AR18

CODE: 18HST302 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, July, 2022

HUMAN VALUES

(Common to CE, 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)	Discuss the importance of Value Education	6M
	b)	Discuss the nature of Work Ethics and how its important in work place.	6M
		(OR)	
2.	a)	Critically analyse the Honesty with help of suitable examples	6M
	b)	Explain the advantages of Self-Exploration with examples.	6M

UNIT-II

3.	a)	Write a note on Harmony in the Human Being?	6M
	b)	Briefly explain the human being as a co-existence of the sentient 'I'	6M
		(OR)	
4.	a)	Briefly explain about the Body as an instrument of 'I' in your own words.	6M
	b)	What do you mean by needs of Self ('I')? Explain with real time examples.	6M

UNIT-III

5.	a)	What are the differences between Harmony in the Family and Harmony in Human?	6M
	b)	Define values in Human? Explain by taking yourself as an example	6M
		(OR)	
6.	a)	Explain the Trust and Respect as the foundational values of relationship with real time examples.	6M
	b)	Differentiate between intention and competence in your own words.	6M

UNIT-IV

7.	a)	Define existence and nature? Explain the different order of nature and existence	6M
	b)	What do you understand by existence as co-existence? Explain with real time examples.	6M
		(OR)	
8.	a)	Explain the self-regulation in nature with suitable examples	6M
	b)	Discuss the nature of Holistic perception of harmony with examples	6M

UNIT-V

9.	a)	Explain the importance of Humanistic Education with examples	6M
	b)	Critically analyse the role of Natural acceptance of human values.	6M
		(OR)	
10.	a)	Discuss difference between Humanistic Constitution and Humanistic Universal Order	6M
	b)	Critically analyse the Implications of the Holistic Understanding of Harmony	6M

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AR18

CODE: 18EET314 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, July-2022

SWITCHGEAR AND PROTECTION

(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)	Define restriking voltage and recovery voltages.	6M
	b)	In a 132kV system, the inductance and capacitance up to the location of circuit breaker are 0.3H and 0.017 μF, respectively. Determine (i) The maximum value of the restriking voltage across the contacts of circuit breaker, (ii) Frequency of transient oscillation and the maximum value of RRRV.	6M

(OR)

2.	a)	Explain the current chopping phenomena in circuit breakers.	6M
	b)	Explain the vacuum circuit breaker.	6M

UNIT-II

3.	a)	Explain the operation of electromagnetic attraction type relay in detail.	6M
	b)	Explain characteristic of different types of any two distance relays.	6M

(OR)

4.	a)	Explain the help of universal torque equation explain the impedance relay.	6M
	b)	Compare static relays with electromagnetic relays in detail.	6M

UNIT-III

5.	a)	Explain the protection device for a transformer that gives protection from internal faults?	6M
	b)	A 3-phase, 33/11 kV star delta connected transformer is protected by Merz-price system. The CTs on low voltage side have a ratio of 520/5 A. Find the ratio of CTs on the high voltage side.	6M

(OR)

6.	a)	Develop the protection scheme of generator against stator fault and inter turn.	6M
	b)	Explain how the transformer is protected with Buchholz relay.	6M

UNIT-IV

7.	a)	Classify differential protection scheme to the feeder and bus bar with neat diagram.	6M
	b)	Explain principle of translay relay protection scheme.	6M

(OR)

8.	a)	Explain principle of three zone protection scheme.	6M
	b)	Explain the carrier current protection scheme with neat diagram?	6M

UNIT-V

9.	a)	Explain what are the causes of over voltages in power system.	6M
	b)	Explain the protection scheme of rod gap arrester against lightning.	6M

(OR)

10.	a)	Write the advantages and disadvantages of ungrounded system.	6M
	b)	Explain resonant grounding with neat diagram.	6M

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AR18

CODE: 18MET313 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, July, 2022

CAD/CAM

(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)	Briefly explain the term scaling, translation and rotation used in Graphics.	4M
	b)	Draw and explain the CAD/CAM product cycle.	8M

(OR)

