AR18

CODE: 18HST402 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-2022

HUMAN VALUES

(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)	Explain the process of self-exploration.	**(6M)**
	b)	Write a note on the basic guidelines for value education.	**(6M)**
		(OR)	
2.	a)	Write a note on Work Ethics with help of examples.	**(6M)**
	b)	Differentiate between the happiness and prosperity in your own words?	**(6M)**

UNIT-II

3.	a)	Differentiate the needs of self and the needs of body.	**(6M)**
	b)	What do you understand by co-existence of the sentient? Explain with examples.	**(6M)**
		(OR)	
4.	a)	Explain the importance of Harmony in the Human Being in your own words.	**(6M)**
	b)	What do you understand by the body as an instrument? Explain with suitable examples.	**(6M)**

UNIT-III

5.	a)	Briefly explain the characteristics of successful family with suitable examples.	**(6M)**
	b)	Explain the difference between the intention and competence in your own words?	**(6M)**
		(OR)	
6.	a)	What do you understand by harmony? Explain the advantages and disadvantages	**(6M)**
	b)	Discuss the main differences between human values and trust.	**(6M)**

UNIT-IV

7.	a)	Write a note on four orders of nature.	**(6M)**
	b)	What do you mean by existence and explain that existence is in a form of co-existence?	**(6M)**
		(OR)	
8.	a)	Elucidate harmony in nature and how will you create it. Explain with in your own words?	**(6M)**
	b)	What do you understand by Interconnectedness and explain with suitable examples?	**(6M)**

UNIT-V

9.	a)	What do you understand by Natural acceptance? Explain the Natural acceptance of human values in real life situation.	**(6M)**
	b)	Explain the importance of Humanistic Education in your own words.	**(6M)**
		(OR)	
10.	a)	Explain the difference between Humanistic Constitution and Humanistic Universal Order	**(6M)**
	b)	Explain the importance of Holistic Understanding of Harmony	**(6M)**

AR18

CODE: 18MEE443 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, February-2022

INDUSTRIAL HYDRAULICS AND PNEUMATICS

(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)	Inspect a gear pump with a neat sketch.	6M
	b)	Draw and explain different hydraulic symbols.	6M
		(OR)	
2.	a)	How do you Evaluate the hydraulic motor performance.	6M
	b)	How do you select the mechanics of hydraulic cylinder loading for 1st class lever.	6M

UNIT-II

3.	a)	Elaborate a check valve and shuttle valve.	6M
	b)	Interpret a pressure reducing valve.	6M
		(OR)	
4.	a)	Explain a pressure compensated valve.	6M
	b)	Develop the function and types of accumulators.	6M

UNIT-III

5.	a)	Explain speed control circuit using meter-in and meter-out circuit.	6M
	b)	Draw a circuit for plastic injection moulding machine.	6M
		(OR)	
6.	a)	Examine a standard manifold for dual speed.	6M
	b)	Recommend various hydraulic press applications.	6M

UNIT-IV

7.	a)	Design a pneumatic actuator with a neat sketch.	6M
	b)	Organize a pilot operated solenoid valve.	6M
		(OR)	
8.	a)	Enumerate a two way directional control valve.	6M
	b)	Design a PE converter.	6M

UNIT-V

9.	a)	Sketch and explain the working of a shuttle valve.	6M
	b)	Explain about time delay valve and its applications.	6M
		(OR)	
10.	a)	Recommend a position and pressure sensing circuit.	6M
	b)	Analyze pneumatic circuit analysis.	6M

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AR16

CODE: 16CE4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-2022

TRAFFIC ENGINEERING

(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)	What are the basic traffic characteristics that effect the traffic system	9M
	b)	What are the purposes of traffic volume study	5M
		(OR)	
2.	a)	If the spot speeds are 50, 40, 60, 54 and 45 kmph, then find the time mean speed and space mean speed.	7M
	b)	What is an Off-street parking? What are the different types of off-street parking facilities?	7M

