, the various work done in metal cutting and shear stress. [8]

(OR)

2. a) How do you define Tool Life? Explain the parameters that control the tool life of a single-point cutting tool. [4]
   b) Explain the types of chips produced in machining operations and conditions favouring them. [8]

UNIT-II

3. a) Explain the procedure for turning a job, which is very long. List the various operations and tools (cutting and holding) required for the operation. [4]
   b) A grey cast iron shaft is machined in a centre lathe in 1 minute with a single cut. The shaft is 100 mm long and 75 mm in diameter. If the feed used is 0.30 mm/revolution, what cutting speed was used? [8]

(OR)

4. a) Sketch four parts not suited for production on a single spindle automatic. [4]
   b) What are the steps of the procedure involved in changing over to a new part production on a Swiss-type auto? [8]

UNIT-III

5. a) Describe about the continuous broaching machine and explain the type of component surfaces for which it is useful. [6]
   b) What are the differences between simple indexing and differential indexing? Explain the relative merits. [6]

(OR)

6. a) Describe the methods of holding the work pieces in shapers. Give simple sketches of the same [3]
   b) Estimate the time required to machine a grey cast iron part measuring 6m long and 1.25m wide on a double housing planer. Cutting tools used are made of carbide, which can take a cutting speed of 80 m/min and a return speed is 160m/min. To finish the part, it requires two rough cuts with a feed of 1.5mm/stroke and two finish cuts with a feed of 0.5 mm/stroke. Assume the time for reversing the table is 0.02 minutes [9]

UNIT-IV

7. Describe the grinding wheel structure with the help of a neat sketch and state the different bonding and abrasive materials used in it. What would you like as an abrasive for grinding steel? [12]

(OR)

8. a) Explain the principle of gear shaping. [6]
   b) Sketch a gear hob and label its elements. [6]

UNIT-V

9. a) Define a fit in connection with an assembly. What are the different types of fits possible? [9]
   b) Write a short note on gauge blocks. [3]

(OR)

10. a) Explain how the gauge tolerance and gauge wear are allocated in the design of limit gauges [9]
    b) Define the terms tolerance, limits, and fits with reference to the dimensional measurement. [3]

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CODE: 18ECT311 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January,2023

ANTENNAS AND WAVE PROPAGATION

(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)	Define Antenna Parameters (i) Antenna impedance (ii) radiation resistance (iii) power gain and (iv) antenna efficiency	6M
	b)	Explain half wave dipole antenna and its radiation.	6M
		(OR)	
2.	a)	Explain the theorem related to radiation from half wave dipole	6M
	b)	State the theorem related to quarter wave monopole	6M

UNIT-II

3.	a)	Explain the two element arrays, advantages and its applications	6M
	b)	Define end fire array, schematic figures and salient features	6M
		(OR)	
4.	a)	Define binomial array and phased array with the respective schematic figures	6M
	b)	Derive the array factor of N-element uniform linear array	6M

UNIT-III

5.	a)	Explain the folded dipole antenna, schematic figures and its salient features	6M
	b)	Explain the V and inverted V antennas, schematic figure and its salient features	6M
		(OR)	
6.	a)	Explain the non resonant radiators and its figures	6M
	b)	Explain helical antenna and its salient features	6M

UNIT-IV

7.	a)	Explain corner reflectors with figures and its salient features	6M
	b)	Explain parabolic reflectors with figures and its salient features	6M
		(OR)	
8.	a)	Explain cassegrain feed with schematic figures, applications, advantages and disadvantages	6M
	b)	Explain in detail about the microstrip antenna with schematic figure, advantages, disadvantages and its applications	6M

UNIT-V

9.	a)	Explain the fundamental equation of free space propagation	6M
	b)	Explain in detail about the ground wave propagation	6M
		(OR)	
10.	a)	Explain sky wave propagation and the formation of ionosphere layers	6M
	b)	Explain the space wave propagation and the mechanism	6M

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AR18

CODE: 18CST309 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular/Supplementary Examinations, January, 2023

COMPUTER 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 various components of data communication	(6M)
	b)	Describe various layers in OSI model	(6M)
		(OR)	
2.	a)	Discuss Encapsulation	(6M)
	b)	Explain physical address	(6M)

UNIT-II

3.	a)	Compare fixed size and variable size framing	(6M)
	b)	Differentiate flow control and error centre	(6M)
		(OR)	
4.	a)	Discuss multiple access protocol	(6M)
	b)	Explain sliding window protocol	(6M)

