

VILLUPURAM DLST.

Class : 10Register
Number**COMMON QUARTERLY EXAMINATION - 2024-25**

Time Allowed : 3.00 Hours]

SCIENCE
PART - I

[Max. Marks : 75

12x1=12

Note: (i) Answer all the questions
(ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer

- To project the rockets which of the following principle(s) is / (are) required?
a) Newton's third law of motion b) Newton's law of gravitation
c) Law of conservation of linear momentum d) both a and c.
- A convex lens forms a real, diminished point sized image at focus. Then the position of the object is at
a) Focus b) Infinity c) at 2f d) between f and 2f
- If a substance is heated or cooled, the linear expansion occurs along the axis of
a) X or -X b) Y or -Y c) both (a) and (b) d) (a) or (b)
- SI unit of resistance is
a) mho b) Joule c) Ohm d) Ohm meter
- 1 mole of any substance contains ----- molecules.
a) 6.023×10^{23} b) 6.023×10^{-23} c) 3.0115×10^{23} d) 12.046×10^{23}
- group contains the member of halogen family
a) 17th b) 15th c) 18th d) 16th
- Which of the following is the universal solvent?
a) Acetone b) Benzene c) Water d) Alcohol
- The xylem and phloem arranged side by side on same radius is called -----
a) Radial b) Amphivasal c) Conjoint d) None of these
- The body of leech has
a) 23 segments b) 33 segments c) 38 segments d) 30 segments
- Vomiting centre is located in
a) Medulla oblongata b) Stomach c) Cerebrum d) Hypothalamus
- Which organ acts as both exocrine gland as well as endocrine gland
a) Pancreas b) Kidney c) Liver d) Lungs
- Estrogen is secreted by
a) Anterior pituitary b) Primary follicle c) Graffian follicle d) Corpus luteum

PART - II

Answer any seven questions. (Q.no 22 is compulsory)

7x2=14

- Define inertia. Give its classification.
- What is power of accommodation of eye?
- Define: Atomicity
- True or False: (If false give the correct statement)
a) Solutions which contain three components are called binary solution.
b) Moseley's periodic table is based on atomic mass.
- What is respiratory quotient?
- Why is the Sinoatrial node called the pacemaker of heart?
- Match the following

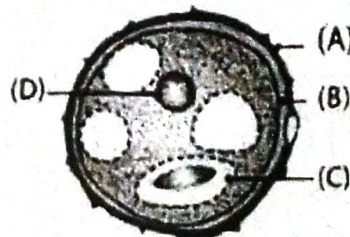
Column I

- Nissil's granules
- Hypothalamus
- Cerebellum
- Schwann cell

Column II

- Forebrain
- Peripheral Nervous system
- Cyton
- Hindbrain

- Identify the parts A, B, C and D



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21. What are Okazaki fragments?
 22. A charge of 12 coulomb flows through a bulb in 5 second. What is the current through the bulb?

PART - III

Answer any seven questions. (Q.no 32 is compulsory)

7×4=28

23. List any five properties of light
 24. a) Distinguish between ideal gas and real gas.
 b) State Ohm's law
 25. a) A is a silvery white metal. A combines with O_2 to form B at $800^\circ C$, the alloy of A is used in making the aircraft. Find A and B
 b) What is mean by binary solution?
 26. List out the parasitic adaptations in leech.
 27. Give the importance of transpiration
 28. a) Write the physiological effects of gibberellins.
 b) What are chemical messengers?
 29. a) Define triple fusion
 b) Name the secondary sex organs in male
 30. a) What are allosomes?
 b) **Assertion and Reasoning Direction: Mark the correct statement as..**
 i) If both A and R are true and R is correct explanation of A
 ii) If both A and R are true but R is not the correct explanation of A
 iii) A is true but R is false
 iv) Both A and R are false

Assertion (A) : Pituitary gland is referred as "Master gland".

Reason (R) : It controls the functioning of other endocrine glands.

31. a) Why are the walls of the left ventricle thicker than the other chambers of the heart?
 b) What does CNS stand for?
 32. a) Calculate the gram molecular mass of H_2O
 b) By convention, the clockwise moments are taken as ----- and the anticlockwise moments are taken as -----

PART - IV

Answer all the questions.

