

PHYSICAL SCIENCE (EM)
EVALIATION KEY INDICATOR

IX – Class

PART -A

1. Mass percentage = $20/100 \times 100$ }
= 20% }
2. Yes .
O₂ represents Oxygen molecule }
O represents Oxygen atom (1M) }
- (OR)
- O₂ represents a formula }
O represents an atom }
3. Carbon
4. Suspend the object accurately at the centre point.(1M) }
(Any related answer)
5. u = initial velocity }
v = final velocity }
a = acceleration } 2M
t = time }
- (Any related answer 2 M)
6. m = 300kg }
V = 90km/h = $90 \times 5/18 = 25$ m/s } 1M
Momentum (P) = mv }
= 300 x 25 } ½ M
= 7500 kg m/s } ½ M
- (Any related answer)

(OR)

$$\begin{array}{l}
 M = 300\text{kg} \\
 V = 90 \text{ km/h} \\
 P = mv \\
 = 300 \times 90 \\
 = 2700 \text{ kg km/h}
 \end{array}
 \begin{array}{l}
 \\
 \frac{1}{2} m \\
 \\
 \frac{1}{2} m \\
 1M
 \end{array}
 \left. \vphantom{\begin{array}{l} M \\ V \\ P \\ \\ \end{array}} \right\} 2M$$

7. i. No changes in mass

ii. Weight changes $2M$

8. N- Shell

$$2n^2$$

9. If symbols were not introduced, it is a problem to write all elements. It is difficult to write chemical equations. Difficult to understand different names at difficult places. ($2 \times 1 = 2$)

So Scientists did a good job.

(Any related answer)

10A. i. Consider a circular ring like Bangle. It is a regular shape. Its center of gravity lies at its geometrical center.

Means center of gravity is our side of object.

ii. Consider an arc shaped object like Boomerang. Its center of gravity lies at the center of its edges along? Straight line. Means Center of gravity is outside of object.

$$\begin{array}{l}
 10B. \quad m_1 = 20\text{kg} \\
 M_2 = 20\text{kg} \\
 R = 20\text{cm} = 0.2\text{m} \\
 G = 6.67 \times 10^{-11} \text{ nm}^2/\text{kg}^2 \\
 F = G (m_1 m_2 / r^2) \\
 = 6.67 \times 10^{-11} \times 20 \times 20 \\
 \quad \quad \quad \frac{0.2 \times 0.2}{0.2 \times 0.2} \\
 = 6.67 \times 10^{-7} \text{ N}
 \end{array}
 \left. \vphantom{\begin{array}{l} m_1 \\ M_2 \\ R \\ G \\ F \\ \\ \\ \end{array}} \right\} 1$$

$$\left. \vphantom{\begin{array}{l} \\ \\ \\ \\ \\ \\ \\ \end{array}} \right\} 4M$$

11.A. Chromatography:

- i. Take water in a beaker.
- ii. Draw a thick line with marker just above the bottom of the filter paper.
- iii. Hang the paper in water by the support of a pencil.
- iv. The edge of the paper touches the water. But the marker line.
- v. we observe the water gradually moves up and different colors up on the paper.
- vi. Thus the color components in the ink were separated and observed.

- 11B.
- i. Prepare a known solution of lead nitrate in a conical flask.
 - ii. Prepare a known solution of potassium iodide in a test tube.
 - iii. Hang the test tube in flask without mixing the solutions keep a cork on the flask.
 - iv. Measure the total mass by using digital balance.
 - v. Tilt and swirl the flask, so that two solutions mix.
 - vi. Chemical reaction takes place and new substances formed.
 - vii. Measure the total mass again.
 - viii. we came to know that the total mass of reactants and products was same.
 - ix. Means : "The mass neither be created nor destroyed".

"The law of conservation of mass"

12A. i. Molecular mass of Na_2CO_3

$$= 2 \times 23 + 1 \times 12 + 3 \times 16$$

$$= 46 + 12 + 48$$

$$= 106 \text{ u}$$

ii. Mass of H_2O

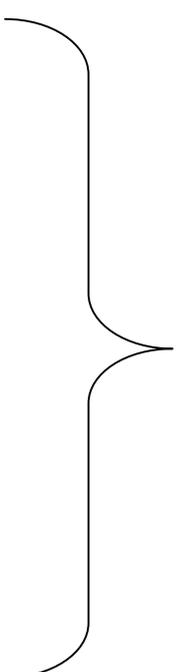
$$= 2 \times 1 + 1 \times 16$$

$$= 2 + 16$$

$$= 18$$

iii. CO_2

iv. Unified mass (or) u


$$4 \times 1 = 4M$$

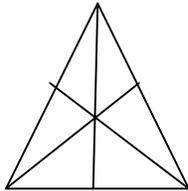
12B.

Element	Symbol	Atomic number (Z)	Atomic mass Number (A)	Number of electrons (N)
Oxygen		8	16	8
Hydrogen		1	1	0
Carbon		6	12	6
Sodium		11	23	12

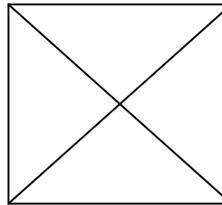
13A. i. It is a wood machine. – 1M

ii.

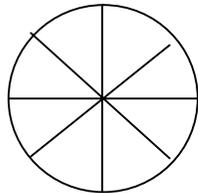
13b. i.



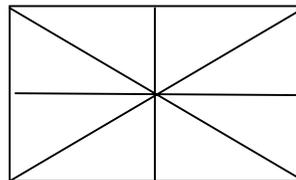
ii.



iii.



iv.



At the point of center of gravity the total mass of the body is supposed to act at it. $4 \times 1 = 4M$

PART – B

14. A

19. A

24. C

29. C

15. B

20. A

25. C

30. A

16. C

21. A

26. A

31. D

17. B

22. A

27. B

32. B

18. C

23. A

28. A

33. D