UNIT-II

3.	a)	Compare basic capacity and possible capacity of a highway traffic lane. List the operating conditions on which the capacity measure depends on.	7M
	b)	Determine the factors affecting practical capacity.	7M
		(OR)	
4.	a)	Determine the importance of capacity and Level of service (LOS) of a facility in traffic engineering.	7M
	b)	List the factors affecting level of service of a facility.	7M

UNIT-III

	a)	The average normal flow of traffic on cross roads A and B during design periods are 400 and 250 PCU/hr; the saturation flow values on these roads are estimated as 1250 and 1000 PCU/hr respectively. The all-red time required for pedestrian crossings is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method.	14M
		(OR)	
6.	a)	What is the need for traffic regulation? What are the traffic regulations concerning the driver	7M
	b)	Determine the advantages of channelized intersection.	7M

UNIT-IV

7.	a)	What are the effects of noise on human beings?	7M
	b)	What are the measures for controlling air pollution?	7M
		(OR)	
8.	a)	Discuss briefly on the visual intrusion and degrading the aesthetics by traffic in urban space	7M
	b)	What are the guidelines to be kept in view in planning new facilities or improvement of existing ones to keep the effects of severance and land consumption as low as possible?	7M

UNIT-V

9.	a)	What is a traffic control device? Discuss briefly on traffic control devices?	7M
	b)	Discuss briefly on the classification of road markings.	7M
		(OR)	
10.	a)	Discuss briefly about the informatory signs.	7M
	b)	What are the various regulatory signs?	7M

AR16

CODE: 16EE4028 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-2022

SPECIAL ELECTRICAL MACHINES

(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.		Describe the various power controller circuits to Switched Reluctance motor and explain the operation of any one scheme with suitable circuit diagram.	14M
		(OR)	
2.	a)	Give basic features or characteristics of Switched Reluctance motor	7M
	b)	Describe the various operating modes of Switched Reluctance motor.	7M

UNIT-II

3.	a)	Explain the construction and principle of operation of Variable Reluctance Stepping motor.	10M
	b)	Compare closed loop control and open loop control in stepper motor	4M
		(OR)	
4.	a)	What are the advantages of closed loop control of stepper motor	7M
	b)	Explain the concept of torque production in variable reluctance stepping motor.	7M

UNIT-III

5.	a)	What are the advantages of BLPM DC motor over conventional DC motor	7M
	b)	What are the differences between mechanical and electronic commutator	7M
		(OR)	
6.	a)	Derive the torque and EMF equations of the permanent magnet brushless DC motor.	7M
	b)	Sketch torque – speed characteristics of a permanent magnet brushless DC motor.	7M

UNIT-IV

7.	a)	Discuss advantages & applications of linear induction motor	7M
	b)	What are the differences in the constructional features of PMBLDC and PMSM?	7M
		(OR)	
8.	a)	Derive the torque equation of PMSM with the phasor diagram	10M
	b)	How the linear induction motor is suitable for traction.	4M

UNIT-V

9.	a)	What are the factors affecting the efficiency of a traction drive?	7M
	b)	Compare the AC and DC traction	7M
		(OR)	
10.	a)	Classify and explain briefly what are the different motors used for the traction.	7M
	b)	What are the advantages and disadvantages of electric traction?	7M

AR16

CODE: 16ME4026 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B. Tech I Semester Supplementary Examinations, February,2022

INDUSTRIAL HYDRAULICS AND PNEUMATICS

(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)	List out any four advantages of fluid power system?	8M
	b)	Define pump? How pumps are classified? What are the factors to be considered for pump selection?	6M

(OR)

2.	a)	Give any four important properties of hydraulic fluids	8M
	b)	Define gear pump? How gear pumps are classified?	6M

UNIT-II

3.	a)	What are the different types of accumulators in use? Draw the circuit connections of a hydraulic accumulator.	8M
	b)	Draw symbolic representations of (i) Pressure reducing valve; (ii) Counter balance valve; and (iii) Sequence valve	6M

(OR)

4.	a)	What are the formulae used in selecting the size of an accumulator?	6M
	b)	Draw a simple hydro-pneumatic intensifier and explain its working principle.	8M