3×7=21

33. a) (i) Describe rocket propulsion.
 (ii) Differentiate convex lens and concave lens.
 (OR)
 b) (i) State Boyle's law.
 (ii) Why does the sky appear in blue colour?
 (iii) What is meant by electric current?
 (iv) LED stands for -----
 34. a) (i) Give the salient features of "Modern atomic theory".
 (ii) Name the acid that renders aluminium passive. Why?
 (OR)
 b) (i) State two conditions necessary for rusting of iron
 (ii) In what way hygroscopic substances differ from deliquescent substances.
 (iii) Classify the following substances into deliquescent, hygroscopic.
 Conc. Sulphuric acid, Copper sulphate penta hydrate, Silica gel, Calcium chloride, Gypsum salt.
 35. a) (i) What is photosynthesis and where in a cell does it occur?
 (ii) Differentiate the following- Aerobic and Anaerobic respiration.
 (iii) Why is the teeth of rabbit called heterodont?
 (iv) ----- is called as Personality hormone.
 (OR)
 b) (i) Enumerate two functions of blood.
 (ii) Name the parts of the hind brain.
 (iii) What is bolting? How can it be induced artificially?
 (iv) When is World Menstrual Hygiene Day observed?

SCHOOL EDUCATION – VILLUPURAM DISTRICT

QUARTERLY EXAMINATION- 2024

SCIENCE ANSWER KEY

PART-I**Answer all the questions.****(12×1=12)**

1	d) both a and c.	1
2	b) infinity	1
3	d) (a) or (b)	1
4	c) ohm	1
5	a. 6.023×10^{23}	1
6	a) 17th	1
7	c. Water	1
8	c) conjoint	1
9	b) 33 segments	1
10	(a) medulla oblongata	1
11	a) Pancreas	1
12	c) Graffian follicle	1

PART-II**Answer any seven questions.(Q.no 22 is compulsory)****(7×2=14)**

13	Inertia: The inherent property of a body to resist any change in its state of rest or the state of uniform motion, unless it is influenced upon by an external unbalanced force Type: a. Inertia of rest b. Inertia of motion c. Inertia of direction	1 1
14	Power of accommodation: The ability of the eye lens to focus nearby as well as the distant objects is called power of accommodation of the eye	2
15	The number of atoms present in the molecule is called its ' atomicity '	2
16	a. False Correct statement: Solutions which contain two components are called binary solution b. False Correct statement: Moseley's periodic table is based on atomic number	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
17	Respiratory quotient is the ratio of volume of carbon dioxide liberated and the volume of oxygen consumed during respiration (or) Respiratory quotient = Volume of CO ₂ liberated / Volume of O ₂ consumed	2 1
18	SA node is capable of initiating impulse which can stimulate the heart muscles to contract.	2

