ANNEXURE-C

DAV PUBLIC SCHOOLS, ODISHA ZONE

PERIODIC ASSESSMENT –II(2023-24)
SUBJECT – SCIENCE(086)
CLASS - IX
MARKING SCHEME

Q No.	Value Points	Marks Alloted	Total mark	Page No. of NCERT TEXT Book
1.	(c) 625 m	1	1	110
2.	(a) Zero	1	1	101
3.	(b)	1	1	121
4.	(b) m	1	1	NCERT EXEMPLAR
5.	(d) all the above	1	1	122
6.	(c) Liquid C	1	1	141
7.	(b) 351 K	1	1	6
8.	(c) (i), (iii) and (iv)	1	1	NCERT EXEMPLAR
9.	(a) They are homogeneous mixtures and classified as metallic alloys.	1	1	15
10.	(c) corrosion and it is a chemical change	1	1	24
11.	(c) Atoms of a given element are not identical in mass and chemical properties.	1	1	32
12.	(d) 32g	1	1	31
13.	(a) raisins in beaker A were more swollen than those in beaker B	1	1	60
14.	(b) Sclerenchyma	1	1	71
15.	(c) X- Epidermal cell Y- Guard cell	1	1	71
16.	(c) remain at the same position	1	1	NCERT EXEMPLAR
17.	(c) Assertion is true but the Reason is false.	1	1	120
18.	(c) Assertion is true but the Reason is false.	1	1	7
19.	(a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.	1	1	18
20.	(c) Assertion is true but the Reason is false.	1	1	59
21.	(a) The rider tends to fall forward due to inertia of motion of upper part of his body. (b) It is difficult to hold hose ejecting large amount of water because of its tendency to move backward due to equal reaction force applied by stream of water on the hose.	1 1	2	118,122
22.	3g of Hydrogen react completely with 14g of Nitrogen. 9g of Hydrogen react completely with $\frac{14}{3} \times 9 = 42$g of Nitrogen. Law of constant proportion which states in a chemical substance the elements are always present in definite proportions by mass.	1 1	2	32

23.	(a) Lysosome destroys the foreign materials that enters into the cell by its hydrolytic enzymes. (b) SER plays a crucial role in detoxifying many poisons and drugs.	1 1	2	64
24.	X – Dilute hydrochloric acid. The egg shrinks/exosmosis	1 1	2	60
25.	(a) Part-A – cell wall Part-B- vacuole (b) Function of part-A:- To withstand very dilute (hypotonic) external media without bursting. Function of part-B:- -Provide turgidity and rigidity to the cell. -Storage of amino acids, sugars, organic acids, proteins etc. (Any one) OR (a) Endocytosis The flexibility of the cell membrane enables the cell to engulf in food and other material from its external environment. This process is called Endocytosis. (b)because of rigid cell wall	½ ½ ½ ½ OR ½ 1 ½	2	60,61,65
26.	**A** – Epidermis; **B** – Stomatal pore Massive amounts of gaseous exchange takes place in the leaves through these pores for the purpose of photosynthesis. Transpiration. (Any One). OR Chlorenchyma-helps in photosynthesis Aerenchyma-buoyancy to aquatic plants	½ + ½ 1 OR 1 1	2	71
27.	(a) m = 10 g = 1/100 kg, u = 10^3 m / s, v = 0, s = 5/100 m $v^2 - u^2 = 2as$ $0 - (10^3)^2 = 2.a.5/100$ $a = -10^7$ ms^{-2} F = m. a = -10^5 N (b) v = u + at $0 = 10^3 - 10^7 t$ $10^7 t = 10^3$ $t = 10^3 / 10^7 = 10^{-4}$ s OR Given, mass of the bullet (m) = 10g (or 0.01 kg) (u) = 150 m/s (v) = 0 m/s Time period (t) = 0.03 s v = u + at 0 = 150 + a (0.03) a = -5000 ms^{-2} $v^2 = u^2 + 2as$ $0 = 150^2 + 2 \times (-5000)s$ s = 2.25 m As per the second law of motion, F = ma F = 0.01kg × (-5000 ms^{-2}) F = -50 N	½ 1 ½ 1 OR ½ ½ 1 1	3	NCERT EXEMPLAR 129

