AR20

CODE: 20HST101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

ENGLISH

(Common to CE, CSE, IT, MECH & AIML Branches)

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) Swami speaks about different modes of punishment at school. Do you think Samuel punishes boys like that? State reasons to justify your answer from Father's Help. 5M

   b) Provide at least two synonyms for each of the following words. 5x1=5
   i. languor ii. audacity iii. eloquence iv. gorgeous v. unorthodox

(OR)

2. a) 'Swaminathan sat down, feeling slightly happy at his success.' In what sense was he successful? State reasons to justify your answer from Father's Help. 5M

   b) Write one-word substitutes for the following expressions. 5x1=5
   i. One who can use either hand with ease
   ii. An arrangement of flowers that is usually given as a present
   iii. A community of people smaller than a village
   iv. A person who is trained to travel in a spacecraft
   v. A person who writes beautiful writing

UNIT-II

3. a) Trace the influence of Kalam's father on him from A P J Abdul Kalam's My Early Days? 5M

   b) Fill in the blanks with appropriate verb forms. 5x1=5
   i. My children ----------(play) basketball every Saturday.
   ii. We _____ (visit) Bangalore in Summer Vacation.
   iii. I----------(thank) him for what he ----------(do).
   iv. He ----------(not, reach) home yet.
   v. If I go to Hyderabad I----------(bring) you the book.

(OR)

4. a) What was the important lesson that Iyadurai Solomon taught Kalam? 5M

b) Fill in the blanks with appropriate verb forms. 5x1=5

i. He ----------(go) for a walk in the mornings.
ii. She ----------(work) in the office for 10 years.
iii. John----------(have) a car.
iv. I ----------(complete) writing exams yesterday.
v. If you _____ (come) early, you can catch the bus.

UNIT-III

5. a) What do you think the last two lines of the poem The Road Not Taken mean? (Looking back, does the poet regret his choice or accept it?) 5M

b) b. Rewrite / Convert the following as directed. 5x1=5

i. He said to me, "I am happy to be here this evening. (into Indirect Speech)
ii. The visitor requested him to take him to the officer. (into Direct Speech)
iii. No other country in the world is so great as India. (into Superlative Degree)
iv. Tea is too hot to drink. (so...that... not)
v. He was a mere boy and so he could not stand the fight. (Being)

(OR)

6. a) Elaborate the conflict presented by Robert Frost in The Road Not Taken? 5M

b) Rewrite / Convert the following as directed. 5x1=5

i. He said, "Alas! He is dead." (into Indirect Speech)
ii. The officer ordered the typist to type the letter immediately. (into Direct Speech)
iii. Vimala is wiser than Kamala. (into Positive Degree)
iv. He worked hard, yet he did not succeed. (Although)
v. You must pay the bill or the goods will be returned. (If)

UNIT-IV

7. a) George Orwell talks about how political language is designed to twist meaning. Do you agree with this statement? Use examples from speeches you have heard or read to substantiate your answer. 5M

b) Punctuate the below extract. 5M

one day ralph decided to pack his suitcase full of snowballs his cousin sammy told him not to he told ralph that all the snowballs would melt and ruin his suitcase ralph didnt listen he packed his suitcase full of snowballs and they all melted water started to leak out of his suitcase ralph figured out a way to solve his problem he put his suitcase in the freezer and the water turned to ice

(OR)

8. a) What do you think George Orwell means by 'What is above all needed is to let the meaning choose the word...'? 5M

b) Fill in the blanks of the below passage with appropriate prepositions. 5x1=5

Opera refers to a dramatic art form, originating in Europe, __(i)__ which the emotional content is conveyed to the audience as much through music, both vocal and instrumental, as it is through the lyrics. __(ii)__ contrast, in musical theater an actor's dramatic performance is primary, and the music plays a lesser role. The drama in opera is presented using the primary elements __(iii)__ theater such as scenery, costumes, and acting. However, the words __(iv)__ the opera, or libretto, are sung rather than spoken. The singers are accompanied by a musical ensemble ranging from a small instrumental ensemble __(v)__ a full symphonic orchestra.