19	a .Cyton b. Fore brain c. Hind brain d. Peripheral nervous system	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$						
20	a .Exine b. Intine c. Generative cell d. Vegetative nucleus	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$						
21	During DNA replication ,the short segments of DNA found in the lagging strand are called Okazaki fragments	2						
22	Sol: $q = 12c$ $t = 5$ s $I = q/t$ $I = 12/5$ $I = 2.4$ A	1 1						
PART-III								
Answer any seven questions.(Q.no 32 is compulsory) (7×4=28)								
23	Properties of light: 1. Light is a form of energy. 2. Light always travels along a straight line. 3. Light does not need any medium for its propagation. It can even travel through vacuum. 4. The speed of light in vacuum or air is, $c = 3 \times 10^8$ ms ⁻¹ . 5. Since, light is in the form of waves, it is characterized by a wavelength (λ) and a frequency (ν), which are related by the following equation: $c = \nu \lambda$ (c - velocity of light). 6. Different coloured light has different wavelength and frequency. 7. Among the visible light, violet light has the lowest wavelength and red light has the highest wavelength. 8. When light is incident on the interface between two media, it is partly reflected and partly refracted.	Any four points (4 X 1=4)						
24	a. <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Real gas</th> <th style="text-align: center;">Ideal gas</th> </tr> </thead> <tbody> <tr> <td>Molecules or atoms of a gases interact with each other with a definite amount of intermolecular or inter atomic force of attraction</td> <td>Atoms or molecules of a gas do not interact with each other</td> </tr> <tr> <td>At very high temperature or low pressure there is no interatomic or intermolecular force of attraction</td> <td>At very high temperature or low pressure the interatomic or intermolecular force of attraction is weak</td> </tr> </tbody> </table> b. ohm's law: At a constant temperature, the steady current 'I' flowing through a conductor is directly proportional to the potential difference 'V' between the two ends of the conductor.	Real gas	Ideal gas	Molecules or atoms of a gases interact with each other with a definite amount of intermolecular or inter atomic force of attraction	Atoms or molecules of a gas do not interact with each other	At very high temperature or low pressure there is no interatomic or intermolecular force of attraction	At very high temperature or low pressure the interatomic or intermolecular force of attraction is weak	2 2
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25	<p>a.</p> <p>i) Aluminium</p> <p>ii) Aluminium oxide</p> <p>b. Solutions which are made of one solute and one solvent (two components) are called binary solutions</p>	<p>1</p> <p>1</p> <p>2</p>
26	<p>Parasitic adaptation of leech</p> <ol style="list-style-type: none"> 1. Blood is sucked by pharynx. 2. Anterior and posterior ends of the body are provided with suckers by which the animal attaches itself to the body of the host. 3. The three jaws inside the mouth, causes a painless Y-shaped wound in the skin of the host. 4. The salivary glands produce hirudin which does not allow the blood to coagulate. 5. Blood is stored in the crop 	<p>Any four points (4 X 1=4)</p>
27	<p>Importance of transpiration</p> <ol style="list-style-type: none"> 1. Creates transpirational pull for transport of water 2. Supplies water for photosynthesis 3. Transports minerals from soil to all parts of the plant 4. Cools the surface of the leaves by evaporation. 5. Keeps the cells turgid; hence, maintains their shape 	<p>Any four points (4 X 1=4)</p>
28	<p>a.</p> <p>Physiological effects of gibberellins</p> <ol style="list-style-type: none"> i..Application of gibberellins on plants stimulate extraordinary elongation of internode ii. Treatment of rosette plants with gibberellin induces sudden shoot elongation followed by flowering. iii.Gibberellins promote the production of male flowers in monoecious plants iv. Gibberellins break dormancy of potato tubers. v. Gibberellins are efficient than auxins in inducing the formation of seedless fruit - Parthenocarpic fruits <p>b. Chemical messengers The hormones secreted by endocrine glands are called chemical messengers</p>	<p>Any two points (2 X 1=2)</p> <p>2</p>
29	<p>a. Triple fusion The fusion of sperm with the secondary nucleus to form the primary endosperm nucleus is called triple fusion</p> <p>b. Secondary sex organs of male Vas deferens, epididymis, seminal vesicle, prostate gland and penis.</p>	<p>2</p> <p>Any two organs (2 X 1=2)</p>
30	<p>a. Allosomes are chromosomes which are responsible for determining the sex of an individual</p> <p>b. i) If both A and R are true and R is correct explanation of A</p>	<p>2</p> <p>2</p>
31	<p>a. Because the ventricles have to pump out blood with force away from the heart</p> <p>b. CNS- Central Nervous System</p>	<p>2</p> <p>2</p>

32	<p>a.</p> $= 2[H] + 1[O]$ $= 2[1] + 1[16]$ $= 2 + 16$ $= 18 \text{ gram}$ <p>b.</p> <p>negative , positive</p>	<p>2</p> <p>2</p>
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PART-IV

Answer all the questions.

(7×3=21)

33a	<p>i. Rocket propulsion</p> <ol style="list-style-type: none"> 1. Propulsion of rockets is based on the law of conservation of linear momentum as well as Newton's III law of motion. 2. When the rocket is fired, this fuel is burnt and a hot gas is ejected with a high speed from the nozzle of the rocket, producing a huge momentum. 3. To balance this momentum, an equal and opposite reaction force is produced in the combustion chamber, which makes the rocket project forward. 4. According to the conservation of linear momentum, when the mass of the rocket decreases with altitude, which results in the gradual increase in velocity of the rocket. 5. At one stage, it reaches a velocity, which is sufficient to just escape from the gravitational pull of the Earth called escape velocity. <p>ii.</p> <table border="1"> <tr> <td>Convex lens</td> <td>Concave lens</td> </tr> <tr> <td>Thicker at the middle thinner at the edges</td> <td>Thinner at the middle thicker at the edges</td> </tr> <tr> <td>Converges the light</td> <td>Diverges the light</td> </tr> </table>	Convex lens	Concave lens	Thicker at the middle thinner at the edges	Thinner at the middle thicker at the edges	Converges the light	Diverges the light	<p>5</p> <p>2</p>
Convex lens	Concave lens							
Thicker at the middle thinner at the edges	Thinner at the middle thicker at the edges							
Converges the light	Diverges the light							
33b.	<ol style="list-style-type: none"> i. When the temperature of a gas is kept constant, the volume of a fixed mass of gas is inversely proportional to its pressure ii. When sunlight passes through the atmosphere, the blue colour (shorter wavelength) is scattered to a greater extent. This scattering causes the sky to appear in blue colour. iii. Current is defined as the rate of flow of charges in a conductor iv. Light Emitting Diode 	<p>2</p> <p>2</p> <p>2</p> <p>1</p>						

