

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

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|---|---|-----|
| 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

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

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| 11 | a) Explain the formation of depletion region in PN junction. | (5) |
| | b) Explain the principle of operation of LED. | (5) |

OR

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

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| 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)
