 MACRO VISION ACADEMY BURHANPUR	Entrance Paper (2024-25)		For Office Use Only
	Class:	XI BIOLOGY (SAMPLE PAPER-III)	
	Time:	02:30 Hrs.	
	M.M:	75	

Personal Information

Student's Name:- _____ **Father's Name:-** _____

City:- _____ **Mobile No:-** _____ **Exam Date:-** / / 2024

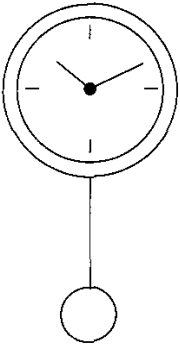
Studying in Class:- _____ **Appearing for class:-** _____ **Board:-** _____

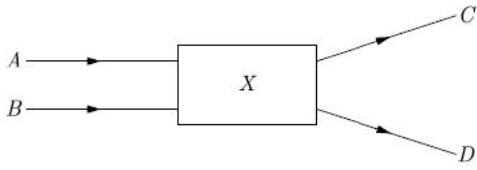
GENERAL INSTRUCTIONS:

- All questions are compulsory.
- Section A contains 10 questions (from 1-10) of Mathematics.
- Section B contains 15 questions (from 11-25) of Physics.
- Section C contains 15 questions (from 26-40) of Chemistry.
- Section D contains 25 questions (from 41-65) of Biology.
- Section E contains 10 questions (from 66-75) of English.

Mathematics (10)	Physics (15)	Chemistry (15)	Biology (25)	English (10)	OBTAINED MARKS (75)

Section-A Mathematics		
Q.N	Questions	Answers
1.	The following system of linear equation have infinite number of solutions: $(2m-1)x+3y-5=0$ $3x+(n-1)y-2=0$ Then, the values of m and n are _____.	$m = \frac{17}{4}$ OR 4.25 $n = \frac{11}{5}$ OR 2.2
2.	If $5 \tan \theta = 3$, then the value of $\left(\frac{5 \sin \theta - 3 \cos \theta}{4 \sin \theta + 3 \cos \theta}\right)$ is _____.	0
3.	If p and q are the zeroes of polynomial $f(x) = 2x^2 - 7x + 3$, then the value of $p^2 + q^2$ is _____	$\frac{37}{4}$ OR 9.25

4.	If AB is diameter of the circle whose centre is $(2, -3)$ and B is the point $(3, 4)$, then the coordinates of a point A is _____.	$(1, -10)$
5.	26 th term of the AP 25, 28, 31, is _____.	100
6.	If two cubes of 5 cm each are kept together joining edge to edge to form a cuboid, then the surface area of the cuboid so formed is _____.	250 cm^2
7.	<p>Assertion (A): $\sqrt{7}$ is an irrational number.</p> <p>Reason (R): If x be a prime number ,then \sqrt{x} is an irrational number.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(a) Both assertion and reason are correct and reason is correct explanation of the assertion.
<p>Case study (Q.8 – Q.10)</p> <p>Based on the given information, answer the following questions.</p> <p>Ram bought a pendulum clock for his living room from Chandni Chowk, Delhi. The clock contains pendulum of length 21 cm. The minute hand and hour hand of the clock are 14 cm and 10 cm long, respectively and there is no second hand in the clock.</p> <div style="text-align: center;">  </div>		
8.	The angle described by the minute hand in 20 minutes is _____.	120°
9.	The area swept by the minute hand in 12 minutes is _____.	123.2 cm^2 OR $\frac{616}{5}\text{ cm}^2$