2.	a)	Differentiate between working coordinate system and screen coordinate system.	4M
	b)	The vertices of a triangle are situated at points (15, 30), (25, 35) and (5, 45). Find the coordinates of the vertices if the triangle is rotated by 30° in counter clockwise direction about its centroid.	8M

UNIT-II

3.	a)	Explain the Constructive Solid Geometry (CSG) method to create models	6M
	b)	Write the properties of Bezier and B-Spline curves.	6M

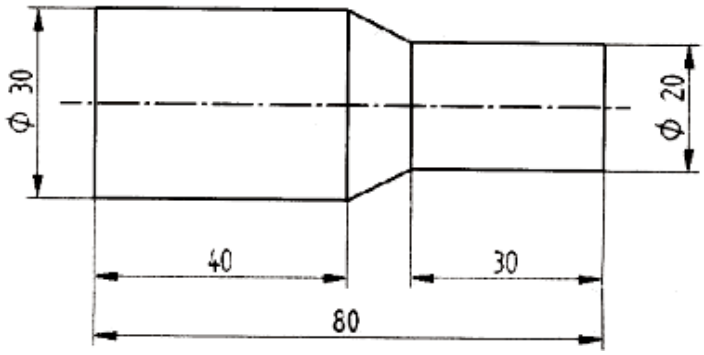
(OR)

4.	a)	Explain Bezier curve with a neat sketch. Explain its advantages and limitations.	6M
	b)	Derive the parametric equation of Hermite cubic spline curve.	6M

UNIT-III

5.	a)	What are the types of statements used in APT programming? Explain in detail.	4M

b) Write a part program for the component shown in figure below: 8M



Note: Assume the required data.

(OR)

6. a) Explain the difference between CNC and DNC along with neat sketches. 6M
   b) Explain with a neat sketch basic components of Numerical Control. 6M

UNIT-IV

7. a) Explain Opitz classification and coding system in GT. 8M
   b) Explain about generative CAPP system. 4M

(OR)

8. a) Compare a process type layout and group technology layout for batch production. 6M

   b) What is computer aided process planning? Explain the variant and generative CAPP systems. 6M

UNIT-V

9. a) Describe the types of material handling devices in FMS 6M
   b) Discuss the following types of layouts in the design of FMS. 6M
   i) Robot centred layout ii) Ladder layout iii) Loop layout iv) Free layout

(OR)

10. a) Compare the merits and demerits of a RGV and an AGV. 6M
    b) Sketch the layout of a typical FMS and explain the important subsystems. 6M

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AR18

CODE: 18BST309 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, July-2022

BIOLOGY

(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)	Why do we need to study biology? Discuss how biological observations of the 18th century that lead to major discoveries.	(6M)
	b)	Write the fundamental differences between science and engineering using live examples.	(6M)
		(OR)	
2.	a)	Analyse the Brownian motion and the origin of Thermodynamics.	(6M)
	b)	Explain the exciting and contemporary aspects of Biology as an Independent scientific discipline.	(6M)

UNIT-II

3.	a)	Write about the carbon utilization in Autotrophs, Heterotrophs and lithotrophs.	(6M)
	b)	Explain the ecological aspects of single-celled organisms.	(6M)
		(OR)	
4.	a)	Describe the concept of species and strains along with the identification of micro-organisms.	(6M)
	b)	Explain Microscopy. Write the classification of micro-organisms in detail	(6M)

UNIT-III

5.	a)	Define concepts of Recessiveness and Dominance with suitable examples.	(6M)
	b)	Discuss about Mendal's Laws of independent assortment.	(6M)
		(OR)	
6.	a)	Discuss the concept of complementation using human genetics.	(6M)
	b)	Write about the concept of Genetic code and Genetic recombination	(6M)

UNIT-IV

7.	a)	Define enzymes and explain the classification and properties of enzymes.	(6M)
	b)	Write about the structure and functions of Proteins	(6M)
		(OR)	
8.	a)	Write about the Enzyme kinetics and Kinetic parameters.	(6M)
	b)	Explain briefly about structural elements.	(6M)

