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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2023

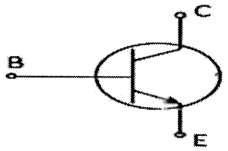
BASIC ELECTRONICS

[Maximum Marks: **75**] [Time: **3** Hours]

PART-A

I. Answer *all* the following questions in one word or one sentence. Each question carries *'one'* mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1.	Define doping.	M1.01	R
2.	Draw the V-I characteristics of PN junction diode.	M1.03	R
3.	List the modes of operation of transistor.	M2.02	R
4.	State the relationship between α and β.	M2.03	R
5.	 Identify the component.	M2.01	R
6.	Draw the equivalent circuit of UJT.	M3.01	R
7.	Define intrinsic standoff ratio.	M3.02	R
8.	List any two non-linear wave shaping circuits.	M4.04	R
9.	Name the output waveform obtained, when a square wave is given as input to the integrator circuit.	M4.03	R

PART-B

II. Answer any *eight* questions from the following. Each question carries *'three'* marks.

(8 x 3 = 24 Marks)

		Module Outcome	Cognitive level
1.	List and define any three specifications of diode.	M1.04	R
2.	Explain the drift current and diffusion current of diode.	M1.02	U
3.	"CE configuration is most widely used in amplifier circuits". Justify the statement.	M2.04	U
4.	Explain the basic conditions that must be satisfied for the faithful amplification.	M2.05	U
5.	a) Classify the voltage that should be applied for the operations of N channel JFET. (2 marks) b) Interpret the operation of N channel JFET when no voltage is applied. (1 mark)	M3.02	U
6.	Draw the energy band diagram of semiconductors.	M1.01	R
7.	Define static and dynamic forward resistances of PN junction diode.	M1.03	R

8.	What are the values of TUF, ripple factor and DC output voltage having a peak voltage of 10V in a half wave rectifier circuit.	M4.01	R
9.	Explain the effect of temperature in leakage current.	M2.03	U
10.	Explain the biasing conditions for various modes of operation of transistor.	M2.02	U

PART-C

Answer all questions. Each question carries *'seven'* marks

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Compare P-type and N-type semiconductors.	M1.01	U
	OR		
IV.	Classify and explain various biasing conditions of p-n junction.	M1.03	U
V.	Compare the three transistor configurations.	M2.04	U
	OR		
VI.	Describe the physical structure of BJT with diagram.	M2.01	U
VII.	Describe the physical structure of MOSFET with diagram.	M3.01	U
	OR		
VIII.	With neat sketch explain the ON state of UJT.	M3.02	U
IX.	Design and illustrate the operation of an RC integrator with square wave signal.	M4.03	A
	OR		
X.	Construct and explain the operation of double slicer at +2V and -2V. Sketch the input –output waveforms. (Assume ideal diode conditions).	M4.04	A
XI.	With diagram explain the working of series inductor filter.	M4.02	U
	OR		
XII.	Explain the working of half wave voltage doubler with diagram.	M4.05	U
XIII.	Draw and describe the structure of UJT.	M3.01	U
	OR		
XIV.	A) Draw the symbol for N channel JFET. (2 marks)	M3.01	R
	B) Draw the drain and transfer characteristics of JFET. (5 marks)	M3.03	R

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