Total No. of printed pages = 3

**Et-304/E.Et.E/3rd Sem/2015/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 are the active and passive components of electronic circuits ? 4

   (b) What is electron emission ? What are the different types of electron emission ? 4

   (c) A resistor has a colour band sequence : brown, green, grey and gold. Find the range in which its value must lie depending upon the manufacturer's tolerance to suit a circuit. 6

[Turn over

2. (a) Describe the construction of a vacuum diode with suitable diagram. 6

(b) Describe how control grid controls the operation of a vacuum triode. 6

(c) What is the function of screen grid in a vacuum tetrode ? 2

3. (a) What do you mean by conductor, insulator and semiconductor ? 3

(b) What is a p-n junction and how it is formed ? Describe with a neat diagram. 1+5=6

(c) Define P-type and N-type semiconductors with suitable diagram. 5

4. (a) Draw the circuit diagram and explain the construction and operation of a bridge type full wave rectifier. 7

(b) What is a Zener diode and what are the characteristics of it ? How a Zener diode can be used for wave shaping ? 7

5. (a) Draw common emitter (CE) configuration of transistor. 2

(b) Define class A, class B and class C amplifier. 6

(c) With a neat circuit diagram, explain the working of RC coupled amplifier. 6

6. (a) Describe the construction and operation of a Colpitt's oscillator. 8

(b) What are the advantages of negative feed-back ? 6

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

(i) Cathode ray tube

(ii) Push-pull amplifier

(iii) Colour coding of resistor

(iv) Behaviour of p-n junction under biasing.