UNIT-III

5.	a)	Differentiate virtual circuits and datagram subnet	(6M)
	b)	Explain link state routing algorithm	(6M)
		(OR)	
6.	a)	Differentiate IPV4 and IPV6	(6M)
	b)	Briefly discuss congestion control algorithms	(6M)

UNIT-IV

7.		Compare connection less Vs connection oriented services	(12M)
		(OR)	
8.		Explain TCP services and TCP features	(12M)

UNIT-V

9.		Write a notes on (a) DNS (b) SNMP (c) Electronic mail	(12M)
		(OR)	
10.	a)	What is static web document	(6M)
	b)	Discuss hyper text transfer protocol	(6M)

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AR16

CODE: 16HS3005 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January, 2023

MANAGERIAL ECONOMICS AND MANAGEMENT SCIENCE

(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)	Define Managerial Economics. Explain the nature of Managerial Economics.	7M
	b)	What is Elasticity of Demand? Explain the significance of elasticity of demand.	7M
		(OR)	
2.	a)	Define Demand? Explain the various determinants of demand.	7M
	b)	What is demand forecasting? Explain the various survey methods of forecasting.	7M

UNIT-II

3.	a)	What are Laws of Variable Proportions? Explain with an illustration.	7M
	b)	What is Break Even Analysis? Explain its significance and limitations.	7M
		(OR)	
4.	a)	Define production function? Explain the Cobb-Douglas production function.	7M
	b)	What are economies of scale? Explain the internal economies of scale.	7M

UNIT-III

5.	a)	What are the features of Monopolistic competition?	7M
	b)	How would you determine the price and output in a monopolistic competition?	7M
		(OR)	
6.	a)	Define Market? Explain the features of market structure.	7M
	b)	Explain the different strategy based pricing methods.	7M

UNIT-IV

7.	a)	Discuss in detail the significant contribution made by F.W. Taylor towards management.	7M
	b)	Briefly explain Maslow's Hierarchy of Human Needs theory of motivation.	7M
		(OR)	
8.	a)	Define Management? Explain the importance of Management in an organisation.	7M
	b)	Why does social responsibility become an important facet of management in the present times? How is it discharged?	7M

UNIT-V

9.	a)	Define Human Resource Management? Explain the various functions of a HR Manager.	7M
	b)	Discuss the various Channels of distribution used in marketing with appropriate examples.	7M
		(OR)	
10.	a)	Describe different stages of product life cycle and marketing strategies required at each stage.	7M
	b)	What do you understand by job evaluation? Explain in detail different methods of job evaluation.	7M

AR16

CODE: 16ME3015 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January-2023

METAL CUTTING AND MACHINE TOOLS

(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

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UNIT - I

1. a) Discuss about mechanism of chip formation with a neat sketch? 8M
   b) What is tool life? Enumerate the factors affecting tool life. Briefly explain the effect of each factor? 6M

(OR)

2. a) What is Cutting fluid? Explain in brief Purpose of cutting fluids and Properties of Cutting fluids? 6M
   b) In an orthogonal cutting operation, the following data have been observed: Uncut chip thickness = 0.127mm Width of cut = 6.35 mm Cutting speed = 2 m/s Cutting force = 567 N Thrust force = 227 N Chip thickness = 0.228 mm Rake angle = 10^0 Calculate shear angle, shear stress along the shear plane, chip velocity and the power for the cutting operation? 8M

UNIT-II

3. a) What are the differences between capstan and turret lathe? 6M
   b) Explain with neat sketches about thread cutting methods? 8M

(OR)

4. a) Explain the principle of operation of a Multi-spindle progressive action type horizontal automatic machine? 8M
   b) Calculate the machining time required for making 18 holes on M.S plate of 20mm thickness with the data: Drill diameter =30mm, Cutting speed=25m/min and Feed=0.15mm/rev? 6M

UNIT-III

5.	a)	what is meant by milling Process? Explain various types of milling cutters?	8M
	b)	Briefly explain operations in slotter with neat sketches?	6M
		(OR)	
6.	a)	Explain about the table feed mechanism of a shaper machine with neat sketch?	8M
	b)	Briefly explain the following operations? (i) Reaming (ii) Broaching machines iii) Drilling	6M

UNIT-IV

7.	a)	What is the difference between lapping and honing?	6M
	b)	Briefly explain the following processes with neat sketch? i) Abrasive jet machining ii) Gear cutting	8M
		(OR)	
8.	a)	Describe the working principle of surface grinding with neat sketch?	6M
	b)	Describe the centre less grinding process. What are the various feeding methods used in centre less grinding?	8M