34a	<p>i. Salient features of modern atomic theory</p> <ol style="list-style-type: none"> 1. An atom is no longer indivisible 2. Atoms of the same element may have different atomic mass 3. Atoms of different elements may have same atomic masses 4. Atoms of one element can be transmuted into atoms of other elements. by artificial transmutation 5. Atoms may not always combine in a simple whole number ratio 6. Atom is the smallest particle that takes part in a chemical reaction 7. The mass of an atom can be converted into energy $E = mc^2$. <p>ii. Dilute or concentrated nitric acid</p> <p>Reason: it renders aluminium passive due to the formation of an oxide film on its surface</p>	<p>Any five points (5 X 1=5)</p> <p>1 1</p>								
34b	<p>i. Condition for Rusting:</p> <ol style="list-style-type: none"> 1. water 2. Moisture air <p>ii.</p> <table border="1" data-bbox="288 1048 1203 1391"> <thead> <tr> <th data-bbox="288 1048 783 1088">Hygroscopic substances</th> <th data-bbox="783 1048 1203 1088">Deliquescent substances</th> </tr> </thead> <tbody> <tr> <td data-bbox="288 1088 783 1200">When exposed to the atmosphere they absorb moisture and do not dissolve</td> <td data-bbox="783 1088 1203 1200">When exposed to the atmospheric air they absorb moisture and dissolve.</td> </tr> <tr> <td data-bbox="288 1200 783 1272">Do not change its physical state on exposure to air</td> <td data-bbox="783 1200 1203 1272">Change its physical state on exposure to air</td> </tr> <tr> <td data-bbox="288 1272 783 1391">May be amorphous solids or liquids</td> <td data-bbox="783 1272 1203 1391">They are crystalline solids</td> </tr> </tbody> </table> <p>iii.</p> <p>Hygroscopic substances: Conc.Sulphuric acid , Silica Gel Deliquescent substances :Copper sulphate penta hydrate, Calcium chloride, and Gypsum salt</p>	Hygroscopic substances	Deliquescent substances	When exposed to the atmosphere they absorb moisture and do not dissolve	When exposed to the atmospheric air they absorb moisture and dissolve.	Do not change its physical state on exposure to air	Change its physical state on exposure to air	May be amorphous solids or liquids	They are crystalline solids	<p>2</p> <p>3</p> <p>2</p>
Hygroscopic substances	Deliquescent substances									
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Do not change its physical state on exposure to air	Change its physical state on exposure to air									
May be amorphous solids or liquids	They are crystalline solids									
35a	<p>i. Photosynthesis:</p> <p>Photosynthesis is a process by which autotrophic organisms like green plants, algae and chlorophyll containing bacteria utilize the energy from sunlight to synthesize their own food</p> <p>ii.</p> <table border="1" data-bbox="288 1720 1203 1899"> <thead> <tr> <th data-bbox="288 1720 746 1760">Aerobic respiration</th> <th data-bbox="746 1720 1203 1760">Anaerobic respiration</th> </tr> </thead> <tbody> <tr> <td data-bbox="288 1760 746 1832">Take place with the help of oxygen</td> <td data-bbox="746 1760 1203 1832">Takes place without oxygen.</td> </tr> <tr> <td data-bbox="288 1832 746 1899">Formation of carbon dioxide, water and energy.</td> <td data-bbox="746 1832 1203 1899">Formation of ethanol</td> </tr> </tbody> </table> <p>iii. In rabbit the teeth are of different types. Hence, the dentition is called heterodont</p> <p>iv . Thyroid hormone</p>	Aerobic respiration	Anaerobic respiration	Take place with the help of oxygen	Takes place without oxygen.	Formation of carbon dioxide, water and energy.	Formation of ethanol	<p>2</p> <p>2</p> <p>2</p> <p>1</p>		
Aerobic respiration	Anaerobic respiration									
Take place with the help of oxygen	Takes place without oxygen.									
Formation of carbon dioxide, water and energy.	Formation of ethanol									

35b	<p>i. Functions of blood :</p> <ol style="list-style-type: none"> 1. Transport of respiratory gases (Oxygen and CO₂). 2. Transport of digested food materials to the different body cells. 3. Transport of hormones. 4. Transport of nitrogenous excretory products like ammonia, urea and uric acid. 5. It is involved in protection of the body and defense against diseases. 6. It acts as buffer and also helps in regulation of pH and body temperature. 7. It maintains proper water balance in the body. <p>ii. Parts of hind brain</p> <p>cerebellum, pons and medulla oblongata.</p> <p>iii. Bolting</p> <p>Treatment of rosette plants with gibberellin induces sudden shoot elongation followed by flowering is called bolting</p> <p>iv. May 28</p>	<p>Any two points (2 X 1=2)</p> <p>2</p> <p>2</p> <p>1</p>
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