

P. R. Thakur Govt. College

Department of Physics

B.Sc. 1st Semester Examination, 2024-25

Paper – PSHSE101M

Basic Instrumentation Skills (SEC-1)

Time: 90 Minutes

Full Marks: 30

1. Answer any five questions from the following:

2×5=10

- (a) What is the primary function of a rectifier ?
- (b) Explain the concept of ripple factor in a rectifier circuit.
- (c) What is the purpose of the shunt resistor in an ammeter?
- (d) What is the primary function of a signal generator?
- (e) What do you mean by ideal voltage source and ideal current source?
- (f) Describe the safety precautions to be taken while using a multimeter.
- (g) Compare analog and digital voltmeters.
- (h) A voltmeter is used to measure the voltage across a resistor. However, the reading on the voltmeter is affected by the input impedance of the voltmeter. Explain how to minimize the error caused by the input impedance.

2. Answer any four questions from the following:

5×4=20

- (a) Draw a neat circuit diagram for a full-wave rectifier and explain its operation. 5
- (b) What is a filter? Explain the action of C-filter. 1+4
- (c) What do you mean by modulation? Why do we need modulation in radio communication systems? What are different types of modulation? 2+2+1
- (d) Draw a neat and labelled diagram of a single beam CRO. Explain how the brightness and focussing of the electron beam are controlled. 2+3
- (e) What is a time base? Explain how the frequency of an a.c. signal can be measured by a CRO. 2+3
- (f) Draw a block diagram of digital multimeter and explain its working principle. 5