UNIT-V

9.	a)	Distinguish interchangeability and selective assembly?	6M
	b)	Calculate all the relevant dimensions of 35H7/f8 fit, dimension 35 mm falls in the step of 30-50 mm. The fundamental deviation for f shaft is – 5.5D0.41. i (in microns)=0.45(D)1/3+0.001D, IT7=16i and IT8=25i.	8M
		(OR)	
10.	a)	Explain following terms with neat sketches? (i) Hole basis and shaft basis system (ii)unilateral and bilateral tolerance system	8M
	b)	State and Explain Taylors Principle of limit gauging?	6M

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AR16

CODE: 16CS3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January, 2023

COMPUTER NETWORKS

(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 various uses of computer networks.	7M
	b)	Categorize computer networks based on inter computer distance and explain the purpose of each of them.	7M
		(OR)	
2.	a)	Compare OSI and TCP/IP reference models.	7M
	b)	How do you uniquely identify applications running on a remote computer?	7M

UNIT-II

3.	a)	Write a short notes on the following protocols (i) GO BACK N (ii) Selective Repeat	7M
	b)	What are the different Versions of ALOHA? Explain.	7M
		(OR)	
4.	a)	Illustrate the concept of framing with a neat diagram.	7M
	b)	List and Explain various error correcting codes.	7M

UNIT-III

5.	a)	Explain hierarchical routing problem with suitable example?	7M
	b)	Define congestion. Mention the names of various congestion control mechanisms?	7M
		(OR)	
6.	a)	Compute shortest path in an example graph using Dijkstra's algorithm	7M
	b)	What are the advantages of using dynamic routing algorithms?	7M

UNIT-IV

7.	a)	Draw and explain connection management process in TCP?	7M
	b)	Explain the purpose of Asynchronous Transfer Mode?	7M
		(OR)	
8.	a)	What are the contents of a UDP header? Explain each of them.	7M
	b)	Compare TCP with UDP based on various communication parameters	7M

UNIT-V

9.	a)	What is domain name space? Explain different categories of domains	7M
	b)	Differentiate between static web pages and dynamic web pages based on technologies used	7M
		(OR)	
10.	a)	Write a sample HTML page to display a list of Grocery Items and their prices in a table.	7M
	b)	What are the different HTTP methods that can be used in communicating with a server	7M

AR13

CODE: 13EC3019 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January,2023
MICROPROCESSORS & MICRO CONTROLLERS
(Information Technology)

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

PART-A

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

1. a) What is the use of segmentation?
   b) What is a Microprocessor?
   c) Differentiate Macro and Procedure.
   d) What is pipelining?
   e) What signal is used to insert WAIT states in a bus cycle in 80386?
   f) What unit increases the speed of all shift and rotate operations in 80386?
   g) What is the use of TCON & TMOD registers?
   h) What is minimum mode?
   i) What are the modes of operation of 8255?
   j) What are dedicated interrupts of 8086?

PART-B

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

UNIT-I

2. a) Illustrate 8086 Physical address generation using segment base and offset with an example. What is the advantage of doing so? [6M]
   b) What is an Assembler directive and Explain any 6 Assembler directives [6M]

(OR)

3. a) Review the addressing modes of INTEL 8086 microprocessor. [4M]
   b) Describe in detail bus activities of 8086 microprocessor during memory read operation in minimum mode. [8M]

UNIT-II

4. a) Explain interrupt vector table of 8086 microprocessor. [6M]
   b) Compose an Assembly Language Program to arrange given bytes in ascending order residing in memory at an offset of 6000H from segment base. [6M]

(OR)

5. a) Illustrate the operation of stack during PUSH and POP instructions execution. [6M]
   b) List out string instructions .Describe the advantage of using string instruction "MOVSB" with justification. [6M]

UNIT-III

6. a) Explain the architecture features of 80386 Microprocessor. [6M]
   b) List the modes of operation of 80386 and Explain? [6M]

(OR)

7. a) Explain segmentation and paging concepts of 80386 microprocessor. [8M]
   b) List the features of 80486. [4M]

UNIT-IV

8. a) Illustrate the purpose of DMA controller in microprocessor based system designs and point out the need for DMA control in a microprocessor based system. [4M]
   b) Differentiate serial and parallel communication and describe in detail about methods of parallel data transfer. [8M]

(OR)

9. Explain the internal architecture of 8255 PPI. [12M]

UNIT-V

10. a) Explain register organisation of 8051micro controller. [6M]
    b) Describe in detail addressing modes of 8051 with suitable examples. [6M]

(OR)

11. Explain the pin diagram of 8051 microcontroller. [12M]