Total No. of printed pages = 7

END SEMESTER EXAMINATION, NOVEMBER 2018

Semester – 3rd (New)

Subject Code : Et-305

ANALOG ELECTRONICS – I

Full Marks – 70

Time – Three hours

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

PART – A

Marks – 25

All questions are compulsory.

1. Fill in the blanks : 1×10=10

   (a) An atom consists of a ——— charged nucleus.

   (b) Electrons in the larger orbits have ——— energy.

   (c) LDR stands for ——— .

[Turn over

(d) The forward resistance of diode is ——— than its reverse resistance.

(e) In a transistor base is very ——— doped.

(f) The most commonly used transistor circuit arrangement is ———.

(g) Clipping circuits limits the ——— of a output circuit.

(h) Clamping circuits can move the ——— signal up or down.

(i) The best method of transistor biasing is ———.

(j) A single stage transistor amplifier contains ——— transistor.

2. State true or false : 1×10=10

(a) Energy bands and energy levels are the same.

(b) Doping semiconductors with pentavalent impurities produces p type semiconductors.

(c) Efficiency of a full wave rectifier is 40.6%.

(d) A properly doped crystal diode with sharp breakdown voltage is known as Zener diode.

(e) A transistor has one pn junction.

(f) If the operating point changes unfaithful amplification results.

(g) The final stage of a multistage amplifier uses transformer coupling.

(h) Semiconductor devices are not sensitive to temperature variations.

(i) Class C power amplifier has the highest collector efficiency.

(j) A FET is a unipolar transistor.

3. Select the correct answer : 1×5=5

(a) A Zener diode is operated in

(i) Forward region

(ii) Rectifier region

(iii) Breakdown region

(iv) Saturated region.

(b) The number of terminals in a transistor are

(i) Two

(ii) Three

(iii) Five

(iv) None of the above.

(c) Frequency response is best in the

(i) Transformer coupled amplifier

(ii) RC coupled amplifier

(iii) Oscillators

(iv) None of the above.

(d) The noise level in a FET compared to a ordinary transistor is

(i) more

(ii) no noise at all

(iii) less

(iv) None of the above.

(e) The number of pn junctions in a UJT are

(i) Three

(ii) One

(iii) Two

(iv) None of the above.

PART – B

Marks – 45

Answer any *five* questions.

4. (a) State Bohrs explanation of atomic structure.

(b) What are the properties of semiconductors ?

(c) Explain the formation of p type semiconductor. 3+3+3=9

5. (a) Explain how a crystal diode can work as a half wave rectifier.

(b) Derive an expression for the efficiency of a full wave rectifier.

(c) Define Ripple factor and derive an expression for it. 3+3+3=9

6. (a) Explain how a Zener diode can work as a voltage regulator.

(b) Draw the input and output characteristics for a common emitter configuration.

(c) What is transistor load line ? How can the operating point be determined ? 3+3+3=9

7. (a) Describe the operation of a clipping circuit.

(b) Explain the construction and working of a RC coupled amplifier.

(c) What do you understand by Class A, B, and Class C amplifiers ? 3+3+3=9

8. (a) What is FET ? Explain its working principle.

(b) State the differences between voltage and power amplifiers.

(c) What do you understand by crossover distortion in a push pull amplifier ? 3+3+3=9

9. Write short notes on any *three* : 3×3=9

(a) Photovoltaic cell

(b) Capacitor input filter

(c) Push pull amplifiers

(d) Base bias

(e) UJT.