

## B.Sc. Sem-5 Examination

CC 303

Electronics

August 2021

Time : 2-00 Hours]

[Max. Marks : 50

- Instructions:** (1) All questions in Section I carry equal marks.  
 (2) Attempt any **THREE** questions from Section I.  
 (3) **Question No. 9 in Section II is COMPULSORY**

**Section – I**

1. (A) Draw a block diagram of a true rms-responding voltmeter. Explain principle and working of the same. 7  
 (B) Draw a neat circuit diagram of TVM (Transistor Voltmeter) with FET as an input stage. Explain working of a circuit to measure voltage. 7
2. (A) Draw the circuit of AC voltmeter using half wave and full wave rectifier circuit. Explain working of both the circuit. To overcome the problem of nonlinearity of the rectifier diodes, what arrangement is to be made? 7  
 (B) With the help of block diagram and circuit diagram, Write principle of operation as well as working of Chopper type voltmeter. 7
3. (A) (I) State advantages of a DVM over an analog meter. 4  
 (II) Mention general specification of a DVM. 3  
 (B) Explain principle of operation and working of basic Staircase Ramp type DVM with the help of its block diagram. Write advantages of this DVM. 7
4. (A) Draw the block diagram of a Ramp type DVM. Explain principle and working of the DVM. Write one disadvantage. 7  
 (B) Explain V/F conversion principle. Draw a block diagram of Integrating type DVM and explain method of conversion of analog measurement of unknown voltage into digital. 7
5. (A) Show cutaway view of cathode ray tube and explain how electron beam can be made to focus at the screen and produces a small spot. 7  
 (B) Explain, with necessary figures how is an Oscilloscope used for frequency measurement, also for magnitude and phase measurement for two different waves. 7

6. (A) Discuss the function of delay line. Explain lumped delay line. Write advantages and disadvantages of lumped delay line. 7
- (B) Explain, with the help of diagram the function of postdeflection acceleration oscilloscope tube using a scan expansion mesh. 7
7. (A) Explain difference between pulse generator and square wave generator. 7
- (B) Draw the pertinent characteristics of a pulse and define each terminology related to a pulse. 7
8. (A) Draw a block diagram of laboratory general purpose generator. What are the facilities availed with this generator? Explain, in details the operation of a basic generating loop formed by the Synchronization of external circuits and two current sources. 7
- (B) Draw a neat circuit diagram of Astable multivibrator. Explain operation of the circuit and derive the equation of periodic oscillation. Sketch the wave forms at the base and collector junctions of both the transistors of the circuit. 7

### Section – II

9. Attempt any **EIGHT**: 8
- (A) What is the form factor for the symmetric wave having 5 volt peak amplitude.
- (B) Write two advantages of chopper type voltmeter.
- (C) Calculate the sensitivity of dc voltmeter having 200  $\mu\text{A}$  FSD.
- (D) What is the advantage of using a Sample and hold circuit in DVM?
- (E) The lowest range on a  $4\frac{1}{2}$  digit DVM is 10 mV full scale. What is the sensitivity of this meter?
- (F) Write an equation for the closed loop gain of a feedback amplifier.
- (G) Define deflection sensitivity.
- (H) What is graticules?
- (I) Define resolution.
- (J) Define sensitivity of digital meter.
- (K) Name the different types multivibrators.
- (L) What will be the pulse width of 1 kHz pulse waves having 40% duty cycle?
- (M) What is phosphorescence?
- (N) Draw a circuit diagram of a simple sine wave generator.
- (O) Why is feedback network used in oscillator circuit?
- (P) Write the unique characteristic of PIN diode.