

# D.A.V PUBLIC SCHOOL, ODISHA ZONE-II

Summative-I (2015-2016)

Class- IX  
Subject-science

Max.Marks- 90  
Time - 3 Hrs

## Instructions:

1. The question paper consists of 2 sections – section A (having 24 questions) and section B (having 12 questions). You are to attempt all the questions.
2. All questions are compulsory.
3. There is no overall choices have been provided.
4. All questions of section A and section B are to be attempted separately.

## Answer the following questions

### Section - A

1. What is the boiling point of a liquid? (1)
2. Who discovered cells in living organisms? Give an exp. Of unicellular organism. (1)
3. Which speed is greater:30m/s or 90km/hr? (1)
4. Why does a body reach the ground quicker at poles than at the equator when dropped from the same height? (2)
5. How can you obtain butter from milk? Write the process involved (2)
6. Why are lysosomes also known as scavengers- waste disposal system of the cell? (2)
7. An object starting from rest travels 20m in first 2sec and 160m in next 4sec .What will be the velocity after 7sec from the start (3)
8. A car starts from rest and moves along the x-axis with constant acceleration  $5\text{ms}^{-2}$  for 8 seconds. if it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest? (3)
9. A gas jar containing air is placed upside down on a gas jar of bromine vapour. (3)  

It is observed that after some time the gas jar containing air also becomes completely reddish brown.

  - i) Explain why this happens?
  - ii) Name the process involved
10. What is chromatography? Write the separating techniques of the following mixtures (3)
  - a. Muddy water
  - b. Kerosene and water
  - c. Common salt and Ammonium chloride
  - d. Sulphur and Charcoal
11. With the help of an labeled diagram describe an activity to show that particles of matter are very small. (3)  
Use the following materials that have been provided to you.  
4 beakers, spatula, 4 test tubes, distilled water and few drops of potassium permanganate.

12. a) What happens to an animal cell when it is placed in a very dilute external medium?  
b) Write differences between diffusion & osmosis. (3)
13. Define the term tissue. Name the tissue that (a) allows aquatic plants to float (b) Provide flexibility to plant parts. (3)
14. What are the desirable agronomic characteristics for crop improvement? (3)
15. What are the advantages of mixed cropping? (3)
16. a..What is the source of centripetal force that a planet requires to revolve around the sun? on what factors that force depend?  
b. What is the value of universal gravitational constant(G)? (3)
17. a. Define Newton's first law of motion.  
b. Explain Newton's first law from Newton's second law of motion mathematically. (3)
18. a. Define acceleration due to gravity. Derive an expression for acceleration due to gravity in terms of mass of earth (M) and universal gravitational constant (G) . (3)
19. Draw a plant cell & label the parts which (5)  
a) Determine function & development of the cell  
b) Provides resistance to microbes  
c) Packages materials coming from ER  
d) Is fluid contained inside the nucleus  
e) Is site for many biochemical reactions necessary to sustain life  
f) Site for photosynthesis
20. a. Why is it advised to tie luggage kept on the roof of a bus? (5)  
b. If an object is not moving, does it mean that no force is acting on it?  
c. Which would require a greater force, accelerating a 2 k.g. mass at  $5 \text{ m/s}^2$  or a 4 k.g. mass at  $2 \text{ m/s}^2$ ?
21. a. What are the uses of a distance vs time graph? (5)  
b. Is the motion of a body uniform or accelerated if it goes round the sun with constant speed in a circular orbit.  
c. Express average velocity when the velocity of a body changes at a non-uniform rate and a uniform rate.

22. Answer the following. (5)
- Define a solution. If 10 ml of  $H_2SO_4$  is dissolved in 90 ml of  $H_2O$ , calculate the concentration of the solution.
  - Distinguish between sol and solution basing on (a) stability and (b) Tyndall effect.
  - Give any two characteristics of compounds.
23. Answer the following. (5)
- What is evaporation? How it causes cooling?
  - In the following examples state which factors is responsible for the change in the rate of evaporation.
    - Clothes dry faster on spreading them.
    - Clothes dry faster in a windy day.
    - Clothes dry faster in sun than in shade.
    - Clothes take longer time to dry on a raining day.
    - We can able to sip hot tea from a saucer.
  - a) What do you understand by composite fish culture ?  
b) Differentiate between capture fishery & culture fishery. (5)

