

# NEW STANDARD ACADEMY

Marks: 80

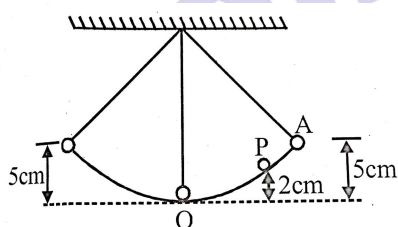
Time: 3 HRS

18-11-2024

CLASS : 9<sup>TH</sup>

## PHYSICS

- (a) Define 1 J work.  
(b) Figure shows a simple pendulum consisting a bob of mass 100gm. Initially the bob of pendulum is at rest at O. It is displaced to one side at A. The height of A above O is 5 cm



- (a) SI unit of electrical energy = watt or 1 joule per sec.  
(b) Calculate the power of an electric motor that can lift 800kg of water to store in a tank at a height of 1500 cm in 20s. ( $g=10\text{m/sec}^2$ )
- A moving body of mass 20 kg has 40 J of kinetic energy. Calculate its speed.
- A 300 kg truck moving at speed of 90 m/sec stop after covering some distance. The force applied by brakes is 27000 N .Compute the distance covered and work done by this force
- The kinetic energy of an object of mass 'm' moving with a velocity of 5m/sec is 25 J. What will be its kinetic energy, when the velocity is doubled? What will be its kinetic energy when its velocity is increased three times?
- Define kinetic energy and potential energy. Write an expression for K.E. of a body of mass m moving with a speed V. Find the kinetic energy of a stone of 10 kg moving with a velocity of 10m/sec.
- Acceleration due to gravity of a person on a planet A is half of that on earth. He can jump up to a height of 0.4 m on the surface of the earth. How high can he jump on

- planet when his potential energy remains same on both planets?
- Define power. State commercial unit and SI unit of electrical energy. An electric heater of 400 W works for 2 hours .Find the electrical energy units consumed in a day
- Four men lift a 250 kg box to a height of 1 m and hold it without raising or lowering it. (Take  $g= 10\text{ m/s}^2$ )  
(i) How much work is done by the men in lifting the box?  
(ii) How much work is done in just holding it? Give reason.
- Mass of 10 kg is dropped from a height of 50 cm. Find its:  
(i) Potential energy just before dropping.  
(ii) Kinetic energy just on touching the ground.

## CHEMISTRY

- In a reaction, 4.0 g of sodium carbonate were reacted with 10 g of hydrochloric acid solution. The product was a mixture of 2.5 g of carbon dioxide and 11.5 g of sodium chloride solution. Is this data in agreement with the law of conservation of mass?
- If 6.3 g of sodium hydrogen carbonate are added to 15.0 g of ethanoic acid (or acetic acid) solution, the residue left is found to weigh 18.0 g. What mass of  $\text{CO}_2$  is released in the reaction?
- In a reaction, 5.3 g of sodium carbonate reacted with 6 g of ethanoic acid. The products were 2.2g of carbon dioxide, 0.9 g water and some sodium ethanoate. What is the expected weight of sodium ethanoate?
- Hydrogen and oxygen combine in the ratio of 1 : 8 by mass to form water. What mass

of oxygen will be required to react completely with 4 g of hydrogen?

15. Explain Dalton's atomic theory.
16. The percentage of the three elements calcium, carbon and oxygen in a sample of calcium carbonate is given as Calcium = 40.0%; Carbon = 12.0%; Oxygen = 48.0%

If the law of constant proportions is true, what weights of these elements will be present in 1.5 g of another sample of calcium carbonate?

17. 0.24 g of a sample of a compound having boron and oxygen was found on analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound.
18. When 5.0 g of calcium is burnt in 2.0 g of oxygen, 7.0 g of calcium oxide is produced. What mass of calcium oxide will be produced when 5.0 g of calcium is burnt in 20.0 g of oxygen? Which law of chemical combination will govern your answer
19. Prove that  $1 \text{ amu} = 1.66 \times 10^{-24} \text{ g}$
20. What is difference between atom and molecule

### BIOLOGY

21. Describe the different types of epithelial tissue.
22. What is the main function of ligament and cartilage?
23. What is mast cell?
24. What is the role of platelets in blood of human?
25. What is the component of bone?
26. Which type of epithelial tissue is found in the respiratory tract?
27. Name two components of white blood corpuscles and their functions
28. Write the functions of
  - (a) Tendons
  - (b) Adipose tissue
29. What is blood? Describe the different types of blood cells.
30. Describe the different types of connective tissues

### MATHS

31. The following data on the number of girls (to the nearest ten) per thousand boys in

different sections of Indian society is given below

Section	Number of girls per thousand boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

32. The expenditure of a family on different heads in a month is given below:

Head	Food	Edu . clot h	H.Re nt	Othe rs	Savin gs
Expenditu re	400 0	250 0	100 0	3500	2500 1500

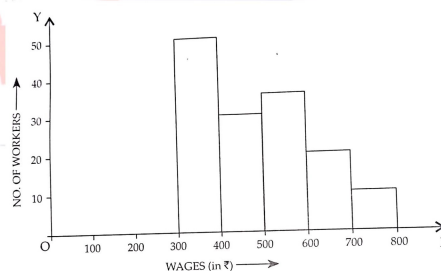
33. Draw a histogram for the following data:

Height	150- 160	160- 170	170- 180	180- 190	190- 200
No. of students	8	3	4	10	2

34. In a histogram, the areas of the rectangles are proportional of each rectangle is proportional to the class size of the corresponding class interval? If not correct the statement.
35. The length of 62 leaves of a plant are measured in millimetres and the data is represented in the following table:

Length(in mm)	118- 126	127- 135	136- 144	145- 153	154- 162	163- 171	172- 180
No of leaves	8	10	12	17	7	5	3

36. In the adjoining figure, there is a histogram depicting daily wages of workers in factory. Construct the frequency distribution table.



37. Draw a frequency polygon to represent the following data:

Class Interval	20-30	30-40	40-50	50-60	60-70	70-80
frequency	5	10	19	42	18	6

38. Draw a histogram to represent the following grouped frequency:

Age	5-9	10-14	15-19	20-24	25-29	30-34	35-39
On.of persons	10	28	32	48	50	35	12

39. In a city the weekly observations made in a study on the cost of living index are given in the following table

Cost of living index	Number of weeks
140 – 150	5
150 – 160	10
160 – 170	20
170 – 180	9
180 – 190	6
190 – 200	2
Total	52

40. 100 students in a school have heights as tabulated below:

Length(in Cm)	121-130	131-140	141-150	151-160	161-170	171-180
No of Students	12	16	30	20	14	8