

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, JULY 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 | Write four important milestone developments in the evolution of electronics and also give typical applications of electronics in different fields. | (5) |
| 2 | Differentiate between intrinsic and extrinsic semiconductors also plot the V-I characteristics of a silicon PN junction diode.                     | (5) |
| 3 | Draw and explain the basic components of a public address system.                                                                                  | (5) |
| 4 | What are universal gates? Why are they called so? List out the important properties of an ideal operational amplifier.                             | (5) |
| 5 | Define modulation. What are the different types of analog modulation schemes? Explain the need for modulation.                                     | (5) |
| 6 | What is the super-heterodyne principle used in communication system. What are the typical frequencies used in AM and FM?                           | (5) |
| 7 | List out the major advantages of optical fiber communication system.                                                                               | (5) |
| 8 | Explain the different components in CCTV system.                                                                                                   | (5) |

**PART B**

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

**Module I**

- |   |                                                                                                                                                                             |     |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 9 | a) Explain the principle of operation of transformer. What are the basic specifications of a transformer?                                                                   | (5) |
|   | b) What are the different types of capacitors based on the dielectric material used also explain the working principle of an electrolytic capacitor with suitable sketches. | (5) |

**OR**

- |    |                                                                                                                                                                                                           |     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 10 | a) With neat diagrams explain the principle and working of electromagnetic relays.                                                                                                                        | (5) |
|    | b) What are the different classifications of resistors and also mention the importance of tolerance. Find the resistance value a resistor with the following colour code- Yellow, violet, gold and brown. | (5) |

**Module II**

- |    |                                                                                                                |      |
|----|----------------------------------------------------------------------------------------------------------------|------|
| 11 | Explain the input and output characteristics of common emitter amplifier and also draw its frequency response. | (10) |
|----|----------------------------------------------------------------------------------------------------------------|------|

**OR**

- 12 Explain the working of photodiode and LED with suitable diagrams. (10)

**Module III**

- 13 a) Explain the concept of feedback mechanism, what are the different types? What are the typical use of each type? (5)
- b) Define peak inverse voltage (PIV). Explain the working of a full wave bridge rectifier. (5)

**OR**

- 14 What is an oscillator? What are the different types? Explain the working of an RC phase shift oscillator. (10)

**Module IV**

- 15 a) What is the importance of an operational amplifier? Design a non-inverting amplifier with a gain of 11. (5)
- b) Explain the working of a function generator. (5)

**OR**

- 16 With suitable diagrams explain the working of digital storage oscilloscope. List out its advantages over analog CRO. (10)

**Module V**

- 17 a) Draw the spectrum of AM signal with a sinusoidal input and also specify the differences in AM and FM with respect to: (5)
- i) Modulation index ii) Bandwidth
- b) Draw the block diagram of FM super-heterodyne receiver and explain its working. (5)

**OR**

- 18 a) What are the major applications of satellite communication? What are the different types of orbits used? Which band is used for satellite communication? (5)
- b) What are geostationary satellites? Why are they called so? What are their advantages? (5)

**Module VI**

- 19 a) Draw the block diagram of optical communication explain? (5)
- b) Draw the block diagram of DTH system and explain its operation. (5)

**OR**

- 20 a) Explain the concept of cells and frequency reuse in mobile communication. (5)
- b) Explain the working of cable TV system. (5)

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