UNIT-V

9.	a)	Write a brief account of the Endothermic reaction and demonstrate the glycolysis cycle.	(6M)
	b)	Explain energy-yielding and energy-consuming reactions.	(6M)
		(OR)	
10.	a)	Demonstrate Krebs cycle in life along with the characterization of an exergonic reaction.	(6M)
	b)	Discuss the synthesis of Glucose through photosynthesis in plants	(6M)

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AR16

CODE: 16CE3019 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, July-2022

PRE-STRESSED CONCRETE

(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) Differentiate between pre-stressed concrete structures over reinforced concrete structures 7M

   b) A rectangular concrete beam of cross section 300mm deep and 200mm wide is prestressed by means of 15 wires of 5mm diameter located 65mm from the bottom of the beam and 3 wires of diameter of 5mm, placed at 25mm from the top. Assuming the prestress in the steel as 840N/mm^2, Calculate the stresses at the extreme fibers of the mid span section when the beam is supporting its own weight over a span of 6m. If a uniformly distributed live load of 6Kn/m is imposed evaluate the maximum working stress in concrete. The density of the concrete is 24 kN/m^3. 7M

(OR)

2. a) What is pretensioning systems and explain Hoyer's system with neat sketch. 7M

   b) Explain the principle of pre-stressing and various methods of pre-stressing. 7M

UNIT-II

3. a) What are the losses of prestress concrete beams? Explain any two in Detail. 7M

   b) A post tensioned cable of beam 10m long is initially tensioned to a stress of1000 N/mm^2 at one end. If the tendons are curved so that the slope is 1 in 15 at each end with an area of 600mm^2, Calculate the loss of prestress due to friction. Following data is adopted. Coefficient of friction between duct and cable =0.55. Friction coefficient for wave effect=0.0015/m. During anchoring, if there is a slip of 3mm at the jacking end, calculate the final force in the cable and the percentage loss of prestress due to friction and slip. 7M

(OR)

4. A rectangular beam of 300 mm deep and 200 mm wide is prestressed by means of 12-5 mm diameter wires located 60 mm from the bottom of the beam and 3-5 mm diameter located 25 mm from the top of the beam. If the wires are initially tensioned to a stress of 800 N/mm^2, calculate the percentage loss of stress in the steel immediately after transfer. 14M

UNIT-III

5. Explain in detail with neat sketches about the shear strength of beams with and without shear reinforcement using IS: 1343. 14M

(OR)

6. A pre-tensioned beam is pre-stressed using 5mm diameter wires with an initial stress of 80% of the ultimate tensile strength of steel , fpu= 1600 N/sq.mm, fcu=40N/sq.mm. Find the following 14M
   i) Calculate the transmission length
   ii) Compute the bond stress at ¼ & ½ the transmission length from the end.
   iii) Calculate the overall average bond stress.

UNIT-IV

7. A composite beam is made by casting 300 X 900 mm precast prestressed with cast in situ slab of 1500 X 150 mm. the effective prestress of 12 Mpa at the soffit and zero at the top. determine the uniformly distributed for the composite action on a simply suppoted span 16m for the unpropped construction. Concrete weighs 25kN/m^3. 14M

(OR)

8. Explain the phenomenon of differential shrinkage in composite construction. 14M

UNIT-V

9. A concrete beam with a symmetrical I-section has flange width and depth of 200 mm and 60 mm, respectively. The thickness of the web is 80 mm and overall depth is 400 mm. the beam is prestressed by a cable carrying a force of 1000 kN. The span of the beam is 8 m. the center line of the cable is 150 mm from the soffit of the beam at the center of span, linearly varying to 250 mm at the supports. Compute the initial deflection at mid span due to prestress and the self weight of the beam, assuming E_c = 38 kN/sqmm. Compare the deflection with the limiting deflection permitted in IS: 1343 (D_c = 24 kN/cum). 14M

(OR)

10. a) Distinguish between short term and long term deflections. 7M
    b) A simply- supported beam of span 9 m and cross-section 250*500 mm is prestressed by a single cable with a prestressing force of 200 kN. The cable profile is parabolic with 50 mm below the centroid at midspan and zero eccentricity at supports. Take Ec = 35 kN/mm^2 and density of concrete is 25 kN/m^3. Calculate the upward deflection due to prestress at midspan. 7M

