UG Odd Semester (CBCS) Exam., December—2016

COMPUTER SCIENCE

(1st Semester)

Course No. : MCS–104 (C)

(Electronic Devices and Circuits)

Full Marks : 75
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. Discuss about the following : 5×3=15

(a) Ohmic contact

(b) Reverse saturation current

(c) Break-point voltage

2. (a) Discuss about law of junction. 8

(b) Prove that the capacitance generated due to space-charge density when the diode is reverse biased is equal to the capacitance of parallel-plate capacitor. 7

UNIT—II

3. (a) Discuss about half-wave rectifier. 7

(b) What is ripple factor? Derive the expression for ripple factor for half-wave rectifier. 8

4. (a) Discuss about full-wave rectifier. Derive the expression for ripple factor for full-wave rectifier. 6+4=10

(b) Discuss about induction filters. 5

UNIT—III

5. (a) Prove that transistor alpha is the product of the transport factor and emitter efficiency. 7

(b) Discuss about common bar configuration. 8

6. (a) Give the difference between field-effect transistor and bipolar-junction transistor. 5

(b) Discuss about construction and characteristics of field-effect transistor. 10

UNIT—IV

7. (a) What is operating point? Discuss about the fixed bias circuit. 3+4=7

(b) Define the following : 4×2=8

(i) Thermal stability

(ii) Stability factor

8. (a) Define thermistor and sensistor. 5

(b) What is the condition for thermal stability? 5

(c) Discuss about thermal runaway. 5

UNIT—V

9. (a) What are different types of amplifier? Discuss about each of them. 8

(b) Discuss about feedback concept. What are the advantages of negative feedback? 3+4=7

10. (a) Discuss about the general characteristics of negative feedback amplifier. 7

(b) What are effects of negative feedback on output and input resistances? 8

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