AU–144

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

5S : ELECTRONICS

(Measuring Instruments)

Time : Three Hours] [Maximum Marks : 80

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

(2) Draw neat diagram wherever necessary.

1. (A) Fill in the blanks :

(i) The VCO stands for _____.

(ii) The thermocouple is a junction of two _____ metals.

(iii) The EMG stands for _____.

(iv) The potentiometer is a _____ transducer. 2

(B) Choose the correct alternative :

(i) The DCM stands for :

(a) Digital voltmeter (b) Digital capacitance meter

(c) Digital frequency meter (d) Digital resistance meter

(ii) The example of mechanical sensor is a :

(a) LVDT (b) Strain gauge

(c) RVDT (d) Motor

(iii) The IC-555 has _____ terminals.

(a) 8 (b) 10

(c) 12 (d) 16

(iv) The LVDT is a _____ transducer.

(a) Capacitive (b) Inductive

(c) Resistive (d) Active 2

(C) Answer the questions in **one sentence** each :

(i) What is digital transducer ?

(ii) What is actuator ?

(iii) What is thermistor ?

(iv) What is the basic function of transducer ? 4

EITHER

2. (A) Explain construction and working of LVDT. 6

(B) Explain active and passive transducer with examples. 6

OR

(P) Explain the measurement of displacement using capacitive transducer. 6

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

EITHER

3. (A) Explain construction and operation of thermistor. 6

(B) Explain different types of RTDS. 6

OR

(P) Explain principle and working of total radiation pyrometer. 6

(Q) State advantage and disadvantage of thermocouple. 4

(R) Draw the labelled diagram of infrared radiation pyrometer. 2

EITHER

4. (A) Draw block diagram of IC-555 and explain the working of each block. 6

(B) Explain the astable multivibrator using IC-555. 6

OR

(P) Explain the block diagram of PLL. 6

(Q) Explain working of PLL as FM-demodulator. 6

EITHER

5. (A) What are digital display devices ? Explain. 6

(B) What are basic elements of magnetic tape recorder ? Explain. 6

OR

(P) Explain the working of digital frequency meter. 6

(Q) Explain the working of ramp type digital voltmeter. 6

EITHER

6. (A) Explain the working of bent beam actuator. 6

(B) Explain the working of carbon monoxide sensor. 6

OR

(P) What is sensor ? Explain strain gauge as mechanical sensor. 6

(Q) Explain fiber optics as a thermal sensor. 6

EITHER

7. (A) Explain the working of x-ray machine with necessary block diagram. 6

(B) Explain block diagram of ECG recorder. 6

OR

(P) Explain the working of EEG recorder. 6

(Q) Explain the working of Laser Doppler blood flow meter with block diagram. 6