

SECOND TERMINAL EVALUATION 2017 PHYSICS

Standard: IX

Time : 1½ Hour
Total Score : 40

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time

Answer any **FOUR** questions from 1 to 5. Each question carries 1 score. (4 x 1 = 4)

1. Using the relationship between the terms in the first pair; complete the second pair given below.
Hydrometer : law of floatation :: Hydraulic jack :
2. From the following find the correct statements regarding acceleration due to gravity.
 - a) same at all places on the earth
 - b) more for higher mass and less for lower mass
 - c) same for bodies of higher mass and lower ~~mass~~
 - d) less for higher mass and more for ~~lower~~ mass
3. Find out the odd one and give reason for your answer
(a stone at a height, a compressed spring, a moving car, an elongated rubber band)
4. In which of the following location on the surface of earth, weight of body will be maximum?
(Centre of the earth, at the equator, at the poles, between the centre of the earth and its surface)
5. A ray of light entering obliquely from air to glass is shown in the figures. Which is the correct one?

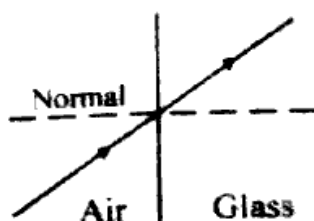


Figure (1)

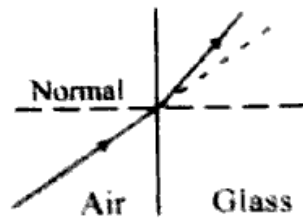


Figure (2)

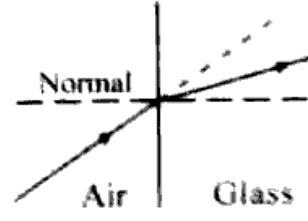


Figure (3)

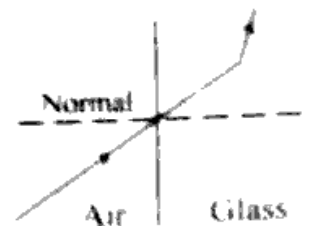
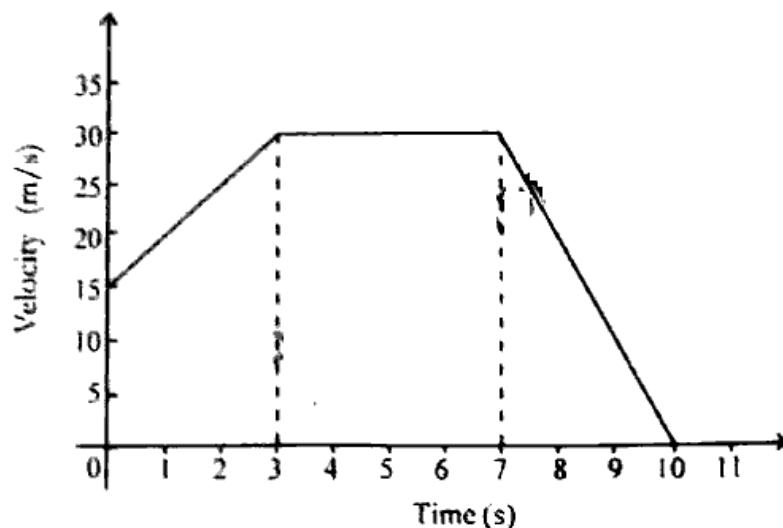


Figure (4)

Answer any **FOUR** questions from 6 to 10. Each question carries 2 score. (4 x 2 = 8)

6. The velocity time-graph of an object is given below.

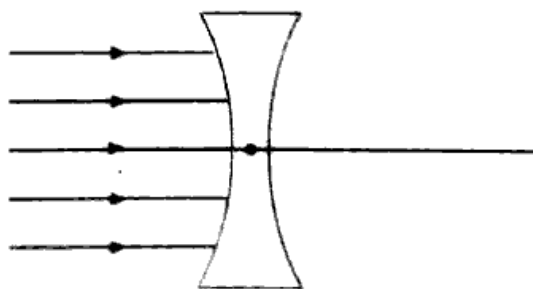


- What is the initial velocity of the object?
- Find out the displacement of the object between 3s and 7s using the graph.