section-B

25. Akshaya observed onion peel under the microscope. The peel was stained and it was pink in colour, The stain used is: [1]
- Glycerine
  - Methylene blue
  - Safranine
  - Iodine
26. Ritesh observed a permanent slide of striated muscle cell. Which one of the following will not be found in the slide? [1]
- Nucleus
  - Dendrites
  - Dark band
  - Light band
27. The presence of magenta colour on adding conc. HCl to a given sample of solution of dal confirms the presence of, [1]
- argemone oil in the dal
  - Potassium dichromate in the dal
  - saw dust in the dal
  - metanil yellow in the dal
28. On the laboratory table were placed four watch glasses with labels A, B, C and D. Watch glass A had chalk powder, B had sago powder, C had common salt and D had powdered sugar. On adding two drops of iodine to the content of each watch glass the one turning blue black will be : [1]
- A
  - B
  - C
  - D

29. The observation is made about a solution of common salt in water is , [1]
- a. Its components can be separated by filtration.
  - b. Its particles are visible to the naked eyes.
  - c. Its shows tyndall effect.
  - d. Its transparent and stable.
30. Ram wants to find out the accurate boiling point of water he should use, [1]
- a. Tap water
  - b. Distilled water
  - c. salt water
  - d. sugar solution
31. Which of the statement is correct for the process of melting of ice? [1]
- a. At melting point only ice exists.
  - b. At melting point only water exists
  - c. At melting point both ice and water exists.
  - d. None of the above.
32. The final appearance of the solution formed when zinc metal is put into dilute sulphuric acid is [1]
- a. Red
  - b. Black
  - c. pink
  - d. colourless
33. When magnesium is burnt in air, it produces magnesium oxide that appear to be like. [1]
- a. Wood ash
  - b. Table salt
  - c. chalk powder.
  - d. powdered sugar
34. Calculate the mass of sodium sulphate required to prepare its 20% (mass percent) solution in 100 gm of water. [2]
35. You are given two slides of plant tissues- parenchyma and sclerenchyma .How can you identify the sclerenchyma? [2]
36. While performing this practical , student-A kept the wooden block on polished wooden surface and measured the minimum force required to pull it as  $F_1$  while student-B kept wooden block on a rough surface covered with sand and measured the minimum force required to pull it as  $F_2$ . They repeated the experiment 5 times .Which student applied more force to pull the block? [2]
- .....

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## MARKING SCHEME

Q.no	Answer	Value point	Total marks
1	The temperature at which the liquid starts to boil.	1	1
2	Anton Van Leeuwenhoek  Amoeba	½  1/2	1
3	30m/s	1	1
4	since $g_p > g_e$ ,  so the time taken for a body is less if acceleration due to gravity is more ,when the initial  velocities and the distance travelled are same.	1   1	2
5	Butter can be obtained by rotating the solution or milk by which the heavier butter would be settle down.  The name of the process is “Centrifugation”	1  1	2
6	Capable of breaking down all organic material & digest the cell		2
7	using , $s_1 = u t + \frac{1}{2} a t^2$  $\gg 20 = 0 + \frac{1}{2} \times a \times 2^2$  $\gg a = 10 \text{m/s}^2$  $V = u + at$  $= 0 + 10 \times 2 = 20 \text{m/s}$  $s_2 = v t' + \frac{1}{2} \times a' \times t'^2$  $\gg 160 = 20 \times 4 + \frac{1}{2} \times a' \times 16$  $\gg a' = 10 \text{m/s}^2$  Since $a = a'$ , $v' = 0 + 10 \times 7 = 70 \text{m/s}$	1   1  1	3

8	<p>initial velocity ,<math>u=0\text{m/s}</math></p> <p>using <math>s = u t + \frac{1}{2}at^2</math></p> <p>distance travelled in first 8sec,</p> $s_1=0+\frac{1}{2} \times 5 \times 8^2 =160\text{m}$ <p>At this point the velocity ,<math>v= u + at</math></p> $= 0+5 \times 8 =40\text{m/s}$ <p>Distance covered in last 4 seconds</p> $s_2 =40 \times 4 = 160\text{m/s}$ <p>Hence, total distances=<math>s_1+s_2=160+160=320\text{m}</math></p>	<p>1</p> <p>1</p> <p>1</p>	3
9	<p>This happens as the reddish brown bromine vapour slowly moves inside the gas jar contains air and makes the total reddish brown, due to diffusion of the gases.</p> <p>ii)The process involved is known as "Diffusion"</p>	<p>2</p> <p>1</p>	3
10	<p>The process of separating coloured components from their solution depending upon their solubility in water is known as chromatography.</p> <p>a) Muddy water- Filtration and sedimentation</p> <p>b) Kerosene and water- Separating funnel.</p> <p>c) Common salt and ammonium chloride- Sublimation</p> <p>d) Sulphur and Charcoal- By passing through carbon disulphide solution</p>	<p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p>	3
11	<p>Correct diagram</p> <p>Correct explanation</p>	<p>1.5</p> <p>1.5</p>	3
12	<p>Swells up</p> <p>Any 2 differences</p>	<p>1</p> <p>2</p>	3
13	<p>Definition</p> <p>Parenchyma</p> <p>Collenchymas</p>	<p>1</p> <p>1+1</p>	3

