TKN/KS/16–5871

Fourth Semester B. Sc. Examination

ELECTRONICS

Analogue and Digital Techniques

Paper – I

Time : Three Hours] [Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.
(2) Draw neat diagram wherever necessary.

EITHER

1. (A) State and derive Barkhausen criterion for oscillation. Explain the working of wein bridge oscillator, with neat diagram. 5 + 5

OR

(B) Explain positive and negative feedback. Explain NOT gate based crystal oscillator with the help of neat diagram. 4 + 6

EITHER

2. (A) Draw the circuit diagram of astable multivibrator using Op – amp. Explain its working with the help of waveforms.
Derive an expression for the time period of output wave form. 2 + 5 + 3

OR

(B) Draw the circuit diagram of monostable multivibrator using Op – Amp. and explain it.

Draw the circuit diagram of instrumentation amplifier using Op – Amp and explian its working. 5 + 5

EITHER

3. (A) Explain the need of D/A convertor.
Explain weighted resistor type D/A converter with neat circuit diagram.
State advantages and disadvantages of weighted resistor type D/A converter. 2 + 5 + 3

OR

(B) Explain the following terms with respect to D/A convertes :—

(i) Range

(ii) Resolution

(iii) Linearity

(iv) Speed

Explain R – 2R type D/A converter with the help of neat diagram. 4 + 6

EITHER

4. (A) Draw the block diagram of counter type A/D converter and explain it.
Explain dual slope type A/D converter. 5 + 5

OR

(B) Explain successive approximation type A/D converter and also explain the pattern for conversion of analog input to 4 – bit output.
Explain flash type A/D converter. 4 + 2 + 4

5. Solve any **ten** :—

(A) State any two disadvantages of positive feedback.

(B) Write the output equation of phase shift oscillator.

(C) What is stability in oscillator ?

(D) State the application of astable multibrator.

(E) How astable multivibrator can be converted to monostable multivibrator ?

(F) State the use of instrumentation amplifier.

(G) State the advantages of R – 2R ladder type D/A converter.

(H) What types of output can be obtained in D/A converter ?

(I) What is dual bias D/A converter ?

(J) Explain the need of A/D conversion.

(k) State the advantage of successive approximation type A/D converter.

(L) Explain Reference voltage in A/D converter.

10 x 1 = 10