

THE GALAXY EDUCATION SYSTEM
PHYSICS (Team-3)
TERMINAL EXAMINATION (2010-11)

STD: 9
DATE:

M.M. : 80
Duration: 90Minutes

Answer to this paper must be written on the paper provided separately.
You will NOT be allowed to write during the first 15 minutes.
This time is to be spend in reading the question paper.

This time given at the head of this paper is the time allowed for writing the answer.

**This paper is divided into 2 Sections. Section-I (40 marks) and Section-II (40 marks).
Section-I is compulsory and in Section-II, 4 questions are to be attempted out of 6 questions. The
intended marks for questions or parts of questions are given inbrackets[]**

SECTION I (40 Marks)
(Attempts all the questions)

Question 1

- a) The bob of a simple pendulum is made of wood. What will be the effect on the time period if an identical ball of aluminium replaces the wooden bob ? [2]
- b) Find the distance travelled by a body in 5minutes if it travels with a uniform speed of 20m/s. [2]
- c) Differentiate between uniform acceleration and variable acceleration [2]
- d) What can you say about the nature of motion of a body if its displacement time graph is
1. a straight line parallel to time axis ?
 2. a straight line inclined to the time axis with an acute angle? [2]
- e) What is momentum? Give its SI unit . [2]

Question 2

- a) State Newton's second law of motion [2]
- b) What force is required to produce an acceleration of 2m/s^2 in a body of mass 0.8 Kg? [2]
- c) Define gravitational constant G. [2]
- d) Give two reasons why water is not a suitable barometric liquid? [2]
- e) At a given place a barometer records a pressure of 70cm of mercury. If mercury is replaced by water, what would be the height of the water column? [density of Hg is 13600kg/m^3 , density of water is 1000kg/m^3] [2]

Question 3

- a) A solid weighs 100gf in air and 88gf when completely immersed in water. Calculate the upthrust and relative density of the solid. [2]
- b) What happens when you shake a wet piece of cloth? Explain [2]
- c) At what temperature will the Fahrenheit scale measure twice that on the Celsius scale? [2]
- d) Differentiate between density and relative density of a substance. [2]
- e) What is a lactometer? How does it measure the purity of milk? [2]

Question 4

- a) What is meant by rivetting? How is it done? [2]
- b) What is convection? Why does it not occur in solids and vacuum? [2]
- c) The temperature of two bodies differ by 10°C. How much will they differ on Fahrenheit scale. [2]
- d) What is meant by anomalous expansion of water? [2]
- e) Convert 1mm of Hg into pascal. Take density of Hg = 13600kg/m^3 and $g = 9.8\text{m/s}^2$ [2]

SECTION II (40 Marks)

(Answer any four questions from this section)

Question 5

- a) A metal cube of side 5cm at 20°C is heated, when its each side becomes 5.05cm at 820°C. Calculate the values of coefficient of linear, superficial and cubical expansion. [3]
- b) What fraction of an iceberg of density 910kg/m^3 will be above the surface of sea water of density 1170kg/m^3 . [3]
- c) Explain the process of conduction in solids [4]

Question 6

- a) A body moves with a velocity of 2m/s for 5sec and then its velocity increases to 10m/s in next 5sec. Thereafter its velocity begins to decrease at a uniform rate until it comes to rest after 10sec.
1. Plot a velocity- time graph for the total motion of the body .
 2. From the graph find the total distance moved by the body. [3]
- b) A metal cube of side 5cm and relative density 9 is suspended by a thread and is immersed completely in a liquid of relative density 1.2. Find the tension in the thread [3]
- c) Draw a labelled diagram of a thermos flask and state how the transfer of heat is minimised in it. [4]

Question 7

- a) An aeroplane lands at 216km/hr and stops after covering a runway of 2km. Calculate the acceleration and the time in which it comes to rest. [3]
- b) What is an aneroid barometer? Explain its construction and working [4]
- c) A car of mass 1200kg is brought to rest from a speed of 60m/s by a constant braking force of 6000N. Calculate the retardation and time in which the car comes to rest. [3]

Question 8

- a) A balloon of volume 50cm^3 is filled with hot air of density 0.4kg/m^3 . If the weight of the fabric of balloon is 12kgf and equipment is in the state of equilibrium. [Density of air on earth's surface is 1.3kg/m^3] Calculate
1. Weight of hot air
 2. Weight of hot air, balloon and equipment
 3. Upthrust
 4. Weight of equipment [4]
- b) A hydrometer of weight 10.5gf, has area of cross-section of its stem 0.2cm^2 . If the bulb of hydrometer has a volume of 8.5cm^3 , find the density of the liquid in which only the bulb of hydrometer gets immersed. [3]
- c) State the characteristic properties of upthrust. [3]

Question 9

- a) The volume of a liquid is 830m^3 at 30°C and it is 850m^3 at 90°C . Find the coefficient of volume expansion of the liquid. [3]
- b) Describe two methods to detect the presence of heat radiation. [4]
- c) The mercury thread rises by $\frac{3}{8}$ parts between the two standard points on celsius scale, when thermometer is placed in warm milk. Calculate the temperature in $^\circ\text{C}$, K and fahrenheit scale. [3]

Question 10

- a) A force of 50kgf is applied to the smaller piston of a hydraulic machine. Neglecting friction find the force exerted on the large piston, the diameters of the pistons being 5cm and 25cm respectively [3]
- b) State the defects of a simple barometer. [4]
- c) A stone is dropped freely from the top of a tower and it reaches the ground in 4s . Taking $g = 10\text{m/s}^2$, calculate the height of the tower. [3]