### SECTION A
(Answer all questions)

Question 1

a. i)   Name the forces acting on a body, when a body is immersed in a liquid.
   ii) State the direction of the forces mentioned in part(i).   (2)
b.   A piece of iron of volume $30cm^3$ has a density of 7800 kg/m^3. Find its mass. (2)
c. i)   Define moment of force.
   ii) The moment of a force of 25N about a point is 62.5Nm. Find the
        perpendicular distance of the force from that point.   (2)
d. i)   Why does nose start bleeding on high altitude?
   ii) A force of 80N acts on a body having area $1.6m^2$. Calculate the pressure
        exerted.   (2)
e.   How does the effect of force differ when it is applied on a
         i)rigid body   ii) non-rigid body.   (2)

Question 2

a.   Figure below shows a light ray passing from medium 1 to medium 2.
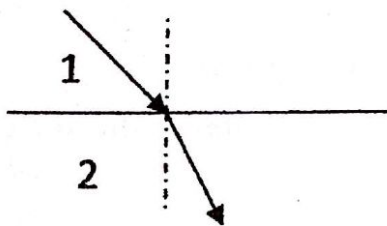
   i)   State whether the speed of light increases or decreases in medium 2.
   ii) Under what condition does the light ray pass undeviated?   (2)
b. i)   What do you mean by dispersion of light?
   ii) Which colour of white light is deviated the maximum?   (2)
c.   Differentiate between real image and virtual image (2 points)   (2)
d.   State the position of image for the following positions of object.
   i)   Beyond the centre of curvature of a concave mirror.

ii) At any point in front of the convex mirror.

e. As seen from above,the apparent depth of a liquid in a vessel is 1 when its real depth is 20cm.Find

    i) the refractive index of the liquid

    ii) the shift produced

Question 3

a. i) Name the material used to make pendulum of a clock.

  ii) Give a reason for using the material mentioned in part (i) above.

b. i) Name the unit in which the loudness of sound is expressed.

  ii) Why is the loudness of sound heard by a plucked wire increased mounted on a sound board.

c. Two waves of same frequency have amplitudes in the ratio 1:4. What will be the ratio of their i) loudness ii) pitch.

d. Draw a displacement-time graph of a wave and label its

    i. amplitude   ii. time period.

e. i) Define pitch of a sound.

 ii) Draw a diagram to show the wave pattern of a high pitch note a low pitch note.

Question 4

a. i) Name the material of a fuse wire.

  ii) State one property of the material of a fuse wire.

b. i) Name the colour coding of neutral wire in a cable used for wirir household electrical circuit.

  ii) State the purpose of the neutral wire

c. Explain the charging of glass rod and silk when they are rubbed each other.

d. i) What is an electroscope?

  ii) Name the different types of electroscope.

e. Write two differences between charging by conduction and ind

Question 5

a. The mass of an empty density bottle is 40g, it is 75g when completely filled with water and 60g when filled completely with a liquid. Density of water = 1 g/ cm³.

Find the

i) volume of the density bottle.
ii) density of the liquid
iii) State with reason whether wood of density $0.75 gcm^{-3}$ will float or sink in the liquid.

b. The diagram below shows a body floating in three different liquids A,B and C at different levels
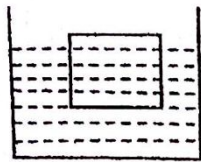

Liquid A   Liquid B   Liquid C
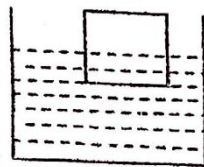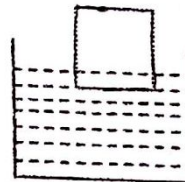
i) In which liquid does the body experience the greatest buoyant force?
ii) Which liquid has the highest density?
iii) Which liquid has the lowest density?

c. i) When does a man exert more pressure on the floor
1. while standing or walking
2. Give reason for your answer in part (1) above.

ii) Name two factors on which the pressure at a point in a liquid depends

Question 6

a. Complete the path of the incident ray AB, falling on a glass slab PQSR and label the lateral displacement.
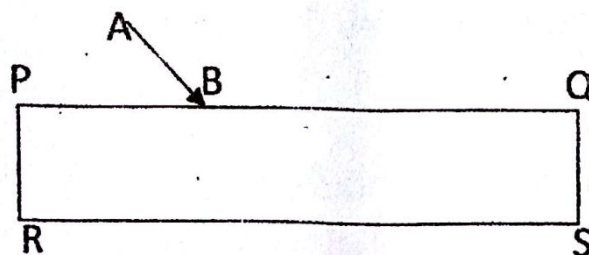
b. A glass slab is placed over a piece of paper on which VIBGYOR is printe

with each letter into its corresponding colour. The letter of which colou will appear to be raised

i) maximum

ii) minimum.

iii) State the reason for your answers.

c. i) Name the mirror which always form virtual image.

ii) Draw a ray diagram to support your answer.

Question 7

a. i) What is linear expansion of a substance?

ii) Two iron rods - one 10m long and the other 5m long are heated to the same rise in temperature. Which will expand more?

iii) Write the relationship between coefficient of cubical expansion and coefficient of linear expansion.

b. State one way of

i) increasing the pitch of sound produced by wind instrument.

ii) decreasing the pitch of sound produced by stringed instrument

iii) increasing the pitch of sound produced by membrane instruments.

c. i) Name the characteristic property of sound which helps in distinguis a loud note from a soft note.

ii) Name a factor on which the above mentioned property in part i) de

iii) Draw a displacement-time graph to distinguish a loud note from a s

Question 8

a. i) Name a commercial unit of electrical energy.

ii) Establish a relation between the above mentioned unit in part i) ar its SI unit.

iii) Name the part of the appliance which is earthed.

b. i) How will you use a gold leaf electroscope to find out whether the on a charged body is positive or negative ?

ii) What is a lightning conductor?

c. A geyser is rated '1500W-220V'.

i) What information does it convey ?

Also calculate

ii) the current drawn

iii) the energy consumed in 35 hours and

iv) the cost of energy consumed at Rs 4.2 per kWh.

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