ANNUAL EVALUATION 2021-22

PHYSICS

Class: IX

Time: 1 ½ hour

Score : 40

Instructions

- First 15 minute 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 6. Each question carries 1 score.   **(4 x 1 = 4)**
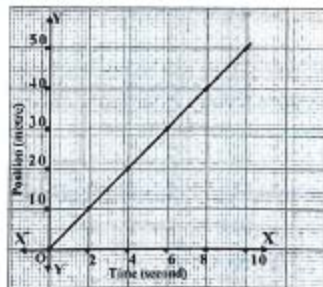
1. Identify the relation in the first word pair and complete the second pair suitably. (1)

   Work : joule

   Power : ....

2. Name the device used to measure the relative density of liquids. (1)

3. Position - time graph of a car is given. (1)

   The distance covered by the car in 6 s is ....

   (10 m, 40 m, 30 m, 50 m)

4. The gravitational force of attraction between two bodies of masses m_1 & m_2

   seperated by a distance 'd' is, $F = \dfrac{G m_1 m_2}{d^2}$ (1)

   The value of 'G' is

   (9.8 m/s², 6.67 x 10⁻¹¹ Nm²/kg², 1.62 m/s², 23.1 m/s²)

5. What should be the minimum distance between the source and the reflecting surface to hear an echo in air.

   (340 m, 17 m, 34 m, 170 m)   (1)

6. What would be the weight of a body of mass 50 kg when placed at the centre of the earth?   (1)

Answer any **FOUR** questions from 7 to 12. Each question carries 2 score.   (4 x 2 = 8)

7. Among the given circuits identify the circuit in which voltmeter and ammeter are connected in the right way. (2)
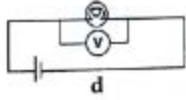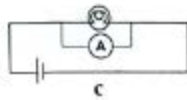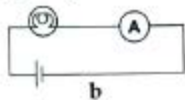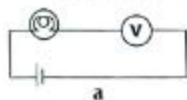
8. In service stations, hydraulic jacks are used to lift vehicles. What is the working principle of a hydraulic jack? State the principle. (2)

9. A stone of mass 0.5 kg is thrown with a velocity of 20 m/s. Find the momentum of the stone. (2)

10. a) Name the device used to find the depth of the sea using ultra sonic waves. (1)
    b) Which phenomenon of sound is used in this device? (1)

11. Correct the mistake, if any, in the following statements by modifying the underlined words.

    a) In an electric generator, mechanical energy is converted into magnetic energy. (1)
    b) The energy possessed by a body by virtue of its strain is called kinetic energy. (1)

12. A car starting from rest travels 100 m in 5 s with uniform acceleration. Find the acceleration of the car? (2)

Answer any **FOUR** questions from 13 to 18. Each question carries 3 score.   (4 x 3 = 12)

13. The weight of a body is different at different places on the earth's surface.
    a) Where on the earth's surface, does a body experience maximum weight?
        (pole region, equitorial region, centre of earth) (1)
    b) What is the unit of weight? (1)
    c) Which is the instrument used to measure the weight of a body ? (1)

14. Classify the following as viscous liquids & mobile liquids.
    Honey, Petrol, Glycerin, Water, Kerosene, Castor oil (3)

15. A car travelling with 20 m/s velocity comes to rest when brake is applied for 8 s.
    a) What is the final velocity of the car ? (1)
    b) Find the retardation of the car. (2)

16. Observe the figure.

    a) When the card is suddenly struck, what happens to the coin? Why? (2)
    b) To which law of motion the observed phenomenon is related? (1)

17. Some situations are given below: (3)
    i) A man climbing up a ladder, carrying a load on his head
    ii) A boy is pushing a strong wall.
    iii) A man carries a load on his head.
    iv) A man is stepping down by carrying a load on his head.
    v) A boy walking along the ground with a bag of mass 10 kg.
    (a) Identify the situations where work is not done against gravity.
    (b) Justify your answer.

18. a) Write any one example each for longitudinal wave and transverse wave.
    b) Identify the following statements as related to transverse and longitudinal waves.
       i) Particles vibrate in a direction perpendicular to the direction of propagation of the wave. (3)
       ii) Compressions and rarefactions are formed.
       iii) Particles vibrate in a direction parallel to the direction of propagation of the wave.
       iv) Crests and troughs are formed.

Answer any **FOUR** questions from 19 to 24. Each question carries 4 score.   (4 x 4 = 16)

19. Motion of a car is shown below using a diagram.

Time:	0	2 s		4 s	6 s		8 s	10 s
	A	B		C	D		E	F
Position:	0 m	5 m		25 m	30 m		50 m	55 m
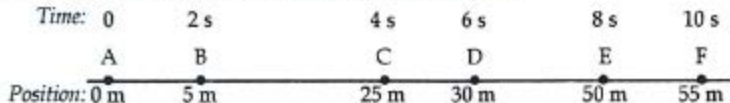
    a) What is the distance covered by the car between B and C ? (1)
    b) Find the velocity of the car during this period. (2)
    c) Among the following which are the time interval where car travels in uniform velocity (0s → 2s, 2s → 4s, 4s → 6s) ? (1)

20. Identify the symbol and write the name of the component. (4)

Symbol	Name of Component
⎓⎓⎓⎓	(a) ....
⎓⎓⎓	(b) ....
⊣⊢	(c) ....
⊙	(d) ....

21. A stone of mass 50 g (0.05 kg) is situated on a terrace at a height of 10 m from the ground. (Acceleration due to gravity $g = 10 \text{ m/s}^2$)

a) Which type of energy is possessed by the stone? Calculate the energy? (2)

b) What is the energy transformation that takes place when it is falling down.? (1)

c) What would be the kinetic energy of the stone just before it touches the ground? (1)

22. "A man jumps from a boat to the shore"

1) Identify the action and reaction in the above situation. (2)

2) State the law related to the given situation. (1)

3) Write another example related to this law. (1)

23. Mass of a body is 10 kg.

a) Find the weight of the body. (1)

b) Find the mass of the body when it is placed at the centre of the earth. (1)

c) Find the weight of the body if it is placed on the surface of 'Jupiter'. (2)
(Value of g at Jupiter $g = 23.1 \text{ m/s}^2$)

24. Observations related to a body of weight 200 N when immersed in two liquids A and B are given in the table.

a) Complete the table. (2)

Liquid	Weight in air	Weight in liquid	Loss of wt. in liquid	Buoyancy
Liquid A	200 N	160 N	(i)	40 N
Liquid B	200 N	170 N	30 N	(ii) ....

b) Which liquid has more density? (1)

c) Justify your answer. (1)