

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 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 the different types of variable resistors? Mention their applications.   | (5) |
| 2 | What is meant by intrinsic and extrinsic semiconductors? How a P-type semiconductor is formed?   | (5) |
| 3 | Explain the working of Zener voltage regulator with a neat diagram.  | (5) |
| 4 | Draw the functional block diagram of an operational amplifier. List the parameters of an ideal Op-amp  | (5) |
| 5 | Write the expression of an AM and FM signal and explain the terms.   | (5) |
| 6 | Explain how modulation reduces antenna height.   | (5) |
| 7 | Discuss the major advantages of optical communication system. What are the sources and detectors used in optical fibre communication system? | (5) |
| 8 | What is meant by a DTH system? What are the main features of DTH?  | (5) |

**PART B**

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

**Module 1**

- |   |  |     |
|---|--|-----|
| 9 | a) Write down the color code for a given resistor of 47-Kilo-ohms with a tolerance of 10%. | (4) |
|   | b) Discuss on different types of transformers.   | (6) |

**OR**

- |    |   |     |
|----|---|-----|
| 10 | a) Give brief details of  | (5) |
|    | (i) Impact of electronics in industry                                 |     |
|    | (ii) Medical electronics  |     |
|    | b) Draw and explain the construction of a wet electrolytic capacitor. | (5) |

**Module II**

- |    |  |     |
|----|--|-----|
| 11 | a) Sketch the input and output characteristics of common emitter transistor configuration and explain briefly. | (5) |
|    | b) Derive the relation between $\alpha$ and $\beta$ for a transistor. For an <i>npn</i> transistor,            | (5) |

$\alpha=0.995$  and  $I_E=10\text{m A}$ . Find  $I_B$  and  $I_C$ ?

**OR**

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

**Module III**

- 13 a) With necessary diagrams, explain the working of a centre-tapped full wave rectifier. (6)
- b) Compare the ripple factor and efficiency of half-wave, centre-tapped and bridge rectifiers (4)

**OR**

- 14 a) Write the conditions for sustained oscillations. (2)
- b) Draw the circuit diagram and explain the working of RC phase shift oscillator. Write the expression for its oscillation frequency. (8)

**Module IV**

- 15 Explain the generation of various waveforms in a function generator. (10)

**OR**

- 16 a) Draw the circuit of a non-inverting amplifier and derive the expression for its voltage gain (7)
- b) Design a non-inverting amplifier for a voltage gain of 11 (3)

**Module V**

- 17 a) What are the advantages and applications of satellite communication? (5)
- b) Explain how the geo-stationary satellite covers full earth? Why are they called so? (5)

**OR**

- 18 With a neat block diagram, explain the principle and working of superheterodyne receiver. (10)

**Module VI**

- 19 a) Describe step-index multimode, step-index single mode and graded index multimode fibres. (5)
- b) Explain cable TV network with its block diagram. (5)

**OR**

- 20 Draw and explain functional block diagram of cellular communication system. (10)

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