UNIT-V

9. a) J. B. Priestley's Mother's Day is a humorous and satirical depiction of the status of the mother in the family. Explain. 5M

b) Write a letter to a publisher to send some books in your curriculum. 5M

(OR)

10. a) What are the issues raised in Mother's Day and how can they be resolved? 5M

b) Write an e-mail to your boss about the despatch of goods from the office. 5M

UNIT-VI

11. a) Explain the origin of the Chipko Movement. 5M

b) Read the following passage carefully and answer questions given below. 5x1=5

"A Cold Day"

It is a frigid January day in York, Pennsylvania. The temperature is below freezing. Snow is starting to fall. Dr. James turns on the television to check the weather. He must leave for his work at the hospital soon. "Today is going to be very cold," says the TV weatherman. "Be sure to wear very warm clothes when you go outside. Also, be careful driving on the roads. Snowfall will make them slippery. In fact, if you can stay home today, do it!" Dr. James cannot stay home. Very sick people are waiting to see him at the hospital. He goes to his closet. He takes out the warmest clothes he has. He puts on a sweater, jacket, gloves, socks, boots, and a hat. He opens his front door to go to work. A gust of cold air blows inside. "Wow, it is very cold outside," Dr. James says. He is from Miami and is not used to the cold. "The weatherman was right!" Before he can drive to work, Dr. James must clear the snow off his car. He does this very fast. He hops in the car. He shivers. His neck feels especially cold. Dr. James drives slowly to work. Everyone else is driving slowly, too. There is a lot of traffic on the road. There are cars in front of and behind him. Suddenly, the cars in front of Dr. James come to a stop. There has been an accident! Dr. James hurries from his car to check on the driver of the car that has swerved off the road. "Is everyone okay?" Dr. James asks. "Yes, yes, we are fine. We slipped on a patch of ice," the driver says. "This would have been a good day to stay home in bed."

1) If the weather is frigid, it is very

A. cold B. rainy C. windy D. slippery

2) In what city does this story take place?

A. Florida B. Miami C. Pennsylvania D. York

3) Dr. James doesn't stay home because

A. There are sick people waiting for him. B. He listens to the weatherman. C. He has to clear snow off his car. D. He must help the people in the accident.

4) What could Dr. James have put on his neck to keep it warm?

A. gloves B. a scarf C. another hat D. a jacket

5) What does Dr. James do before he leaves for work? I. He dresses warmly. II. He checks the weather on TV. III. He clears snow from his car.

A. I only B. I and II C. II and III D. I, II, and III

(OR)

12. a) 'Chipko Movement is an eco-feminist movement.' Do you agree with the statement? Give reasons. 5M

    b) Write an essay on "Online classes and Offline classes" in 500 words. 5M

AR20

CODE: 20EET101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, June-2022

ELECTRONIC DEVICES AND CIRCUITS
(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 formation of PN junction under open circuit condition of diode.	5M
	b)	What is the basic principle behind the LED?	5M

(OR)

2.	a)	Draw and explain the V-I characteristics of PN junction diode under forward and reverse bias condition.	6M
	b)	Explain how the zener diode works as a voltage regulator.	4M

UNIT-II

3.		Explain the working of Full-Wave Rectifier with input and output wave forms and derive the following parameters of Half-Wave Rectifier: a) Ripple factor b) Rectification efficiency	10M

(OR)

4.	a)	Compare the Half Wave and Full- Wave rectifiers?	4M
	b)	A half-wave rectifier has a load of 3.5KΩ. If diode resistance and secondary coil resistance together have a resistance of 800Ω and the input voltage has a signal of peak voltage 240V. Find (i) maximum current (ii) average current (iii) rms value of current (iv) dc output power (v) ac input power (vi) efficiency of rectifier.	6M

UNIT-III

5.	a)	Explain the input and output characteristics of common emitter transistor configuration.	5M
	b)	The reverse leakage current of the transistor when connected in CB configuration is 0.2μA and it is 18μA when the same transistor is connected in CE configuration. Calculate α and β of the transistor.	5M

(OR)

6.	a)	Give the differences between BJT and JFET.	4M
	b)	Explain the input and output characteristics of common base transistor configuration and illustrate the early effect.	6M

UNIT-IV

7.	a)	Explain the factors affecting the stability of operating point of a transistor.	5M
	b)	What is biasing?	5M

(OR)

8.		Explain the voltage-divider or self bias of BJT with necessary diagrams. Deduce the expression for stability factor (S) of Voltage-divider bias.	10M

UNIT-V

9.		Explain different negative feedback amplifiers.	10M

(OR)

10.	a)	Draw the feedback structure and derive the expression for feedback gain with Negative Feedback.	5M
	b)	The collector supply voltage of a CE amplifier is 10V. The voltage drop across a 1KΩ resistor connected in collector circuit is 1V. Find the collector-emitter voltage and base current if $\alpha = 0.9$.	5M

UNIT-VI

11.		Derive the expression for frequency of oscillations and the condition for starting oscillations of a Hartley oscillator.	10M

(OR)

12.		Derive the expression for frequency of oscillations and the condition for starting oscillations of a Wien-bridge oscillator.	10M

AR20

CODE: 20ECT101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

ELECTRONICS-I

(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)	Differentiate among conductor, insulator and semiconductor using energy band concept.	5M
	b)	A diode operating at 300^0K at a forward voltage of 0.4V carries current of 10mA when voltage is changed to 0.42V the current becomes thrice. Calculate the value of reverse leakage current and η for the diode (Assume V_T=26mV). Assume necessary data.	5M

