HIGHER SECONDARY PRACTICAL EXAMINATION
MARCH 2019

HSE : II   **PHYSICS**   TOTAL SCORE : 40
                                                      TIME : 3 Hrs

General Instructions

Two of the questions will be marked with a ✓ mark: one from section A and the other from section B. Read those questions carefully. Write the marked questions on answer sheet. Attempt both.

2. S.I units should be used
3. Scientific calculator can be used.

Score Distribution

	Score
1. Formula and principle	5
2. Setting of Apparatus	2
3. Performance and recording of observations	6
4. Calculation and results in S I units	4
5. Viva voce	1
Total for one experiment	18
Total for two experiment	18 x 2 = 36
6. Record book	4
Total	40

SECTION – A

Find the volume of the given cylinder / rectangular block using vernier calipers (take 5 sets of readings)

A sphere of known mass is given along with Vernier calipers. Determine the diameter and hence volume. Also find the density of the sphere.
    (Mass of sphere = ...)

You are supplied with vernier calipers. Determine the internal volume of the given calorimeter. Hence find the mass of water that can be taken in the calorimeter. Density of water = 1000 kg/m³

Find the density of the material of cylinder with the help of vernier calipers (mass of cylinder = ... kg)

5. A screw gauge and a meter scale are supplied. Determine the diameter of the wire and hence find its volume.

6. Determine the thickness of glass plate and find its volume. You are supplied with screw gauge and graph paper.

7. Determine the volume of the given lead shot using screw gauge.

8. Using spherometer find the thickness of the glass plate and hence find its volume with the use of graph paper

9. Find the radius of curvature of the spherical surface (concave / convex) using spherometer.

10. Using common balance determine the mass of the given body by sensibility method.

11. Using principle of moments determine the mass of the given body, with a minimum of 5 readings.

12. Find the mass of meter scale using principle of moments, take at least 5 readings.

13. Find the relative density of a body using moment bar.

14. Find the relative density of given body using parallelogram law apparatus.

15. Using parallelogram law apparatus balance the body using three sets of known weights. Complete the parallelogram and find the mass of the given body.

16. Using capillary tube and microscope find the surface tension by measuring capillary rise. (Radius of the capillary tube = ...)

17. Draw the load extension graph of helical spring. for at least four different loads and determine the spring constant from the graph.

18. Tabulate load extension for helical spring, for at least four different loads and find spring constant by calculation. Also find the mass of a given body.

19. Measure the period of oscillation with four different known masses and determine spring constant by calculation. Also find the mass of a given body.

20. Draw M-T^2 graph for a helical spring with four readings. Determine spring constant from the graph.

21. Measure the terminal velocity of glass beads through caster oil in a jar. Hence determine the viscosity. (Density of oil = ..., Density of glass bead =)

22. Find the specific heat of a soild or liquid by the method of mixtures.

23. Using the law of friction find the coefficient of friction between a block and the surface.

24. Using simple pendulum determine period of oscillation for the lengths of 70, 75, 85, 90 and 95 cm. Plot L-T^2 graph. Aecceleration due to gravity using graph.

25. Using simple pendulum determine period of oscillation for the lengths of 50, 55, 70, 75, 80 and 90 cm. Find acceleration due to gravity by calculation. Also determine length of seconds pendulum using L-T^2 graph.

26. Using resonance column apparatus find the resonating lengths for at least three tuning forks hence find velocity of sound at room temperature.

27. Compare the frequencies of two tuning forks using resonance column apparatus.

28. Using sonometer determine the unknown frequency of the tuning fork, if three other known frequencies are supplied.

29. Determine the young's modulus of the wire using searle's apparatus.

30. Study the rate of cooling by drawing time – temperature graph. You are provided with calorimeter, water and stop watch, thermometer etc.

SECTION – B

1. Determine the resistivity of the given wire by Ohm's law. Diameter of the wire is to be taken with screw gauge.

2. By drawing current – voltage graph, find the resistance of given wire by Ohm's law. Also find the conductance.

3. Compare, the resistances of two wires by drawing current – voltage graph by Ohm's law.

4. Verify the law of combination of resistance in series / parallel using Ohm's law.

5. Determine the resistivity / conductivity of the given wire using Meter bridge. Screw gauge is provided.

6. Verify the law of combination of resistances in series/ parallel using meter bridge.

7. Compare the resistance of two wires using meter bridge.

8. Study the variation in the internal resistance of primary cell with external resistances using potentiometer.

9. Using potentiometer find the emf of Daniel cell (given the emf of Leclanche cell = 1.45V)

10. Compare the emf s of two cells using potentiometer

11. Find the focal length of convex lens by u-v method. Verify the result using distant object method. Also find the power of the lens.

12. Find the focal length of convex lens by u-v graph. Take six sets-of readings. Also find its power.

13. Find the focal length of the given convex lens by drawing 1/u-1/v graph. Take six sets of readings.

14. Find the focal length of the given concave lens by keeping it in contact with a convex lens / out of contact with a convex lens.

15. Find the focal length of the given concave mirror by drawing u-v graph.

16. Find the focal length of the given concave mirror by drawing 1/u-1/v graph. Take six sets of readings.

17. Find the focal length of the given concave mirror using u-v method. Verify the result by normal reflection method.

18. Find the focal length of the convex mirror using a convex lens.

19. Find the focal length of the liquid lens.

20. Determine the focal length of liquid lens and hence find out the refractive index of the liquid used.

21. Plot a graph showing the variation of angle of deviation "d" with angle of incidence "i" for a given prism. From the graph find the angle of minimum deviation.

22. Draw the path of the ray of light through a prism for five different angles of incidence and find the refractive index of the material of the prism. (Angle of the prism = ...)

23. Draw the forward characteristics of a p-n junction diode and determine its static and dynamic resistances.

24. Draw the reverse characteristic curve of a zener diode and determine its reverse break down voltage.

25. Determine the frequency of altering current using a sonometer.

26. Convert a given galvanometer into an ammeter of desired range.

27. Convert a given galvanometer into a voltmeter of desired range.

28. You are given a transistor, two voltage sources, voltmeters, ammeters and rheostats. Connect the transistor in, common emitter mode and draw the input/ output characteristic curves.

29. Find the refractive index of the liquid using concave mirror.