Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S1 (S, FE) S2 (S, FE) Examination December 2023 (2015 Scheme)

Course Code: BE101-04

Course Name: INTRODUCTION TO ELECTRONICS ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks Marks

1		Explain the construction of carbon film resistor.	(5)
2		Explain the formation of n-type and p-type semiconductors.	(5)
3		What is the need for biasing a transistor? Give one example of transistor biasing.	(5)
4		Give the principle of operation of an SCR.	(5)
5		Design a shunt clipper circuit that that limits the output voltage between +2V and -4V if a 10 V peak-to-peak sine signal is given as the input.	(5)
6		Draw the block diagram of regulated DC power supply and give the need of each stage.	(5)
7		Define resolution and accuracy of measuring instruments.	(5)
8		How is frequency of a waveform measured using CRO?	(5)

PART B

Answer six questions, one full question from each module and carries 10 marks.

MODULE I

9	a)	Explain the construction details of electrolytic capacitor.	(6)
	b)	What will be the range of resistance value of a resistor with colour coding Brown, Black, Green, Gold.	(4)

OR

10	a)	With suitable diagrams explain the working principle of an electromechanical relay.	(6)
	b)	Give any 4 specifications of an inductor.	(4)

MODULE II

11	a)	Explain the working principle of i) Solar cell ii) LED	(6)
	b)	Write short note on the breakdown mechanisms in a diode.	(4)

OR

12 a) Draw and explain the forward and reverse characteristics of a diode. (6)

b) Explain the working of a photodiode. (4)

MODULE III

13 a) Explain the circuit of a common emitter RC coupled amplifier using NPN transistor. (6)

b) Draw the frequency response of a RC coupled amplifier and explain how gain reduces at low and high frequencies. (4)

OR

14 a) With neat sketches, explain the input and output characteristics of a BJT in CE configuration. (6)

b) If the base current of a transistor I_B= 100μA, determine the collector and emitter currents. Given β_{dc}=110. (4)

MODULE IV

15 With neat diagrams explain the structure, characteristics and regions of operation of an n-channel enhancement MOSFET. (10)

OR

16 a) Explain the structure and principle of operation of JFET. (6)

b) Compare enhancement and depletion MOSFETs. (4)

MODULE V

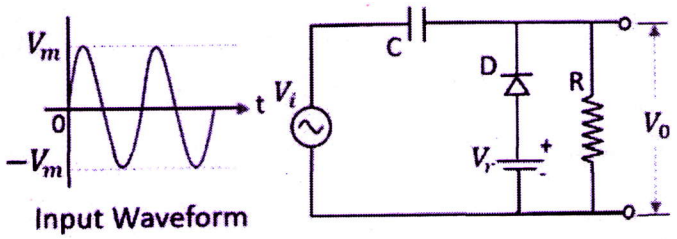
17 a) Draw and explain the circuit of a bridge rectifier with capacitive filter. (6)

b) Derive the expression for V_{dc} of a full wave rectifier. (4)

OR

18 a) Explain how a Zener diode can be used as a voltage regulator. (6)

b) What will be the ouput waveform of the given diode circuit if V_m = 10V and V_r=2V? Assume that the diode is ideal one. (4)



Input Waveform

MODULE VI

19 a) Explain the construction of a basic CRT. (6)

b) Differentiate between absolute error and relative error in measurements. (4)

OR

20 a) Sketch the basic block diagram of a DSO and explain the operation. (6)

b) How do you test a transistor using multimeter? (4)

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