Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019
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   Discuss any two applications of electronics from each of the following fields: (5)

      (a) industry and instrumentation.

      (b) medicine

2   Draw the energy band diagram of conductors, semiconductors and insulators.   (5)
     Also compare the energy band gap between them.

3   Draw the Block diagram of a public addressing system and explain.   (5)

4   Define the terms CMRR and slew rate. Give its value for an ideal op-amp.   (5)

5   Explain the concept of modulation and different modulation techniques.   (5)

6   What are geostationary satellites? Explain.   (5)

7   What is meant by   (5)
     a) hand-off
     b) Total internal reflection

8   List out the major advantages of optical communication system. What are the   (5)
     sources and detectors used in optical fibre communication system?

PART B
Answer six questions, one full question from each module and carries 10 marks.
Module 1

9   a)   How an electromagnetic relay is different from contactors.   (4)

    b)   Explain any *two* type of fixed resistors with necessary diagrams.   (6)

OR

10   a)   Draw and explain the construction of a wet electrolytic capacitor.   (5)

    b)   What is the basic principle of transformer? Mention the important applications   (5)
       of transformer.

Module 1I

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

    b)   Differentiate between avalanche and zener breakdown.   (5)

OR

12   Explain the working of LED and photodiode. Draw the necessary figures   (10)
        wherever applicable..

Module 1II

13   Explain how transistor works as an amplifier. In an npn transistor I_C =   (10)
        9.9505mA, I_E =10mA, leakage current I_{CBO}=0.5μA. Determine I_B, α and I_{CEO}.

OR

14   With a neat circuit diagram and waveforms, explain the working of a full wave   (10)
        bridge rectifier with a capacitor filter.

Module 1V

15   Draw circuit diagram and derive expressions for gain of inverting and non-   (10)
        Inverting amplifier using Op-amp.

OR

16   Draw the block diagram of Digital Storage Oscilloscope and explain the   (10)
        Working.

Module V

17 a) Write down the expression for AM wave and explain.   (4)

    b) Explain the working of super heterodyne receiver.   (6)

OR

18   Explain satellite communication with block diagram   (10)

Module VI

19 a) With necessary diagram, explain how light is transmitted through an optical   (5)
        fibre?

    b) Explain each block of DTH system.   (5)

OR

20 a) Explain the concept of cells and frequency reuse.   (5)

    b) Explain each block of CCTV system.   (5)

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