

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: BE101-04

Course Name: INTRODUCTION TO ELECTRONICS ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

Marks

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| 1 | With a neat diagram, explain the constructional features of an electrolytic capacitor. | (5) |
| 2 | a) Explain how a varactor diode can be used in tuned circuits? | (3) |
| | b) Explain the term peak inverse voltage (PIV) of a diode. | (2) |
| 3 | Draw the output V-I characteristics of a common emitter amplifier and mark the operating point on the load line for $V_{CE} = 6V$ and base current $I_b = 0.2mA$, take β as 50. | (5) |
| 4 | Give the structure of an enhancement type MOSFET and why it is called so. | (5) |
| 5 | Draw the voltage transfer characteristics of a general limiter circuit and explain how it act as clipper. | (5) |
| 6 | Draw the circuit diagram of a voltage doubler and explain the working. | (5) |
| 7 | Define the terms accuracy and precision of a measuring device? | (5) |
| 8 | How do you test an NPN as well as a PNP transistor using multimeter? | (5) |

PART B

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

Module I

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| 9 | a) What are the advantages of carbon film resistor over carbon composition resistors. | (4) |
| | b) Give the constructional features of carbon film resistor with a neat diagram. | (6) |

OR

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| 10 | a) How cooling is effected in high power wire wound resistors. | (4) |
| | b) Explain the constructional features of a wire wound resistor with a diagram. | (6) |

Module II

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| 11 | a) Draw the V-I characteristics of a Silicon diode. The above diode is forward biased with a dc supply voltage of 5 V. Find the Q points for 1.1 k Ω and 2.2 k Ω of load resistance. (Assume cut in voltage of diode is 0.6 V). | (5) |
| | b) With the help of a diagram, explain the working of a photo diode. | (5) |

OR

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| 12 | a) What is drift current and diffusion current in a semiconductor? | (5) |
| | b) How the barrier potential is developed across a PN Junction? | (5) |

Module III

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| 13 | a) Distinguish between common emitter and common base current gain of a transistor and derive a relation between them. | (5) |
| | b) Explain the biasing condition applied across different junctions of a transistor in active, saturation and cut-off regions. | (5) |

OR

- 14 a) Draw and explain the circuit of a common emitter RC coupled amplifier using NPN transistor with voltage divider biasing. (6)
- b) Draw the frequency response of a RC coupled amplifier and explain how gain reduces at low and high frequencies. (4)

Module IV

- 15 a) Draw the V_{DS} v/s I_D curve of an enhancement MOSFET and mark different operating regions. (3)
- b) With help of neat sketches, explain how an increase in V_{DS} affects channel field and drain current in a MOSFET. (7)

OR

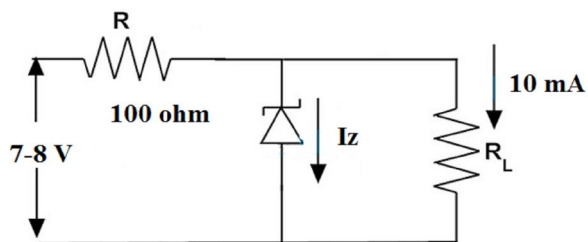
- 16 a) Draw the structure of N channel depletion MOSFET. (3)
- b) Explain the working of a depletion mode MOSFET. (7)

Module V

- 17 a) Draw the circuit of a full wave bridge rectifier and derive the equations for V_{rms} , V_{dc} and ripple factor. (7)
- b) Explain the term rectifier efficiency. (3)

OR

- 18 a) Draw the block diagram of a DC power supply and explain the working of each stage. (5)
- b) Find the minimum and maximum current flowing through the Zener diode as shown in figure for a regulated output of 5 V. Choose proper value for R_L . (5)

**Module VI**

- 19 a) Draw the block diagram and explain the working of a CRO. (6)
- b) Explain with help of diagrams, how phase difference between two signals can be measured using CRO. (4)

OR

- 20 a) Draw the block diagram and explain the working of a digital storage oscilloscope. (6)
- b) List and describe the various types of measurement errors. (4)