<table>
<tr><td>28.</td><td>(a) when an object is partially or fully immersed in a fluid, it experiences an upthrust or upward force that is equal to the weight of the fluid displaced by it.
(b) Hydrometer is used to find the density of water. Lactometer is used to measure the purity of a given sample of milk.(any two relevant answer)
(c) The weight of the liquid displaced by the object is equal to the apparent loss of weight of the solid = 2N</td><td>1

½ + ½

1</td><td>3</td><td>141,142

NCERT Exemplar</td></tr>
<tr><td>29.</td><td>(a) (a) Given that $W_e = mg_e = 392$ N
$W_p = mg_p$
$W_p / W_e = g_p / g_e$ ----------(1)
We know $g_e = GM_e/R_e^2$
According to question
$g_p = (G \times 2M_e)/(4R_e)^2 = GM_e/8R_e^2 = 1/8(GM_e/R_e^2)$
But $g_p = 1/8\ g_e$----------(2)
Using equation (2) in equation (1)
We get, $W_p / W_e = 1/8$
Or $W_p = W_e/8 = 392N/8 = 49$ N

(b) pressure $= \frac{thrust}{area}$
SI unit = pascal</td><td>1

1

½

½</td><td>3</td><td>137,139</td></tr>
<tr><td>30.</td><td>(a)
<table><tr><th>Evaporation</th><th>Boiling</th></tr><tr><td>Evaporation usually occurs on the surface of the liquid.</td><td>Boiling usually occurs from the bulk of the medium.</td></tr><tr><td>The process of evaporation is usually slower.</td><td>The process of boiling is usually much quicker.</td></tr><tr><td>Evaporation cause cooling.</td><td>Boiling don't cause cooling effect.</td></tr><tr><td>Evaporation occurs at any temperature below the boiling point</td><td>Boiling occurs at a fixed temperature</td></tr></table>(Any two)
(b) On a hot, humid day due to the heat ,our body starts sweating for the cooling mechanism i.e., by evaporation and gets cooling effect. But the air cannot hold any more water on a humid day and therefore the sweat or perspiration is seen.

OR

(a)During the change of state the heat supplied is used to overcome the intermolecular force of attraction hence the temperature remains constant.
(b) Ice at 273K will have more cooling effect than water because ice has extra energy in the form of latent heat of fusion. When ice melts, it takes extra energy from the surroundings to overcome this latent heat. The temperature of the surrounding gets lowered or cooling is caused. Since water is in liquid state it will hardly take up energy from the surroundings.</td><td>2

1

OR

1

2</td><td>3</td><td>7,9</td></tr>
</table>

31.	(a) milk, coloured gemstone-colloid tincture of iodine-true solution soil in water-suspension (b)Dispersed phase- liquid Dispersing medium- gas	½ X 4 ½ + ½	3	16,18
32.	(a) Two Similarities: i. Both are found in eukaryotic cells. ii. They have their own DNA and ribosomes. (Any other relevant answer). (b) Viruses lack any membranes and hence do not show characteristics of life until they enter a living body.	1 1 1	3	65
33.	A. Apical Meristem–Increases the length of the stem and the root. B. Intercalary Meristem–Facilitate longitudinal growth of plant organ. Increases the length of the internode. C. Lateral Meristem – increases the girth of the stem or root.	1 1 1	3	69
34.	(a) $F= Gm_1m_2/r^2$ =200 N----------(1) $F_1=Gm_1m_2/(r_1)^2$ =100N------------(2) Dividing eq(1) by eq(2), We get $(r_1)^2/r^2$ =200/100 =2 Or $r_1 =\sqrt{2}\, r$ (b) According to Newton's second law of motion, for a given force, acceleration is inversely proportional to mass of an object. Hence acceleration produced in case of the earth is negligible as mass is much more in comparison tothe mass of the apple. So we do not see the earth moving towards the apple. (c) Given data: Initial velocity, u = 40m/s g = 10 m/s^2 Max height final velocity = 0 Consider third equation of motion $v^2 = u^2 – 2gh$ [negative as the object goes up] $0 = (40)^2 – 2 \times 10 \times h$ h = (40 x 40) / 20 Maximum height h = 80m Total Distance = h + h = 80m + 80m = 160m Total displacement = 0 as the final position of the stone coincides OR (a) i) t = 8s/2 =4s v =0; a = -g = -9.8m/s^2 v = u + at, 0 = u - 9.8 x 4 u = 39.2m/s (ii) $v^2-u^2 = 2ah$, or $0 – (39.2)^2 = 2 \times (-9.8) \times h$ h = 78.4 m (iii) at t = 4s,the ball is at maximum height. 5s - 4s =1s In the next 1s; $h = 0 + \frac{1}{2} \times 9.8 \times (1)^2 = 4.9$ m (from the top) or 73.5m from the bottom. (b) Importance 1. The force that binds us to the earth. 2. The motion of the moon around the earth. (or any relevant point)	1 2 1 ½ ½ OR 1 1 1 1 1	5	132,135,136 136,134