UNIT-III

5.	a)	Explain the speed control circuit for hydraulic motor using meter-in and meter-out circuits.	8M
	b)	Draw a circuit for a simple plastic injection moulding machine.	6M

(OR)

6.	a)	Draw a sketch and mark the standard accessories in a hydraulic power unit.	8M
	b)	Evaluate the pump capacity required in case of clamping for the hydraulic power unit having 8cm clamping cylinder bore diameter and 1.5m/min clamping speed. Estimate the working pressure for the 600kg load of the clamping cylinder.	6M

UNIT-IV

7.	a)	Mention seven applications in which compressed air is used?	7M
	b)	Mention the ways to activate a 3/2 pneumatic direction control valve	7M

(OR)

8.	a)	Mention the prime movers, and also the possibilities of linear/rotary motions using pneumatic, hydraulic and electrical systems.	6M
	b)	Present the graphic symbols (i) Push button-operated, spring return; (ii) Single-solenoid, spring return; and (iii) double solenoid, for 5/2 direction control valve	8M

UNIT-V

9.	a)	Differentiate a control air from signal air with illustration.	8M
	b)	Mention the alternate names given to an AND gate and an OR gate. Is it possible to use both AND gate and OR gate in a single circuit? Highlight the essential difference in the function of an AND gate as compared to an OR gate.	6M

(OR)

10.	a)	Illustrate the signal air 12 shifting the position of the direction control valve to flow the compressed air from 1 and 2. The air is getting exhausted from 2 to 3 prior to making of the effective signal. Explain the significance of the designated 12. Draw a figure designating the signal air by 10 to shift the position of the valve to block the compressed air supply.	8M
	b)	Describe briefly pneumatic vacuum system with three applications.	6M

AR16

CODE: 16EC4031 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-2022

GLOBAL POSITIONING SYSTEM

(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 how Satellite signal is Generated in GPS	7M
	b)	Differentiate Block I, Block II and Block IIA Satellites	7M
		(OR)	
2.		Explain the Working Principle of Global Positioning System in detail.	14M

UNIT-II

3.	a)	Describe C/A code and P-code Generations with block diagrams	10M
	b)	How Pseudo range is different from True range	4M
		(OR)	
4.		Explain the space segment control segment and user segment with neat sketch.	14M

UNIT-III

5.	a)	Compare Geoid and Ellipsoid	7M
	b)	Write short notes on selective availability.	7M
		(OR)	
6.	a)	Explain in detail about Global Datum and Regional Datum with corresponding examples	10M
	b)	Illustrate how a local datum reference is Transformed in to global datum reference	4M

UNIT-IV

7.	a)	Explain in detail about Code Measurement and Carrier phase Measurement	7M
	b)	Explain how a Pseudo range is measured in GPS Receiver	7M
		(OR)	
8.	a)	Explain RINEX format in detail.	8M
	b)	Compare Observation Data file Navigation Data file	6M

UNIT-V

9.		Derive the Equations of Ionospheric Range Delay for Code measurement and Phase-range measurement starting from Refractive index	14M
		(OR)	
10.	a)	Explain Satellite Ephemeris Error and Satellite clock Error	7M
	b)	Describe about the Atmospheric delay Errors	7M

AR16

CODE: 16CS4031 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2022

CRYPTOGRAPHY AND CYBER SECURITY

(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)	Determine the security services required to counter various types of Active and Passive attacks.	7 M
	b)	Discuss the various principles involved in private and public key cryptography.	7 M
		(OR)	
2.	a)	Define the mono alphabetic cipher. What is the difference between a mono alphabetic cipher and a polyalphabetic cipher?	7 M
	b)	Discuss any four Substitution Technique and list their merits and demerits.	7 M

UNIT-II

3.	a)	Explain about DES algorithm.	7 M
	b)	Identify the possible threats for RSA algorithm and list their counter measures.	7 M
		(OR)	
4.	a)	Perform decryption and encryption using RSA algorithm with p=3, q=11, e=7 and N=5.	7 M
	b)	Briefly explain Deffie-Hellman key exchange with an example.	7 M