10.	If the pendulum covers a distance of 33 cm in one complete oscillation, then the angle described by the pendulum at the centre is _____.	90°
Section-B		
Physics		
11.	The refractive index of glass is $3/2$. The velocity of light in glass is_____	2×10^8 m/s
12.	A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located?	-30 cm
13.	Light rays <i>A</i> and <i>B</i> fall on optical component <i>X</i> and come out as <i>C</i> and <i>D</i> .  The optical component <i>X</i> is a_____	concave lens
14.	Where the object is to be placed in front of convex lens so that virtual image will be form?	Between optical centre and focus.
15.	Twinkling of stars is due to atmospheric	Atmospheric refraction
16.	The ability of the eye lens to focus near and far objects clearly on the retina by adjusting its focal length is called_____	power of accommodation
17.	The bluish colour of water in deep sea is due to _____	scattering of light
18.	Electrical resistivity of a given metallic wire depends upon _____	nature of element/material or type of material/element or temperature
19.	A current of 1 A is drawn by a filament of an electric bulb. Number of electrons passing through a cross-section of the filament in 16 seconds would be _____	10^{20}
20.	What is the direction of magnetic field lines inside the magnet?	South pole to north pole

21.	At the time of short circuit the current in circuit ____	Increases heavily or becomes infinity
22.	<p>Assertion (A): The focal length of the convex mirror will increase, if the mirror is placed in water</p> <p>Reason (R): The focal length of a convex mirror of radius R is equal to, $f = R/2$</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(d) Assertion is incorrect, but reason is correct.
<p>Case study (Q.23 – Q.25)</p> <p>Based on the given information, answer the following questions.</p> <p>The relationship between potential difference and current was first established by George Simon Ohm called Ohm's law. An electric circuit is shown below to verify Ohm's law.</p> <div data-bbox="337 997 1331 1375" data-label="Diagram"> </div> <p>Although Ohm's law has been found valid over a large class of materials, there do exist metals and devices used in electric circuits where the proportionality of V and I does not hold.</p>		
23.	How voltmeter is connected across conductor to calculate voltage drop across conductor?	parallel
24.	The slope of $V - I$ graph (V on y -axis and I on x -axis) gives _____	R or Resistance
25.	By increasing the voltage across a conductor, the current will _____	increase

Section-C

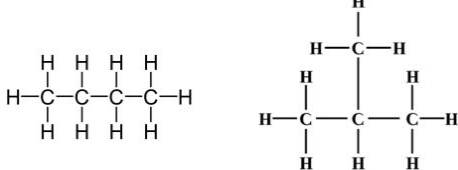
Chemistry

Case study (Q.26 – Q.28)

Based on the given information, answer the following questions.

Carbon has the unique ability to form bonds with other atoms of carbon, giving rise to large molecules. This property is called catenation. These compounds may have long chains of carbon, branched chains of carbon or even carbon atoms arranged in rings. In addition, carbon atoms may be linked by single, double or triple bonds.

26.	What are saturated compounds?	Compounds containing single bond between C-C atoms										
27.	Name any one element other than carbon which show catenation property?	Sulphur										
28.	Write a type of reaction which a saturated hydrocarbon show	Substitution Reaction										
29.	Match the Column-I with Column-II and write the pairs in the given space.	A—(s), B—(p), C—(q), D—(r)										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Column I (Chemical compound)</th> <th style="text-align: center;">Column II (Formula)</th> </tr> </thead> <tbody> <tr> <td>(A) Ferric sulphate</td> <td>(p) FeSO₄</td> </tr> <tr> <td>(B) Ferrous sulphate</td> <td>(q) NaHCO₃</td> </tr> <tr> <td>(C) Sodium bicarbonate</td> <td>(r) Na₂CO₃</td> </tr> <tr> <td>(D) Sodium carbonate</td> <td>(s) Fe₂(SO₄)₃</td> </tr> </tbody> </table>	Column I (Chemical compound)	Column II (Formula)	(A) Ferric sulphate	(p) FeSO ₄	(B) Ferrous sulphate	(q) NaHCO ₃	(C) Sodium bicarbonate	(r) Na ₂ CO ₃	(D) Sodium carbonate	(s) Fe ₂ (SO ₄) ₃	
Column I (Chemical compound)	Column II (Formula)											
(A) Ferric sulphate	(p) FeSO ₄											
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(C) Sodium bicarbonate	(r) Na ₂ CO ₃											
(D) Sodium carbonate	(s) Fe ₂ (SO ₄) ₃											
30.	Write the type of reaction which takes place when Sodium reacts with Oxygen.	Combination Reaction										
31.	Consider the following reactions (i) $\text{Cu} + \text{I}_2 \rightarrow \text{CuI}_2$ (ii) $\text{Fe} + \text{S} \rightarrow \text{FeS}$ Which of the above reactions is/are redox reactions?	Both (i) and (ii)										
32.	Complete the following equation and balance them: (i) $\text{Al} + \text{HCl} \rightarrow$ (ii) $\text{Mg} + \text{HNO}_3 \rightarrow$	(i) $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$ (ii) $\text{Mg} + 2\text{HNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 + \text{H}_2$										
33.	Write one example of a metal which is so soft that, it can be cut with knife and a non-metal which is the hardest substance.	(i) Na OR K (ii) Carbon in the form of diamond										
34.	What happens when a pellet of sodium is dropped in water? Write the reaction involved.	$2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2 + \text{heat}$										