35.	a) Let the amount of Ammonium Chloride be x Amount of solution = (x + 120) g % = $\frac{x}{x+120}$ X 100 ⇨ 15 =$\frac{x}{x+120}$ X 100 ⇨x = 21.17g (b)(i) Solid potassium chloride will separate out. (ii) Iron sulphide will be formed. (c) Sample 'B' will not freeze at 0°C because it is not pure water. At 1 atm, the boiling point of pure water is 100°C and the freezing point of pure water is 0°C. OR (a) At 323 K, salt Y has the highest solubility in water while salt Z has the lowest solubility. (b) By definition of saturated solution, 100 g of water at 323 K contain salt = 40 g 125 g of water at 323 K contain salt = (40g/100g) x (125 g) = 50 g ∴ Mass of salt to be added to make the solution again saturated = (50 – 40) = 10 g (c) At 290 K, mass of T required to make a saturated solution in 200 g of water = (25g/100g) x (200 g) = 50 g (d) A solution which temporarily contains more solute than the saturation level at a particular temperature is called a super saturated solution.	2 1 1 ½+½ OR 1 2 1 1	5	16,17,18,25 NCERT EXEMPLAR
36.	(a) X- Mitosis Y -Meiosis (b) Meiosis, Chromosomes number became half. (c) (i) When a red blood cell is kept in concentrated saline solution, it loses water due to exosmosis and shrinks. (ii) If plasma membrane of a cell breaks down, all the protoplasmic materials including cell organelles will come out of the cell resulting in their non-functioning and hence death of the cell. (iii) Cells of the Onion scale leaves will get killed on boiling; hence no plasmolysis will occur. Therefore, there will be no effect of putting sugar syrup over the leaves.	½ ½ ½ + ½ 1 1 1	5	66
37.	(a) (any one difference) (b) 1:1 (c) a = -6m/s^2, t = 2s, v = 0 m/s v = u + at 0 = u + (-6 x 2) u = 12m/s. s = ut + ½ at^2 s = 24 – 12 =12 m	1 1 1 1	4	NCERT PAGE 101,110

Uniform linear motion	Uniform circular motion
1.Motion is along a straight path	Motion is along a circular path
2.Direction does not change.	Direction changes continuously
3.There is no accelerated .	It is an accelerated motion.

	OR (c)Let distance of school be x km. $t_1 = \frac{x}{30}$ h and $t_2 = \frac{x}{25}$h Total time = $t_1 + t_2 = \frac{x}{30} + \frac{x}{25} = \frac{11x}{150}$ Av speed for round trip = $\frac{total\ distance}{total\ time} = \frac{2x}{11x/150}$ $= \frac{300}{11} = 27.27$km/h	OR 1 1		
38.	a) Water hyacinth floats in water due to presence of large air cavities in the parenchyma tissue. These specialized parenchyma tissues are called aerenchyma. b) Husk of coconut tree is sclerenchyma which is hard. Hence it is difficult to pull out the husk of a coconut tree. c) Collenchyma Provides flexibility in plants. Also provides mechanical support.(Any one) OR (c) Cells of meristematic tissue are very active, they have dense cytoplasm, thin cellulose walls and prominent nuclei. They lack vacuoles. (Any two)	1 1 1 + 1 OR 1 + 1	4	71
39.	(a) beaker D (b) slower in A than in C (c) The rate of diffusion increases with the increase in temperature as with increase in temperature kinetic energy increases ad particles diffuse rapidly OR (c) i) Solid < liquid < gas ii) Inter particle space, kinetic energy, intermolecular space (any two)	1 1 2 OR 1 1	4	2,3

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