14	Any 3 characteristics		3
15	Any 3 advantages		3
16	a. Gravitational force, Depends upon the product of mass of the planet and sun and the distance between them. b. $6.67 \times 10^{-11} \text{Nm}^2\text{kg}^{-2}$	1 1 1	3
17	a. Statement b. As per second law of motion= $ma$ $=m\left(\frac{v-u}{t}\right)$ , if there is no external force= $0$ $\gg m\left(\frac{v-u}{t}\right) = 0$ $\gg v=u$ If $u=0 \gg v=0$ It explain the Newton's first law of motion.	1 1 1	3
18	a. Statement b. if $m$ =mass of the object $M$ =mass of the earth $R$ =distance between object and earth $F$ =force in between them $= G\frac{Mm}{R}$ As per Newton's second law of motion $F=ma$ Or, $F=mg$ Hence $mg=G\frac{Mm}{R}$ $\gg g=G\frac{M}{R}$	1 1 1	3
19	Diagram of plant cell a) Nucleus b) Cell wall c) Golgi complex d) Nucleoplasm e) Cytoplasm    f) Chloroplast	2 $\frac{1}{2}+\frac{1}{2}$ $\frac{1}{2}+\frac{1}{2}$ $\frac{1}{2}+1/2$	5
20	a. Due to inertia of motion ,if the bus applied break it should not flies away. b. No, it implies that all the forces acting on the body are balanced. c. Here $m_1=2\text{kg}$ $a_1=5\text{m/s}^{-2}$ $m_2=4\text{kg}$ $a_2=2\text{m/s}^{-2}$ $F_1=m_1a_1=2 \times 5=10\text{N}$ $F_2=m_2a_2=4 \times 2=8\text{N}$ Hence, $F_1 > F_2$ ,So accelerating a 2 kg mass at $5\text{m/s}^2$ would require more force	1 1 1 1 1	5

21	<p>a.i.it tells us the position ,at any instant</p> <p>ii. We can find distance covered by the body during a particular interval of time.</p> <p>b. accelerated ,as the velocity changes due to change in direction.</p> <p>c. <u>non-uniform motion</u> average  velocity=<math>\frac{\text{Net displacement}}{\text{Total time}}</math></p> <p><u>Uniform motion</u> average  velocity=<math>\frac{\text{Initial velocity}+\text{Final velocity}}{2}</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	5
22	<p>i).Correct statement</p> <p>Correct calculation and correct answer</p> <p>ii)Correct distinction a) Stability b) Tyndall effect</p> <p>iii)Compounds are different from their constituent elements</p> <p>The constituent elements loses their properties.</p>	<p>1</p> <p>1</p> <p>1+1</p> <p>1</p>	5
23	<p>a. Correct definition</p> <p>The particles take heat energy from the system as well as from the surrounding and makes the surrounding cool.</p> <p>i.e. Due to wind speed</p> <p>b. Due to increase in surface area.</p> <p>c. Due to temperature</p> <p>d. Due to humidity</p> <p>e. Due to increase in surface area.</p>	<p>1</p> <p>1.5</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1/2</p>	5
24	<p>In such a system the combination of 5 or 6 fish specious is used in a single fish pond. specious selected in such a way that they have different type of food habit .so the food available in all parts of the pond.</p> <p>Example</p> <p>Two differences..</p>	<p>1</p> <p>1</p> <p>1</p> <p>2</p>	5



25	C	1	1
26	B	1	1
27	D	1	1
28	B	1	1
29	D	1	1
30	B	1	1
31	C	1	1
32	D	1	1
33	A	1	1
34	Correct Calculation  Correct answer	1  1	2
35	The cell wall of sclerenchyma is thicker than parenchyma , so the two slides can be identified with the help of cell wall	1  1	2
36	.student –B applied more force, because frictional forces depend on roughness of surface. More is the rough surface more is frictional force .so more force needs to be applied.	2	2