

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 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 <i>two</i> colour coding scheme of capacitors. Find the capacitance value for 2M2. | (5) |
| 2 | Explain doping concentration and size of three layers in a transistor with neat diagram. | (5) |
| 3 | Draw the diagram of an RC coupled CE amplifier and describe the role of the different capacitors. | (5) |
| 4 | Draw the block diagram of a function generator and specify the function of each block? | (5) |
| 5 | Compare AM and FM. | (5) |
| 6 | Define modulation index and write down the expression for modulation index and total power in AM signal. | (5) |
| 7 | Define critical angle and total internal reflection with diagrams. | (5) |
| 8 | Explain the basic block diagram of DTH system. | (5) |

PART B

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

Module 1

- | | | |
|---|--|-----|
| 9 | a) What is a variable capacitor? Explain the construction of any 2 types of variable capacitors. | (6) |
| | b) The average value of a resistor required is $82k\Omega$. What will be the sequence of the colour band when tolerance would be 10%? | (4) |

OR

- | | | |
|----|--|-----|
| 10 | a) What are passive components? Mention at least three components with symbol. | (4) |
| | b) Explain with diagram, the operation of an electromagnetic relay | (6) |

Module 11

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|----|--|-----|
| 11 | a) Sketch the input and output characteristics of common emitter transistor configuration and explain briefly. | (5) |
| | b) Derive the relation between α and β for a transistor. For an npn transistor, $\alpha=0.995$ and $I_E=10m A$. Find I_B and I_C ? | (5) |

OR

- 12 Briefly explain
- i) LED (10)
 - ii) Photo diode
 - iii) Solar cell

Module III

- 13 a) Explain the working of a Bridge rectifier with relevant waveforms (7)
- b) What is PIV? What are its values for Half wave and Centre tapped Rectifiers? (3)

OR

- 14 What is a Barkhausen criterion? Explain the working of a RC phase shift Oscillator? (10)

Module IV

- 15 a) What are universal gates ? Why they are called so ? (4)
- b) Explain the working of digital multimeter with a block diagram (6)

OR

- 16 a) Draw and explain the functional block diagram of operational amplifier (6)
- b) Draw the circuit diagram and derive the gain of a non-inverting amplifier. (4)

Module V

- 17 a) Explain how the geo-stationary satellite covers full earth? Mention its applications. (6)
- b) List out the major merits of satellite communication. (4)

OR

- 18 a) What are the needs of modulation in a communication system. (6)
- b) Draw the spectrum of AM signal with a sinusoidal input (4)

Module VI

- 19 Explain the working of cable TV distribution system. (10)

OR

- 20 Explain optical fibre communication system with block diagram. What are the different types of optical fibre cables used in optical communication? (10)