UNIT-III

5.	a)	Discuss Vulnerability Naming Schemes in detail.	7 M
	b)	Explain Attacker's Motivation and Tactics.	7 M
		(OR)	
6.	a)	Describe different types of Malwares.	7 M
	b)	Explain Attacks on the Power Grid and Utility Networks.	7 M

UNIT-IV

7.	a)	Explain the architecture of Firewall and mention it's characteristics.	7 M
	b)	Describe about the Windows 7/Vista Firewall as a Personal Firewall	7 M
		(OR)	
8.	a)	What are the differences between Application-Level Gateways and Circuit-Level Gateways?	7 M
	b)	Explain in detail about Emerging Firewall Technology.	7 M

UNIT-V

9.	a)	Explain Network-Based IDS/IPS and Host-Based IDS/IPS.	7 M
	b)	Briefly discuss about SNORT.	7 M
		(OR)	
10.	a)	Explain about Distributed Intrusion Detection Systems and Standards	7 M
	b)	Discuss about the McAfee Approach to IPS	7 M

AR16

CODE: 16CS4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, February-2022

ADVANCED COMPUTER ARCHITECTURE

(Computer Science 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)	Describe three shared memory multi-processor models with neat diagrams.	8M
	b)	Explain any five basic metrics affecting the scalability of a computer system for a given application.	6M
		(OR)	
2.	a)	Write differences between multi-processors and multi-computers.	7M
	b)	Describe some important applications of on parallel processing.	7M

UNIT-II

3.	a)	Briefly explain the characteristics of memory devices in a memory hierarchy what is memory interleaving?	9M
	b)	Briefly explain the six basic cache optimization employed to improve the cache performance.	5M
		(OR)	
4.	a)	Explain the memory hierarchy from low to high levels in detail with neat diagrams.	7M
	b)	Discuss the four memory hierarchy questions for virtual memory.	7M

UNIT-III

5.	a)	Differentiate between synchronous and asynchronous models.	7M
	b)	What are reservation tables in the context of pipelines? Why are they required? Give a sample pipeline with both feedforward and feedback connections and show how a reservation table is created for it.	7M
		(OR)	
6.	a)	Differentiate between linear and nonlinear pipelines. Give their sample pipeline structures and reservation tables.	6M
	b)	Explain pipeline processors according to the levels of processing and explain with a pipeline diagram.	8M

UNIT-IV

7.	a)	Explain the crossbar switch organization for a multiprocessor system. Also give the structure of a cross bar network.	7M
	b)	What is a Multistage Network? Describe different types of multistage network.	7M
		(OR)	
8.	a)	Write in detail about inter processor communications.	7M
	b)	Explain the architecture of vector super computer with neat diagram.	7M

UNIT-V

9.	a)	Briefly characterize the multi cache coherence problem and describe various methods that have been suggested to cope with the problem.	7M
	b)	What is Cache Coherence and why is it important to shared memory multi-processor systems.	7M
		(OR)	
10.	a)	Write about (a) Message Passing Mechanism and (b) Message Routing Schemes.	7M
	b)	Explain Goodman's write once cache coherence protocol using write invalidate policy on write back caches.	7M

AR13

CODE: 13EE4023 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2022

POWER SYSTEM ANALYSIS

(Electrical & Electronics Engineering)

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

PART-A

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

1. a) What is the advantage of per unit method over percent method?
   b) Write the advantages of P.U. system
   c) Which bus matrix is called sparsity matrix?
   d) What is effect of fault impedance?
   e) What is the need of Z_{bus} building algorithm?
   f) Draw the sequence network for L-L fault
   g) Define negative sequence and zero sequence components
   h) What are symmetrical components?
   i) Define Inertia constant.
   j) Define critical clearing time.

