Total No. of printed pages = 3

Et-304/EEtE/3rd Sem/Electrical/2017/M

ELEMENTS OF ELECTRONICS ENGINEERING

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What is electron emission ? What are the different types of electron emission ? 2+3=5

   (b) What are the active and passive components in electronic circuits ? 4

   (c) A resistor has a colour band sequence : Red, Black, Green and Silver. Find the range in which its value must be depending upon the manufacturer's tolerance to suit a circuit. 5

2. (a) Describe the construction and working of a vacuum diode. 7

[Turn over

(b) What are the different vacuum tube constants ? Define them and also derive a relationship between them. 7

3. (a) What is a semiconductor ? What are intrinsic and extrinsic semiconductors ? 2+4=6

(b) Draw the V-I characteristic of a semiconductor diode and explain it. 4

(c) Why is zener diode used as a voltage regulator ? 4

4. (a) Explain the input and output characteristic of a transistor in CB configuration. 6

(b) Define α and β for a transistor. 4

(c) Derive the relationship between α and β. 4

5. (a) Explain the following terms : 2×2=4

(i) Peak inverse voltage

(ii) Ripple factor.

(b) Why feter circuits are used at the rectifier output ? 2

(c) Describe with circuit diagram, the operation of a full wave bridge rectifier. 8

6. (a) Classify amplifiers. 6

(b) With a neat diagram, explain the working of push-pull amplifier. 8

7. Write short notes on any *two* of the following : 7×2=14

(i) Zener diode

(ii) Cathode ray tube

(iii) Formation of P-N Junction

(iv) Hartley oscillator.