7. Fill up the blanks in column B & C

A	B	C
Impulse	(a)	Ns
momentum	mv	(b)

8. Complete the given ray diagram and mark the principal focus of the concave lens.



9. Write down the correct energy transformation in the following table.

Device	Energy transformation
Electric iron box	(a)
Electric bulb	(b)
Electric generator	(c)
Electric fan	(d)

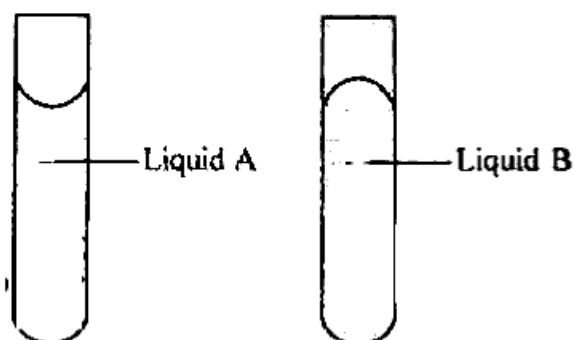
10. Observe the table given below and answer the following questions.

Medium	Refractive index
A	1.33
B	1.62
C	1.5
D	1.52

- In which medium given in the table, the light has maximum velocity? (1)
- The velocity of light in a medium is 2×10^8 m/s. Find the refractive index of this medium. (Velocity of light in vacuum = 3×10^8 m/s) (1)

Answer any **FOUR** questions from 11 to 15. Each question carries 3 score. ($4 \times 3 = 12$)

11. In the figure given below two liquids A and B are taken in two test tubes.



- Which of above liquid have greater adhesive force? (1)
- What is meant by cohesive force? (1)
- Among the two, which liquid shows capillary depression? (1)

12. Two masses 5 kg and 20 kg each are separated by different distances as shown in the figure.

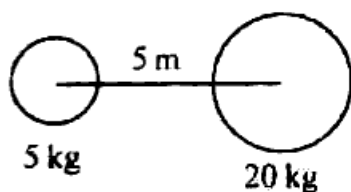


Figure (i)

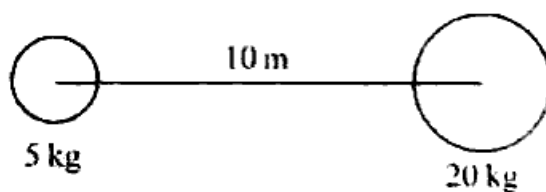


Figure (ii)

- In which figure the mutual force of attraction between the masses is more? (1)
- Calculate the force of attraction between the masses in figure (ii) (2)

(Gravitational constant, $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$)

13. Work is said to be done when a body undergoes displacement in the direction of force.

- In which among the following situations work is said to be done? (2)
 - Pushes a wall
 - A trolley being pulled
 - A person climbing up a ladder with load on his head
 - A person standing with load on his head

- What is the unit of work? (1)

Values of g for some celestial bodies are given in the table. Observe the table and answer the following questions.

Celestial body	Value of g (m/s^2)
Earth	9.8
Moon	1.62
Jupiter	23.1

a) The mass of an object is 50 kg on earth. What is its mass in Jupiter? (1)

b) Calculate its weight on moon? (2)

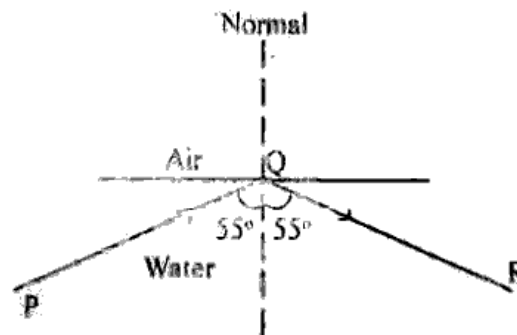
The energy possessed by a body by virtue of its motion is the kinetic energy.

a) Which are the factors on which the kinetic energy of a body depends? (1)

b) A boy of mass 40 kg is riding a bicycle with a speed 2 m/s. The bicycle has a mass of 15 kg. Calculate the total kinetic energy. (2)

Answer any **FOUR** questions from 16 to 20. Each question carries 4 score. ($4 \times 4 = 16$)

16. Observe the figure and answer the following questions.



a) What are the conditions for reflecting PQ in the direction of QR? (1)

b) What is this Phenomenon called? (1)

c) If the angle of incidence is 30° at Q, draw the diagram showing the phenomenon takes place here? (Critical angle of water= 48.6°) (2)

17. Centre of gravity of a square lamina is the point where the diagonals meet.

a) Explain an activity to find the centre of gravity of a uniform thin lamina of irregular shape? (3)

b) What is meant by centre of gravity? (1)

18. Potential energy and kinetic energy are two types of mechanical energy.

a) Calculate the potential energy of a stone of mass 1 kg kept on the terrace of a building 12 m height ($g=10 \text{ m/s}^2$). (2)

b) If the stone is dropped from the terrace, what will be its total energy just before it touches the ground? (1)

c) State the law that helped you to get this answer? (1)