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PHYSICS HSSC-I

v2

Time allowed: 2-35 Hours Total Marks Sections B and C: 68
NOTE: Sections B and C comprise pages 1-2. Answer any fourteen parts from Section B and any two questions from Section C in the appropriate provided answer book. Use supplementary answer sheet for Section B responses. Write your answers neatly and legibly.

SECTION-B (Marks 68)

Q.2 Attempt any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14 x3 = 42)

- (i) Specific heat of gas at constant pressure is greater than specific heat at constant volume. Why?
- (ii) Write work done of a moving particle with its energy.
- (iii) Why is the 1st law of motion also called as the law of inertia?
- (iv) Pick the physical quantities having the same dimension:
 - a. Acceleration b. Force c. Work done
 - d. Rate of change of momentum e. Kinetic Energy f. Gravity
- (v) Two masses m_1 and m_2 are attached to a compressed spring at rest. What will be the ratio of their final velocity?
- (vi) Relate the orbital speed of a satellite depends on its radius.
- (vii) Define Hubble's law.
- (viii) The magnitude of dot product and cross product of two vectors is $6\sqrt{3}$ and 6, respectively. Find the angle between the vectors.
- (ix) Give any three examples of non-conventional energy sources.
- (x) Find the angle between $\vec{r} = x\hat{i} + y\hat{j}$ and $\vec{S} = y\hat{i} + x\hat{j}$.
- (xi) Why would it be disadvantageous to use blue light for a compound microscope?
- (xii) In optical fibre system, how can the loss of energy of different components be reduced?
- (xiii) What are the conditions used while calculating time period of a simple pendulum?
- (xiv) Write an expression that harmonics are integral multiple of fundamental note, for stationary waves.
- (xv) Compare expression of $\omega = v/r$ with the rate of change in velocity.
- (xvi) State the direction of the following vectors in simple situation:
 - a. Angular momentum
 - b. Angular velocity
- (xvii) Define Torque.
- (xviii) Certain gaseous particle has a density of $1.34 \times 10^{-3} \text{ kg m}^{-3}$. It falls through pure water ($\rho = 10^3 \times 10^3 \text{ kg m}^{-3}$) with a terminal speed of 2.5 cm s^{-1} . Find the radius of the particle.
- (xix) The diameter and length of a metallic cylinder is 1.22 cm and 9.38 cm, respectively. What will be the volume of the cylinder?

Page 1 of 2 (Phy)

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