AR16

CODE: 16ME3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, July, 2022

CAD/CAM

(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)	Briefly explain the conventional process of the product cycle in conventional manufacturing environment.	8M
	b)	What are the Input devices and Output devices, explain them briefly.	6M
		(OR)	
2.	a)	Explain the following Transformations in 2 D and 3 D concept of Computer graphics with an example. i. Translation. ii. Scaling.	6M
	b)	A rectangle has corner co-ordinates (10, 20) (40, 20), (40, 40), (10, 40). This rectangle is rotated by 30° anticlockwise (i) about the point (40, 20). Compute the new co-ordinates.	8M

UNIT-II

3.	a)	What is meant by sweep? Discuss in detail the various types of sweep techniques available for 3D geometric construction.	8M
	b)	Compare CSG and B-Rep scheme.	6M
		(OR)	
4.	a)	What is meant by continuity of curves? What are the types of continuity curves?	8M
	b)	Find the equation of a Bezier curve which is defined by four control points as (80,30,0), (100,100,0),(200,100,0) and (250,30,0).	6M

UNIT-III

5.	a)	Explain with a neat sketch basic components of Numerical Control.	8M
	b)	What is manual CNC part programming? Explain with an example.	6M
		(OR)	
6.	a)	Explain the difference between CNC and DNC along with neat sketches	5M
	b)	Explain the following: (a) MCU (b) buffer storage (c) Canned cycle	9M

UNIT-IV

7.	a)	Explain OPTIZ coding system used in group technology	8M
	b)	What are the various hierarchical structure used in GT applications?	6M
		(OR)	
8.	a)	What is CAPP? Explain the any one type of Capp with neat sketches	8M
	b)	Explain the benefits of Group Technology	6M

UNIT-V

9.	a)	How does Lean production differ from Flexible production system? Explain.	7M
	b)	Explain the different types of manufacturing systems	7M
		(OR)	
10.		Discuss the principle of material handling. Describe the five types of material handling devices?	14M

AR16

CODE: 16EC3019 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, July-2022

ANTENNA AND WAVE PROPAGATION

(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 concept of retarded potential of an Electromagnetic wave. 7M
   b) Derive the expression for radiation resistance of short electric dipole. 7M

(OR)

2. a) Explain the basic principle of small circular loop antenna. 7M
   b) Explain the radiation mechanism in a dipole antenna. 7M

UNIT-II

3. a) Explain the different types of arrays with regard to beam pointing direction. 7M
   b) Derive the expression for the radiation pattern of a broadside uniform linear array of four elements and calculate the beam width of its major lobe. 7M

(OR)

4. a) Given a linear, broadside, uniform array of 10 isotropic elements with a separation of $\lambda/4$, between the elements, find the directivity of the Array. 7M
   b) By using pattern multiplication technique, Estimate the radiation pattern of 4 element, $d=\lambda/2$ of binomial array Antenna. 7M

UNIT-III

5. a) List the design features of V- antenna and Rhombic antenna. 7M
   b) Derive an expression for radiated electric field strength of a travelling wave radiator of length L. 7M

(OR)

6. a) Sketch the typical geometry of a Helical antenna radiating in axial mode. List out all its parameters and basic characteristics. Write the expressions for HPBW, BWFN, directivity and axial ratio. 7M
   b) Design 3 element Yagi-Uda array to operate at frequency of 430 MHz 7M

UNIT-IV

7. a) With reference to paraboloids explain the following 7M
   i) Aperture blocking ii) F/D ratio iii) Spill over
   b) Explain the various feeding mechanisms used in parabolic reflector antennas. 7M

(OR)

8. a) Describe the method for measuring the gain and radiation pattern of an antenna. 7M
   b) Explain about lens antenna. 7M

UNIT-V

9. a) Describe briefly the salient features of ground wave propagation. 7M
   b) Derive the expression for the field strength of the space wave. 7M

(OR)

10. a) What is radio horizon? Prove that the radio horizon is about 1.33 times the optical horizon. 7M
    b) Explain the concept of super refraction 7M