PART-B

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

UNIT-I

2. a) Derive the Formula for Base Impedance. 4M
   b) Determine Y_{Bus} for the network, using by direct inspection method for the data shown below. 8M

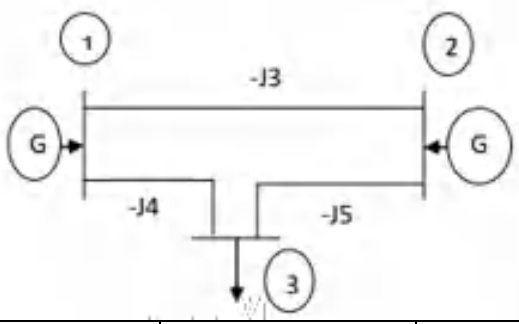
Element	E-A	E-B	A-B	B-C	A-D	C-F	D-F
Positive Sequence reactance	0.04	0.05	0.04	0.03	0.02	0.07	0.10

(OR)

3. a) List the advantages of Per Unit system. 3M
   b) Explain the direct inspection method of formation Y_{bus}. 9M

UNIT-II

4. A three bus power system shown below and the relevant p.u. line admittances are indicated on the diagram and bus data are given in table. Determine the voltages at buses 2 and 3 after first iteration using Gauss –Seidel method. 12M



Bus No	Type	Generation		Load		Bus Voltages	
		P_G	Q_G	P_L	Q_L	V	δ
1	Slack	-	-	-	-	1.02	0
2	PQ	0.25	0.15	0.5	0.25	-	-
3	PQ	0	0	0.6	0.3	-	-

(OR)

5. Explain Newton -Raphson (Rectangular) load flow. Write step-by-step algorithm 12M

AR13

CODE: 13EE4023 SET-2

UNIT-III

6. a) Explain the modifications necessary in the Z_{BUS} when a mutually coupled element is removed or its impedance is changed. 6M

   b) The section bus-bars A and B are linked by a bus-bar reactor rated at 5000KVA with 10% reactance. On bus-bar A there are two generators each of 10000KVA with 10% reactance and on bus-bar B two generators each of 8000KVA with 12% reactance. Calculate the short circuit MVA fed into a dead short circuit between all phases on bus-bar section B with bus-bar reactor in the circuit. 6M

(OR)

7. a) Determine short circuit MVA at the bus bars of a generating station 500 MVA and other station is 200 MVA. The generated voltage of each station is 12 kV. Also find the possible short circuit MVA at each station when they are linked by an inter connected cable with a reactance of 0.6 Ω. 6M

   b) What is the importance to study the short circuit analysis? Discuss the possible causes of short circuits in the power system. 6M

UNIT-IV

8. a) Derive the necessary equations to determine the fault current for a double line to ground fault. 5M

   b) The line currents in a 3-phase supply to an unbalanced load are respectively, I_a=10+20j, I_b= 12-10j , I_c= -3-5j Amp, phase sequence is abc. Determine the sequence components of currents. 7M

(OR)

9. a) Derive the expression for the fault current and terminal voltages for a line to ground fault occurs at the terminal of an unloaded 3-phase alternator. Assume that the alternator neutral is solidly grounded. 6M

   b) Determine the symmetrical components for the three phase currents. 6M
   $I_R = 15\angle 0^o$, $I_Y = 15\angle 230^o$ and $I_B = 15\angle 130^o$

UNIT-V

10. a) Draw a diagram to illustrate the application of equal area criterion to study Transient stability when there is a sudden increase in the input of generator. 6M

    b) Derive the formula for calculating critical clearing angle. 6M

(OR)

11. a) Define the following terms 6M

    1) Steady State Stability Limit
    2) Transient State Stability Limit
    3) Dynamic State Stability Limit

    b) An alternator has reactance of 1.3 p.u is connected to an infinite bus bar with voltage 1.1 p.u through transformer and a line of total reactance of 0.75 p.u. The alternator no load voltage is 1.04 p.u and its inertia constant is 6 MW-Sec/MVA p.u with a frequency of 50 Hz. Find the frequency of natural oscillations if the machine is loaded to (i) 50% and (ii) 75% of its maximum power limit. 6M

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