

B.A. / B.Com. / B.Sc. (NEP) Semester-II  
**SEC52 / SEC521 - Physics - Applied Measurement and Instrumentation Skills**

P. Pages : 2

Time : Two Hours



**GUG/S/25/16444S**

Max. Marks : 40

- Notes :
1. All questions are compulsory.
  2. Draw neat diagram wherever necessary.
  3. Scientific calculator is allowed.

**Either:**

1. a) i) Explain in detail the procedure for measuring DC voltage using a multimeter. 4
- ii) What are the common errors in DC voltage and current measurement using a multimeter? How can they be minimized? 4

**OR**

- b) a) What is a multimeter? How is it used to measure resistance. 2
- b) What is the purpose of selecting an appropriate range in a multimeter? 2
- c) Why it is important to use appropriate probe connections while measuring voltage and current? 2
- d) What precautions should be taken while measuring DC current with a multimeter? 2

**Either:**

2. a) i) Explain how AC current is measured with a multimeter and discuss the precautions required. 4
- ii) Discuss the importance of input impedance in AC voltage measurement and its effect on circuit behavior. 4

**OR**

- b) a) How does a multimeter measure AC voltage? 2
- b) What is the importance of RMS (Root Mean Square) voltage in AC measurements? 2
- c) How does a multimeter measure resistance? 2
- d) What are the common sources of error in AC measurements using a multimeter? 2

3. a) i) Explain the working principle of Cathode Ray Oscilloscope (CRO) with a detailed block diagram. 4
- ii) How does the horizontal and vertical deflection system work in a CRO? 4

**OR**

- a) What is the function of the CRT in a CRO ? 2
  - b) What is the significance of sensitivity in a CRO ? 2
  - c) Explain the role of triggering in a CRO. 2
  - d) How is DC voltage measured using a CRO? 2
4. a) i) Explain the working principle of a pulse generator with a block diagram. 4
- ii) Describe the different types of waveforms generated by a pulse generator and their applications. 4

**OR**

- a) Explain functionality of low-frequency signal generator. 2
  - b) Define amplitude in the context of pulse generators? 2
  - c) How is duty cycle related to pulse width in a pulse generator ? 2
  - d) What are the applications of pulse generators in electronics and communication? 2
5. Solve **any eight** of the followings.
- a) Write the basic functions of multimeter? 1
  - b) Define accuracy in the context of a multimeter. 1
  - c) What is resolution? 1
  - d) What is the significance of frequency response in AC voltage measurement? 1
  - e) What is a crest factor in AC measurements? 1
  - f) Write equation of AC voltage. 1
  - g) Write the relationship between frequency and period in waveform measurement? 1
  - h) Define bandwidth in context of a CRO ? 1
  - i) What does control the brightness of the wave form on CRO screen? 1
  - j) Write the significance of duty cycle in a pluse generator? 1
  - k) Write two advantages of programmable pluse generators? 1
  - l) What is DSO? 1

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