Total No. of printed pages = 4

Et-304/EEtE/3rd Sem/2016/N

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 question No. 1 and any *four* from the rest.

1. Fill in the blanks by inserting appropriate words / figures. 1×10=10

   (i) The most commonly used type of emission in electronic valve is ..... emission.

   (ii) In the colour coding bands of resistor the value of tolerance in case of no colour is ..... .

   (iii) In the colour coding bands of resistor the third band is known as ..... .

   (iv) A vacuum diode can be used as a ..... .

[Turn over

(v) The control grid is near to ..... than ..... .

(vi) A full-wave rectifier is ..... efficient than a half-wave rectifier.

(vii) R-C coupling is used for ..... amplification.

(viii) A semiconductor has..... temperature co-efficient of resistance.

(ix) $\beta = \infty /$ ..... .

(x) Negative feedback reduces ..... in amplifiers.

2. (a) What is Electron emission ? What are the different types of Electron emission ? 1+4=5

(b) How resistors are colour coded ? Explain with a neat diagram. 5

(c) A resistor has a colour code band sequence : green, blue, orange and gold. Find the range in which its value must lie depending upon the manufacturer's tolerance to suit a circuit. 5

3. (a) Give the procedure for determining the plate characteristics of a vacuum diode. What important points we can draw from these characteristics ? 6

(b) Describe the construction of a vacuum triode with a neat diagram. 5

(c) Establish a relationship between plate resistance, transconductance and amplification factor of a triode. 4

4. (a) Discuss the properties of conductor, insulator and semiconductor. 6

(b) What is a pn junction ? Explain the formation of potential barrier in a pn junction. 1+4=5

(c) What do you understand by Intrinsic and Extrinsic Semiconductors ? 2+2=4

5. (a) Draw the graphical symbol of crystal diode and explain its significance. How the polarities of crystal diode are identified ? 5

(b) Describe a half-wave rectifier using a crystal diode. 6

(c) What are the characteristics of a zener diode ? 4

6. (a) Draw the input and output characteristics of CB configuration. What do you understand from these characteristics ? 4

(b) Explain with a neat circuit diagram the working of a Transformer coupled transistor amplifier. 7

(c) What do you understand by Class A, Class B amplifier. 2

(d) Write two advantages of negative feedback. 2

7. (a) Describe the construction and working of a Hartley Oscillator. 7

(b) What are the various controls of a CRO ? Explain it with a neat diagram. 8