Total No. of Questions – [3] Total No. of Printed Pages: 4

G.R./PRN No.	

PAPER CODE	0112-203B/RE-Book/pg.

DECEMBER 2022 (INSEM+ ENDSEM) EXAM

F.Y. B. TECH. (SEMESTER - I)

COURSE NAME: BASIC ELECTRONICS ENGINEERING

COURSE CODE: ET10203B

(PATTERN 2020)

Time: [2Hr] [Max. Marks: 60]

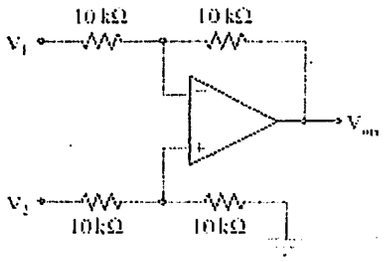
(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data where ever required**

Question No.	Question Description	Marks	CO mapped	Blooms Taxonomy Level
Q.1	i) For a Center Tapped FWR, if PIV of each diode is 12.5 V, then calculate the peak value of transformer secondary voltage. a. 5.9 V b. 11.8 V c. 13.2 V d. 13.9 V	[2]	CO1	Understand
	ii) Consider a practical diode is reverse biased with a 10V battery and a series resistor of 1K. Calculate the voltage across the diode. a. 0.6 V b. 9.4 V c. 10 V d. 0 V	[2]	CO1	Apply
	iii) Which process of the Electron-hole pair is responsible for emitting of light? a) Generation b) Movement c) Recombination d) Diffusion	[2]	CO1	Understand
	iv) Two LED's are connected in series along with limiting resistance. It is supplied with 15 V DC supply and drop across each LED is 1.5 V, the value of limiting resistance for 10 mA current is----- a) 400 Ω b) 750 Ω c) 900 Ω d) 1200Ω	[2]	CO1	Apply

	v) What is the average value of full wave rectifier, for Vp (out) = 30V a) 31.85 V b) 45.65 V c) 19.09 V d) 15.9 V	[2]	CO1	Apply
	vi) Each diode in a center-tapped full-wave rectifier is _____ biased and conducts for _____ of the input cycle. a) forward, 90 degree b) forward, 180 degree c) reverse, 90 degree d) reverse, 360 degree	[2]	CO1	Understand
	vii) In Half Wave Rectifier, if peak value of output is 12.5 V, then the peak value of its input is _____ a) 12.5 V b) 22.5 V c) 11.8 V d) 13.2 V	[2]	CO1	Apply
	viii) Forward bias _____ the depletion region and produces_____ across the p-n junction a. increases, potential voltage b. reduces, barrier potential c. increases, charge d. reduces, potential voltage	[2]	CO1	Understand
	ix) Determine value of collector current Ic, for β=150 and base current I_B= 25 μA. a) 10 mA b) 0.45 mA c) 3.7 mA d) 45 μA	[2]	CO2	Apply
	x) For voltage divider biasing circuit, if R1=1.5 KΩ & R2= 680 Ω, VCC = 20V. What is the value of VB (voltage at Base terminal)? a) 3.12 V b) 6.24 V c) 10 V d) 11 V	[2]	CO2	Apply
	xi) In Common Emitter amplifier, if base current is 80 μA and beta is 50. What is the value of collector current? a) 20 mA b) 200 uA c) 2 A d) 4 mA	[2]	CO2	Apply
	xii) What is the phase shift between input and output signal for BJT Common Base configured amplifier?	[2]	CO2	Apply

	a) 0° b) 180° c) 270° d) 360°			
	xiii) In transistor amplifier circuit, VCC applied as 14 V. For maximum amplification of input signal at its output, what will be the value of VCE required? a) 14 V b) 0.7 V c) 7 V d) 1.4 V	[2]	CO2	Apply
	xiv) In a transistor, I_C = 100 mA and I_E = 100.2 mA. The value of β is ..... a) 50 b) 500 c) 100 d) 200	[2]	CO2	Apply
	xv) In RC phase shift oscillator producing output at f = 500 Hz, R = 7.5 Kohm then C = ----. a) 0.01 micro F b) 0.017 micro F c) 0.012 nF d) 0.001 micro F	[2]	CO2	Apply
Q2	**Solve any three out of four questions.** a) Draw voltage divider biasing CS amplifier circuit and Explain the significance of coupling and bypass capacitors connected in the circuit.	[5]	CO3	Understand
	b) Explain Turning OFF process of SCR with circuit diagrams.	[5]	CO3	Understand
	c) Calculate VGS and VDS for the MOSFET with voltage divider bias circuit, given parameters are R1 = 100 KΩ, R2 = 15 KΩ, RD = 200 Ω, VDD = 24 V. Assume this particular MOSFET has minimum values of I_D(on) = 200 mA at VGS = 4 V and VGS(th) = 2 V.	[5]	CO3	Apply
	d) Sketch the internal structure of n-channel Enhancement type MOSFET and explain its drain characteristics?	[5]	CO3	Understand
Q.3	**Solve any three out of four questions** a) Illustrate the working of op-amp as a voltage regulator using suitable diagram	[5]	CO4	Understand
	b) Explain the following terms related to a differential amplifier with necessary diagrams i) Virtual ground ii) Slew Rate	[5]	CO4	Understand
	c) If V_1= 2V and V_2 = 1.5V, calculate the output voltage. Also calculate output for the values of V_1= -2V and V_2 = 4V.	[5]	CO4	Apply

				
	d) Draw the circuit diagram and sketch the output waveforms of op-amp comparator	[5]	CO4	Apply