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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: EC100

Course Name: BASICS OF ELECTRONICS ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1 Explain with diagram, the operation of an electromagnetic relay. (5)

2 Draw and explain the forward and reverse characteristics of a PN junction diode using the diode equation. (5)

3 Draw circuit diagram and explain how Zener diode can be used as a voltage regulator. (5)

4 Draw the functional block diagram of operational amplifier and explain the functions of each block. (5)

5 Distinguish between LEO, MEO and GEO satellites. (5)

6 Explain the need for modulation. Write two drawbacks of frequency modulation compared to amplitude modulation. (5)

7 Explain working of CCTV with block diagram. (5)

8 With a block schematic explain functioning of a typical optical communication system. (5)

PART B

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

Module I

9 a) With neat diagrams, explain construction of wire wound resistor and carbon composition resistors. (5)

b) A carbon resistor has colour code violet, grey, yellow and gold. Find the range of resistance value. (5)

OR

10 Write the principle of working of transformer.Explain the losses that occur in a transformer. (10)

Module II

11 a) Explain the formation of depletion region in PN junction. (5)

b) Explain the principle of operation of LED. (5)

OR

12 Describe the construction and operation of NPN transistor. (10)

Module III

13 a) With circuit diagram and waveforms, explain the working of centre tapped full wave rectifier. (5)

b) Draw the block diagram of a public address system and specify the functions of each block. (5)

OR

14 Explain with circuit diagram the working of common emitter amplifier. (10)

Module IV

15 a) Implement OR and AND gates using NOR gates only. (5)

b) Write the characteristics of an ideal opamp. Define the terms CMRR, slew rate as related to opamp. (5)

OR

16 Draw the block diagram of digital storage oscilloscope and explain the functions of each block. (10)

Module V

17 a) Define amplitude modulation. Derive an expression for representing amplitude modulated wave. (5)

b) With block diagram explain functions of a satellite transponder. (5)

OR

18 Explain working of super heterodyne receiver with block diagram. Write its advantages compared to tuned radio frequency receivers. (10)

Module VI

19 a) Explain how light is transmitted through optical fiber. Write two advantages of optical communication systems. (5)

b) With block diagram explain working of cable TV network. (5)

OR

20 Explain the concept of cells, frequency reuse and hand off in cellular mobile communication. (10)

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