

SEAT No. \_\_\_\_\_

[32]

Eng.

SARDAR PATEL UNIVERSITY  
B.Sc. Examination, Semester – I  
Physics course code: USO1CPHY51.



Course title: Mechanics - I, Network Analysis &amp; Optics

[TOTAL MARKS 70]

Date: 12/12/2022

- Instructions: 1. All symbols have their usual meaning  
2. figures at the right side of question indicates full marks.

Time- 2.00 to 5.00 Pm

Q.1 Multiple choice question :-

[10]

- (1) The restoring force per unit area is known as -----  
(a) Elasticity (b) Plasticity (c) strain (d) stress
- (2) The ratio of lateral strain to longitudinal strain -----  
(a) Young's modulus (b) Poisson's ratio (c) Bulk Modulus (d) Modulus of rigidity
- (3) The unit of twisting couple -----  
(a) N/m<sup>2</sup> (b) N.m (c) N<sup>2</sup>.m (d) N.m<sup>2</sup>
- (4) The speed of ultrasonic waves in solid medium depends on -----  
(a) Volume (b) Length (c) Density (d) Area
- (5) The time period of simple pendulum of infinite length is -----  
(a) Zero (b) One (c) Infinite (d) None of these
- (6) The compound pendulum is also known as ----- pendulum.  
(a) simple (b) conical (c) Torsional (d) physical
- (7) Every junction is a -----  
(a) mesh (b) loop (c) node (d) branch
- (8) The Maxwell's bridge is used to measure the unknown -----  
(a) resistance (b) Capacitance (c) Inductance (d) Frequency
- (9) The resolving power of prism is given by ----- .  
(a)  $\frac{a}{1.22\lambda}$  (b)  $\frac{1.22\lambda}{2 \sin i}$  (c)  $t \frac{d\mu}{d\lambda}$  (d) nN
- (10) When light travels a distance d in the medium of refractive index  $\mu$ , the optical path is -----  
(a)  $\frac{d}{\mu}$  (b)  $\frac{\mu}{d}$  (c)  $\mu d$  (d)  $\frac{1}{\mu d}$

Q.2 Answer the following question in brief (Any ten)

[20]

- (1) Write and explain Hook's law.
- (2) Explain load and stress.
- (3) What is Cantilever?
- (4) Explain Ultrasonic waves
- (5) Write four uses of Ultrasonic waves.
- (6) What is simple pendulum?
- (7) Give the statement of Thevenin's Theorem.
- (8) Write the balance condition for an ac bridge.
- (9) Give the limitations of Maxwell's bridge.
- (10) What is refractometer?
- (11) What is diffraction? Give types of it.
- (12) Explain the resolution limit of the eye.