

Seat No. : 3994

ND-107

December-2015

B.Sc., Sem.-V

Core Course-303 : Electronics

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) All questions carry equal mark.
(2) Symbols used here have their usual meaning.

1. (i) Draw a general rectifier type AC voltmeter and explain its working. Draw the circuit of AC voltmeter using half-wave rectifier and full-wave rectifier and explain them. 9

(ii) Write considerations in choosing an analog voltmeter. 5

OR

(i) Draw a block diagram of true – RMS responding voltmeter and explain. 7

(ii) Draw a block diagram of average responding voltmeter and explain. 7

2. (a) Write the operating principle of Ramp-type DVM. Draw the block diagram of Ramp-type DVM and explain with necessary diagrams. 10

OR

Draw the block diagram of integrating type DVM using voltage to frequency conversion technique. Explain with suitable diagram.

(b) An integrator contains a $100\text{ k}\Omega$ and $1\ \mu\text{F}$ capacitor. If the voltage applied to the integrator input is 1 Volt, what voltage will be present at the output of the integrator after 1 sec. If reference voltage is applied to integrator at time t_1 is 5 Volt in amplitude, what is time interval of t_2 ? 4

OR

A $4\frac{1}{2}$ digit voltmeter is used for voltage measurements :

- (i) Find its resolution.
- (ii) How would 12.98 V be displayed on a 10 V range ?
- (iii) How would 0.6973 V be displayed on 1 V and 10 V range ?

3. (a) Draw neat and clean block diagram of general purpose CRO. Explain function of each block. 7

OR

Discuss CRT circuit with necessary diagram.

- (b) Describe the function of delay line. Explain distributed parameter delay line in detail. 7

OR

Write short note on oscilloscope technique.

4. (a) Draw the block diagram of laboratory square-wave and pulse generator. Explain with necessary diagrams. 10

OR

Draw the circuit of Astable Multivibrator and explain its working with necessary diagrams.

- (b) (i) Write fundamental difference between pulse generator and square-wave generator. 4

- (ii) Write the characteristics of signal generator.

OR

Write note on piston attenuator.

5. Answer in short :

- (1) What is TVM ?
- (2) Write principle of chopper type DC Amplifier voltmeter.
- (3) Write the difference between average responding voltmeter and peak responding voltmeter.
- (4) Write full form of SAR.
- (5) Write two advantages of DVM.
- (6) Define Resolution.
- (7) What is half digit ?
- (8) What is luminance ?
- (9) What is persistence of phosphor ?
- (10) What is graticules ?
- (11) What is sag ?
- (12) Draw the effect of overcompensated probe.
- (13) Convert +13 dBm to volts.
- (14) Write unique characteristics of PIN Diode.