(FOR THE CANDIDATES ADMITTED   SUBJECT CODE | **22UPS101** |

DURING THE ACADEMIC YEAR 2022-23 ONLY)   REG.NO. | _____ |

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

B.Sc. – PHYSICS   **MAXIMUM MARKS: 50**

I SEMESTER   **TIME : 3 HOURS**

PART – III
CORE – I : GRAVITATION, PROPERTIES OF MATTER AND SOUND
SECTION – A   (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(Objective Questions with four Multiple Choices)   **(K1)**

1.   Boy's method is normally used to determine…………………

    a)   gravitational field   b)   gravitational potential

    c)   gravitational constant   d)   earthquake

2.   The ratio of tangential stress to shearing strain is**……….**

    a)   Bulk modulus   b)   Young's modulus

    c)   Elastic moduli   d)   Rigidity modulus

3.   A ball is dropped from the top of a building it comes down with the same velocity, hence the velocity is referred as…………………….

    a)   uniform velocity   b)   terminal velocity

    c)   velocity of constant force   d)   deceleration

4.   Force of attraction between the molecules of different substances is referred as…………..

    a)   gravitational force   b)   tangential force

    c)   adhesive force   d)   cohesive force

5.   The ultrasonic wave   is……………..

    a)   above 20 kHz sound waves   b)   below 20 kHz sound waves

    c)   above 20 kHz light waves   d)   below 20 kHz light waves

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES   **(K2)**

6. Write the dimensions of the universal gravitational constant,

7. What is a cantilever?

8. Define the term coefficient of viscosity.

9. What is diffusion?

10. What is decibel?   **(CONTD …. 2)**

SECTION – B   (5 X 3 = 15 MARKS)
ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(K3)

11.   a)   Define the term gravitational potential and determine it due to a point mass.
(OR)
      b)   Write a note on seismic waves.

12.   a)   Deduce the expression for torque per unit twist.
(OR)
      b)   Obtain an expression for the depression at the free end of the heavy beam clamped horizontally at one end and loaded at the other end.

13.   a)   What are the important corrections to be applied in the Poiseuille's formula? Discuss with derivations.
(OR)
      b)   What are the assumptions made by Stokes while driving Stokes' formula?

14.   a)   Deduce an expression to obtain excess of pressure inside a liquid drop. Extend it for a soap bubble.
(OR)
      b)   Write three laws about osmatic pressure.

15.   a)   Differentiate musical sound and noise. Mention any three characteristics of sound.
(OR)
      b)   What are the laws of transverse vibrations of a string? Explain.

SECTION – C   (5 X 5 = 25 MARKS)
ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(K4 (Or) K5)

16.   a)   Determine the gravitational field and potential at a point (i) inside and (ii) outside a spherical shell
(OR)
      b)   What is a compound pendulum? Give the theory to obtain the period of oscillation and show that the center of oscillation and center of suspension are interchangeable.

17.   a)   With the theory of bending of beams obtain the expression for the bending moment.
(OR)
      b)   How will you determine Young's modulus of a given beam in uniform and non-uniform bending methods in a laboratory? Explain

18.   a)   Describe with a neat diagram the method of determining the coefficient of viscosity of a liquid by Poiseuille's method.
(OR)
      b)   Explain Rankine's method of determining the viscosity of a gas with the theory of experiment.

19.   a)   Describe Jaeger's method of studying the variation of Surface tension of water with temperature.
(OR)
      b).   Describe the Berkeley and Hartley method of determination of osmotic pressure with an experimental setup.

20.   a)   What are the factors affecting the acoustics of buildings? Explain any five.
(OR)
      b)   Describe the piezoelectric method of producing ultrasonic waves and write any four applications of ultrasonic waves.

ETHICAL PAPER   **************************