(OR)

2.	a)	Explain about various current components in a forward biased PN junction diode.	5M
	b)	A reverse bias voltage of 90V is applied to a germanium diode through a resistance R. The reverse saturation current of the diode is 50μA at an operating temperature of 25^0C. Compute the diode current and voltage for (i) R=10MΩ (ii) R= 100MΩ. Assume necessary data.	5M

UNIT-II

3.		Explain the operation of bridge full wave rectifier. Find its efficiency and ripple factor.	10M

(OR)

4.		Obtain the expression for ripple factor of full wave rectifier with capacitor filter.	10M

UNIT-III

5.	a)	Why transistor is considered as current control device? Explain?	5M
	b)	What is early effect? How does it modify the V-I characteristics of a BJT?	5M

(OR)

6.	a)	With neat sketches explain the cut-off region, active region and saturation region of transistor CE output characteristics.	5M
	b)	With neat sketch explain the drain and transfer characteristics of Enhancement MOSFET.	5M

UNIT-IV

7.	a)	Explain the concept of DC load line and AC load line with neat sketches.	5M
	b)	Design a self bias circuit for the following specifications V_{cc}=12V, β=100, I_{CQ}= 4mA, V_{CEQ}=4V, V_E= V_{CC}/4, R_E=220 ohms and V_{BE}=0.7V. Assume necessary data.	5M

(OR)

8.		Obtain the expression for stability factor 'S' for Fixed bias, Collector to base bias and self bias circuits.	10M

UNIT-V

9. a) Analyze the common base amplifier using h-parameter model (Exact analysis) and derive the expressions for voltage gain, current gain, input impedance and output impedance. 5M

   b) A CE amplifier is driven by a voltage source of internal resistance R_s=800 Ω, and the load impedance is R_L=1000 Ω. The h-parameters are h_{ie}=1KΩ, h_{re}=$2*10^{-4}$, h_{fe}=50, h_{oe}=25μA/V. Compute the current gain, input resistance, voltage gain, output resistance. Assume necessary data. 5M

(OR)

10. a) Analyze the common collector amplifier using h-parameter model (Approximate analysis) and derive the expressions for voltage gain, current gain, input impedance and output impedance. 5M

    b) Consider a single stage CE amplifier with R_s = 1KΩ, R_1 = 50 KΩ, R_2 = 2KΩ, R_c = 1KΩ, R_L = 1.2KΩ, h_{fe} = 50, h_{oe} = h_{re} = 0, h_{ie} = 1.1KΩ. Find A_I, R_o, $A_{v,}$ R_i. Assume necessary data. 5M

UNIT-VI

11. a) Explain the concept of feedback and effect of feedback on the characteristics of amplifiers. 5M

    b) Determine voltage gain, input and output impedance of negative feedback on amplifier having A_V=100, R_i=10KΩ, and R_O=20KΩ, with a feedback factor β= 0.1? Assume necessary data. 5M

(OR)

12. a) What are the different types of feedback amplifiers? And draw the various feedback topologies circuits. 5M

    b) An amplifier has a voltage gain of 4000. Its input impedance is 2K ohms, and output impedance is 60K ohms. Calculate the voltage gain, input and output impedance of the circuit, if 5% of feedback is fed in the form of voltage series negative feedback. Assume necessary data. 5M

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AR18

CODE: 18EET101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

SWITCHING THEORY AND LOGIC DESIGN

(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)	Convert the following octal numbers to hexadecimal. i) 1762.46 ii) 6054.263	6 M
	b)	Represent the following decimal numbers in BCD and Excess-3 codes. i) 429.5 ii) 158.7	6 M

(OR)

2.	a)	Represent the following binary numbers using 2's Complement. i) 1100.10 ii) 111.01 iii) 10001.01	6 M
	b)	Convert the following Gray codes to binary number. i) 100010110 ii) 11100111	6 M

UNIT-II

3.	a)	Obtain the minimal expression F= Σ m(0,1,4,6,8,9,11) using K-map	6 M
	b)	Find the complement of the following Boolean functions and reduce them to a minimum number of literals. i) (BC' + A'D) (AB' + CD') ii) B'D + A'BC' + ACD + A'BC	6 M

(OR)

4.	a)	Obtain the minimal SOP expression for $F = \sum m(2,3,5,7,9,11,12,13,14,15)$	6 M
	b)	Draw the following functions using logic gates. i) F = D(A' + B) + B'D ii) F = y'z + wxy' + wxz' + w'x'z	6 M

UNIT-III

5.	a)	Design full-subtractor using basic logic gates.	6 M
	b)	Design full-adder using basic logic gates.	6 M

(OR)

