EC10508 /EC-1058 Basic Electronics

I B.E./B.TECH EXAMINATION

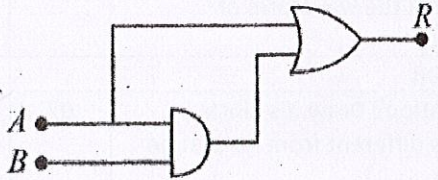Time   3 hrs.   Max Marks:70

                                                    Min Marks: 22

NOTE: Attempt all the questions. All carry equal marks.All abbreviations carry their usual meanings.

TOTAL QUESTIONS - 05

Q. No		Question	Marks	CO	BL	PI
1	a	Explain the formation of Depletion layer in a PN junction.	02	1	1	1.4.1
	b	Sketch the V – I characteristics of a P N junction Diode.	02	1	1	1.4.1
	c	How does Zener Diode regulate the voltage? Explain.	03	1	2	1.4.1
	d	What is the difference between Half wave and Full wave rectifier? Draw the circuit diagram of Bridge Rectifier with labelled input and output waveform.	07	1	2	1.4.1
		OR				
	e	Explain the working of NPN CE transistor amplifier. Also draw its input and output characteristics and indicate different regions of importance.	07	1	2	1.4.1
2	a	Explain the working of Depletion type MOSFET.	02	2	1	1.4.1
	b	Explain the Virtual Ground Concept in an Operational Amplifier.	02	2	2	1.4.1
	c	Bringout a pointwise comparison between JFET and MOSFET.	03	2	2	1.4.2
	d	Explain with the help of neat diagrams, the structure of an N channel FET and it's volt-ampere characteristics.	07	2	3	1.4.1
		OR				
	e	What are characteristics of an OP-Amp? Also draw circuit diagram of OP-Amp as an Adder and Integrator.	07	2	3	1.4.1
3	a	A combinational circuit of logic gate is shown in circuit below, if A is at 3V and B is at 0V, then what will be potential at R ?	02	3	2	1.4.1
	b	State true or false for statements given below	02	3	1	1.4.1

		i. OR gate can be implemented using three NOR gates. ii. NAND gate give output 1, when any input is 1.				

	c	Solve the following
		  i. Convert $(478.39)_{10}$ into octal
		  ii. $(11000101101)_{Gray}$ into Binary
		  iii. Prove $(X+Y)(X+Z)= X+YZ$
			03	3	2	1.4.1

	d	What are combinational circuits? Describe, how a 3-bit adder can be implemented along with its circuit diagram and corresponding equations.	07	3	3	1.4.1
		OR				

	e	Simplify the expressions given below using K-map & implement the circuit diagrams for simplified expressions.
		  i. $F = A'B'C' + A'B'C + A'BC + AB'C + ABC'$
		  ii. $F (A, B, C) = \sum m(0,1,5,6,7)$
			07	3	2	1.4.2

4	a	What is Flip Flop? Write its applications?	02	4	1	1.4.1
	b	State the "Invalid state" of RS flip-flop. Give reason, why is it generated?	02	4	2	1.4.1
	c	Draw the circuit diagram of 4-bit binary weighted resistor DAC for input data 1010 and find output voltage?	03	4	2	1.4.1
	d	Realize J-K flip-flop with circuit diagram & characteristics table. Deduce its characteristics equation. Illustrate working in detail.	07	4	3	1.4.1
		OR				
	e	What is the significance of ADC & DAC? Using appropriate diagram, explain any one type of analog to digital converter in detail.	07	4	3	1.4.1
5	a	Define Modulation. Why is it needed?	02	5	1	1.4.1
	b	How DSO is advantageous over CRO?	02	5	1	1.4.1
	c	Differentiate between Sensors and Transducers.	03	5	2	1.4.1
	d	Draw and explain block diagram of Communication System. Also sketch and label the waveform of Amplitude modulated wave.	07	5	3	1.4.1
		OR				
	e	What is Pulse Code Modulation? Draw it's block diagram and show how it is different from Amplitude and Frequency Modulation.	07	5	3	1.4.3