INTERMEDIATE PART-I (11th CLASS)

PHYSICS   PAPER-I (NEW SCHEME)   TIME ALLOWED: 3.10 Hours
GROUP-II   **SUBJECTIVE**   MAXIMUM MARKS: 83

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

Q.No.2   Attempt any eight parts.   **8 × 2 = 16**
(i)   What do you know about Precision and Accuracy?
(ii)   The period of Simple pendulum is measured by a stopwatch. What type of errors are possible in the time period?
(iii)   Write the dimensions of   (i) Pressure   (ii) Density
(iv)   Define Radian and Steradian.
(v)   Can a vector have a component greater than the vector's magnitude?
(vi)   Can the magnitude of a vector have a negative value?
(vii)   Can a body rotate about its centre of gravity under the action of its weight?
(viii) What is the difference between Elastic Collision and Inelastic Collision?
(ix)   An object is thrown vertically upward. Discuss the sign of acceleration due to gravity relative to velocity while the object is in air.
(x)   How is the distance calculated from velocity-time graph?
(xi)   State Newton's Third law of motion and give at least two examples.
(xii)   Define Viscosity and Drag force.

Q.No.3   Attempt any eight parts.   **8 × 2 = 16**
(i)   Define Power. Write its formula.
(ii)   What sort of Energy is in the following:-   (a) A moving car   (b) Compressed spring
(iii)   An object has 1J of P.E. Explain what does it mean?
(iv)   Why does a diver change his body position before diving in the pool?
(v)   What are Artificial Satellites?
(vi)   Define Moment of Inertia.   Write its formula.
(vii)   What happens to the period of a Simple Pendulum if its length is doubled?
(viii) What is meant by Phase Angle?
(ix)   Can we realize an ideal Simple Pendulum?
(x)   Why does sound travel faster in solids than in gases?
(xi)   How are beats useful in tuning a musical instrument?
(xii)   Define Crest and Trough.

Q.No.4   Attempt any six parts.   **6 × 2 = 12**
(i)   Can visible light produce interference fringes?
(ii)   How is the distance between interference fringes affected by the separation between the slits of Young's experiment? Can fringes disappear?
(iii)   Why the Polaroid sunglasses are better than Ordinary sunglasses?
(iv)   Why would it be advantageous to use blue light with a compound microscope?
(v)   How is the power lost in optical fibre through dispersion?
(vi)   Why does the pressure of a gas in a car tyre increase when it is driven through some distance?
(vii)   Derive Charles' Law from Kinetic Theory of Gases.
(viii) Is it possible to construct a heat engine that will not expel heat into the atmosphere?
(ix)   What are Isothermal and Adiabatic Processes?

SECTION-II

NOTE: - Attempt any three questions of the following:-

5.(a)   Define Elastic Collision. Show that relative speed of approach is equal to relative speed of separation for one dimensional collision.   1, 4

  (b)   Given that $\vec{A} = 2\hat{i} + 3\hat{j}$ and $\vec{B} = 3\hat{i} + 4\hat{j}$.

        Find the magnitude and angle of $\vec{C} = \vec{A} + \vec{B}$ 3

6.(a)   What are Geostationary Satellites? Derive the relation for radius of Geostationary Orbit.   1, 4
  (b)   A force of 400N is required to overcome road friction and air resistance in propelling an automobile at $80\,kmh^{-1}$. What power (kW) must the engine develop?   3

7.(a)   Define SHM. Prove that total energy remains conserved in mass-spring system, oscillating with SHM.   5
  (b)   Find the temperature at which the velocity of sound in air is two times its velocity at $10^{o}C$.   3

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8.(a) Explain Young's Double Slit Experiment to study the phenomenon of interference of light. 5
   (b) A telescope is made of an objective of focal length 20 cm and an eye piece of 5.0 cm, both convex lenses. Find the angular magnification. 3

9.(a) State and explain Equation of Continuity. 5
   (b) Estimate the average speed of Nitrogen molecules in air under standard conditions of pressure and temperature. 3

SECTION-III (PRACTICAL)

10. (A)   Write answers of any four parts. $4 \times 2 = 8$
   (i)   What is meant by the pitch of Screw Gauge?
   (ii)   What is the resolution of a vector?
   (iii)   What is the length of Pendulum?
   (iv)   What is Spring Constant? Give its unit.
   (v)   What are Stationary Waves?
   (vi)   What is Parallax?
   (vii)   What is the difference between convex lens and concave lens?
   (viii) What is Critical Angle?

   (B)   Write down brief procedure to show experimentally that time period of Simple Pendulum is independent of amplitude. 3

OR

   Write down brief procedure to find experimentally the refractive index of the material of prism by Critical Angle Method.

   (C)   Answer the following questions on the basis of graph drawn below:- $2 \times 2 = 4$
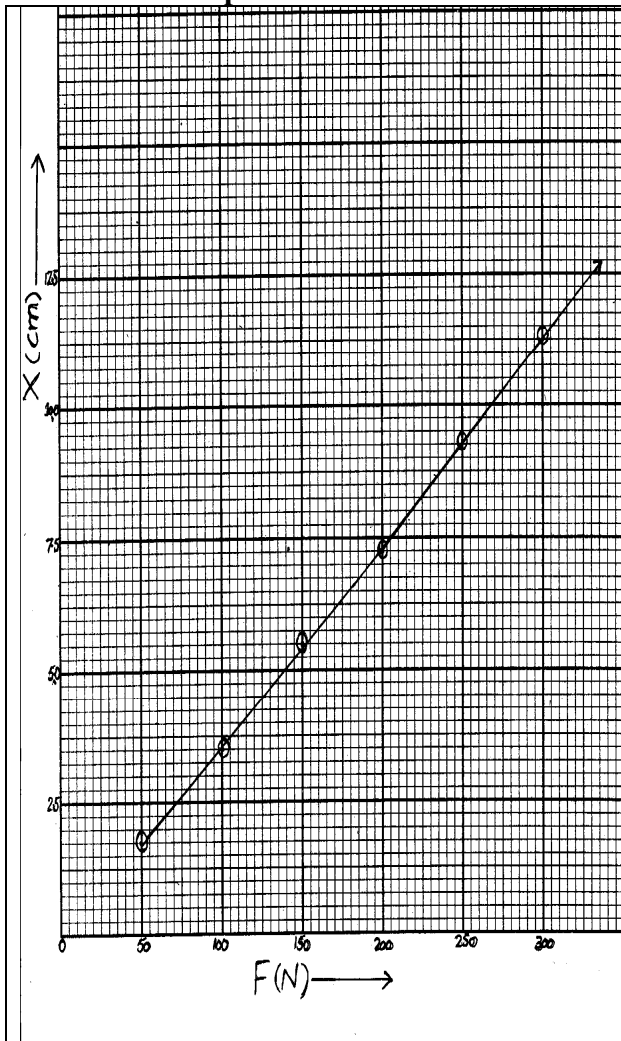   **From Graph A**
   (i) What can you infer from the graph?   (ii) Find the value of Spring Constant from the graph.

OR

   From Graph B
   (i) Measure the intercepts of the graph.   (ii) What do the intercepts represent?

   Graph A   **Graph B**