6.	a)	Design the 4-bit BCD adder using 4-bit binary adders and explain its operation.	6 M
	b)	Implement half adder using basic logic gates.	6 M

UNIT-IV

7.	a)	A combinational circuit is defined by the following three Boolean functions. Design the circuit with a decoder and external gates. $F_1 = X'Y'Z' + XZ$, $F_2 = XY'Z' + X'Y$, $F_3 = X'Y'Z + XY$	6 M
	b)	Implement the function f (A, B, C, D) = ∑(0, 1, 5, 7, 10, 14, 15) using an appropriate multiplexer.	6 M

(OR)

8.	a)	Design 8x1 multiplexer.	6 M
	b)	Describe the operation of 3 x 8 decoder with neat diagram.	6 M

UNIT-V

9.	a)	Design a divide-by-6 ripple counter using JK flip-flops.	6 M
	b)	What is meant by characteristic table and characteristic equations? Present the characteristic tables and characteristic equations of different flip flops.	6 M

(OR)

10.	a)	Illustrate the function of JK flip-flop using NAND gates in detail.	6 M
	b)	Construct a 4-bit Johnson counter using JK flip-flops.	6 M

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AR18

CODE: 18EST104 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

ELEMENTS OF WORKSHOP TECHNOLOGY

(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)	Define Manufacturing & Explain processes effecting change in properties.	6 M
	b)	Give brief classification of materials used in manufacturing.	6M
		(OR)	
2.		What are the various primary shaping processes and machining processes used in manufacturing? Explain any three.	12M

UNIT-II

3.	a)	How the Carpentry tools are are classified according to their use?	6M
	b)	How does a Ripsaw differ from a Cross cut saw?	6M
		(OR)	
4.	a)	Name the different planes used in carpentry and describe the following:(i) wooden jack plane and (ii) Metal Jack Plane	6M
	b)	Sketch and describe the following joints (i) Mortise and Tenon Joint (ii) Lap dovetail Joint.	6M

UNIT-III

5.	a)	Name and explain various types of files used in fitting section.	6M
	b)	Sketch and describe a hand hacksaw.	6M
		(OR)	
6.	a)	Sketch and describe the following (i) Inside Caliper (ii) Outside Caliper	6M
	b)	Explain the following fitting operations: (i) Chipping (ii) Scraping	6M

UNIT-IV

7.	a)	Explain various metals used in sheet metal work.	8M
	b)	What is the importance of sheet metal work?	4M
		(OR)	
8.		List the sheet metal operations and explain any three.	12M

UNIT-V

9.	a)	Describe with sketches (i) Swage block (ii) Anvil.	6M
	b)	Write short Notes on Fullers and Flatters.	6M
		(OR)	
10.	a)	Sketch and show the difference between hand hammer and sledge hammer.	6M
	b)	Explain the following operations with sketches: (i) Bending (ii) punching.	6M

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AR18

CODE: 18ECT101 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, June-2022

ELECTRONIC DEVICES
(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)	Derive an expression for Fermi level in an extrinsic semiconductor	6 M
	b)	Derive expression for the continuity equation	6 M
		(OR)	
2.	a)	Explain the principle of Hall effect with diagram and write its applications	7 M
	b)	What is law of junction? Explain	5 M

UNIT-II

3.	a)	Explain in detail about the current components in a pn junction diode.	8 M
	b)	Determine the forward resistance of a Silicon PN junction diode when the forward current is 6 m A at room temperature	4 M
		(OR)	
4.	a)	Derive expression for the Transition capacitance of PN junction diode	7 M
	b)	Explain in detail the break down mechanisms in a diode	5 M

UNIT-III

5.	a)	Explain the working of a NPN transistor	6 M
	b)	Draw the circuit diagram for finding the CE characteristics of a Transistor	6 M
		(OR)	
6.	a)	What is Early effect and what are the results of Early effect	6 M
	b)	A transistor has $I_B = 100\mu A$ and $I_C = 2\mu A$ Find i)β of the transistor ii) α of the transistor iii)Emitter current I_E	6 M

UNIT-IV

7.	a)	With a neat construction diagram explain the principle of operation of a JFET. Give its characteristics.	7 M
	b)	Write about differences between BJT and FET.	5 M
		(OR)	
8.	a)	Explain the operation of N-channel enhancement type MOSFET with the help of it's (ID-VDS) and (ID-VGS) characteristics	7 M
	b)	Distinguish between JFET and MOSFET	5 M

UNIT-V

9.	a)	Describe the working principle of an SCR with V-I Characteristics	6 M
	b)	Draw the equivalent circuit and V-I Characteristics of UJT and explain it	6 M
		(OR)	
10.	a)	Explain the operation of varactor diode with neat diagram	6 M
	b)	Explain the construction and working of photodiode?	6 M

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