B.Sc. (Part-I) (Semester–I) Examination

ELECTRONICS

(Basic Electronics)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) Question No. **1** is compulsory.

(2) Draw neat diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) The MOSFET stands for _____.

(ii) LED stands for _____.

(iii) IC stands for _____.

(iv) The unit of resistance is _____. 2

(B) Select the correct answers :

(i) The number of P-N junctions in BJT are _____.

(a) Three (b) Two

(c) One (d) None of the above ½

(ii) An ideal current source has _____ internal resistance.

(a) Infinity (b) Zero

(c) High (d) None of these ½

(iii) The half wave rectifier circuits use :

(a) One diode (b) Two diodes

(c) Three diodes (d) Four diodes ½

(iv) The CRO stands for :

(a) Cathode Ray Oscilloscope (b) Cathode Ray Oscillator

(c) Current range Oscillator (d) None ½

(C) Answer the following questions in one sentence :

(i) What is rectifier ?

(ii) What is step-down transformer ?

(iii) What is UJT ?

(iv) Define operating point. 4

2. **EITHER**

(A) Explain the construction and working of transformer. 6

(B) Find out the value of resistor having following colour code :

(i) Brown, Red, Blue and Silver

(ii) Red, Brown, Red and Gold

(iii) Yellow, Brown, Blue and Gold 6

OR

(P) State and explain KVL and KCL. 5

(Q) State and prove Norton's theorem. 7

EITHER

3. (A) Explain the construction and working of CRT with neat diagram. 8

(B) What is loading effect ? Explain. 4

OR

(P) What is ohm meter ? Explain series type ohm meter. 6

(Q) Explain the construction and working of multirange D.C. voltmeter. 6

4. **EITHER**

(A) What is P-N junction ? Explain forward and reverse characteristics of P-N junction diode. 6

(B) Explain construction and operation of full-wave rectifier. 6

OR

(P) Explain regulated power supply with suitable block diagram. 6

(Q) How zener diode is used as voltage regulator ? Explain. 6

5. **EITHER**

(A) What is transistor ? Explain the operation of NPN transistor with suitable diagram. 6

(B) Define α and β of a transistor and obtain relation between α and β. 6

OR

(P) Define Stability Factor. 2

(Q) Draw the circuit diagrams of PNP transistor in CB and CE mode. 4

(R) Explain amplification action of CE amplifier. 6

6. **EITHER**

(A) Explain construction and working of photodiode. 6

(B) State the application of LED. 2

(C) Draw electrical symbols of UJT, LDR, SCR and LED. 4

OR

(P) Explain the construction and operation of FET. 6

(Q) Define μ, gm and rd of FET and derive the relation between them. 6

7. **EITHER**

(A) Explain the Fabrication of diode in monolithic IC. 6

(B) Explain :

(i) Epitaxial Growth

(ii) Diffusion steps in monolithic ICS. 6

OR

(P) Explain the photolithographic process of IC Fabrication. 8

(Q) State the advantages and disadvantages of ICS. 4