AS–1414

B.Sc. Part—II (Semester—III) Examination

ELECTRONICS

(Electronics Devices and Circuits)

Time : Three Hours] [Maximum Marks : 80

Note :— (i) Question No. **1** is compulsory.
(ii) Draw neat diagrams wherever necessary.

1. (A) Fill in the blanks with appropriate words :

(i) EEG is used for diagnosis of _____.

(ii) LVDT has one primary winding but _____ identical secondary windings.

(iii) Thermal sensors is used to measure the _____.

(iv) Capture range of PLL is _____ then lock in range. 2

(B) Choose the correct alternative :

(i) Strain gauge is example of _____ sensor.

(a) Thermal (b) Magnetic

(c) Mechanical (d) Chemical

(ii) IC 565 is a _____.

(a) Timer IC (b) PLL IC

(c) Voltage regulator IC (d) None

(iii) EMG is used for diagnosis of _____ disorders.

(a) Heart (b) Brain

(c) Muscle (d) Bone

(iv) Potentiometer is _____.

(a) Resistive transducer (b) Inductive transducer

(c) Capacitive transducer (d) None 2

(C) Answer in **one** sentence :

(i) What is Oximeter ?

(ii) What is seven segmental display ?

(iii) What is actuator ?

(iv) What is analog transducer ? 4

EITHER

2. (A) Draw the block diagram of generalised instrumentation system and explain function of each block. 6

(B) Explain how displacement is measured using capacitive transducer by variation of dielectric constant. 6

OR

(P) Explain the construction and working of LVDT. 6

(Q) Explain the terms :

(i) Primary and Secondary transducer

(ii) Active and Passive transducer. 6

EITHER

3. (A) What is thermocouple ? Explain its use in measurement of temperature. 6

(B) How temperature is measure by using thermistor ? Explain. 6

OR

(P) Draw a well labelled diagram of Infra-red pyrometer. 3

(Q) State the merit and demerit of thermistor. 3

(R) What is pyrometer ? Explain the operation of total radiation pyrometer with suitable diagram. 6

EITHER

4. (A) Explain block diagram of PLL. 6

(B) Define the terms :

(i) Lock range

(ii) Capture range. 6

OR

(P) Draw the block diagram of IC 555 and explain function of each block. 6

(Q) Explain the operation of astable multivibrator using IC 555. 6

EITHER

5. (A) What is recorder ? Explain the operation of X-Y recorder. 6

(B) Draw the block diagram of digital frequency meter and explain the function of each block. 6

OR

(P) Explain the basic elements of magnetic taperecorder. 6

(Q) Explain seven segment and dot matrix displays. 6

EITHER

6. (A) What is thermal sensor ? Explain fiber optics temperature sensor. 6

(B) Explain phototransistor as an optical sensor. 6

OR

(P) Explain the principle and working of Bent-Beam electrothermal actuator. 6

(Q) Explain the principle of DC motor as electromechanical actuator. 6

EITHER

7. (A) Draw the block diagram of X-ray machine and explain operation of each block. 6

(B) How many types of electrode are used in medical instruments ? Explain. 3

(C) Draw the block diagram of EAR Oximeter. 3

OR

(P) Draw the block diagram of ECG and explain the working of each block. 6

(Q) Draw block diagram of EEG recorder. 3

(R) Draw the circuit diagram of systalic and diastalic blood pressure meter. 3