35.	<p>Assertion (A): Copper sulphate can be stored in silver container</p> <p>Reason (R): Silver can't displace copper from copper sulphate as it is less reactive</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(a) Both assertion and reason are correct and reason is correct explanation of the assertion.
36.	<p>Assertion (A): Chemical bonds in organic compounds are of covalent nature.</p> <p>Reason (R): A covalent bond is formed by the sharing of electrons in the bonding atoms.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(a) Both assertion and reason are correct and reason is correct explanation of the assertion.
37.	Name the functional group present in CH_3COCH_3 .	Ketone
38.	How many covalent bonds are there in a molecule of ethane, C_2H_6 ?	07
39.	<p>Name the main products formed when</p> <p>(i) Ethanol is oxidised by an alkaline solution of KMnO_4</p> <p>(ii) Ethanol reacts with ethanoic acid</p>	<p>(i) Ethanoic acid</p> <p>(ii) Ester (Ethyl ethanoate)</p>
40.	Draw the structures of two isomers of butane, C_4H_{10} .	 <p style="text-align: center;"> n-butane or butane i-butane or isobutane </p>

Section-D

Biology

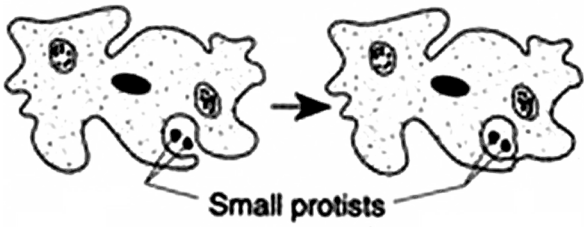
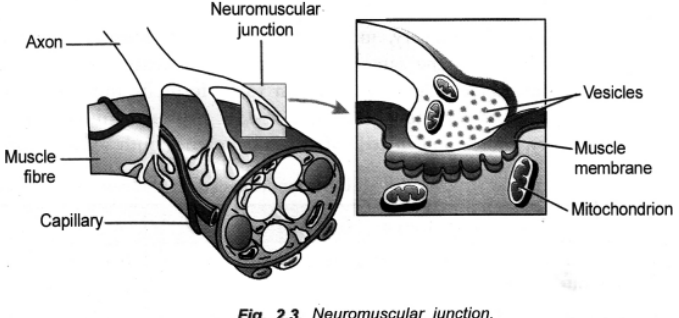
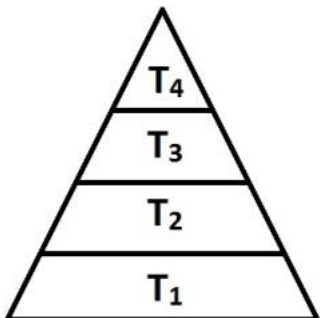
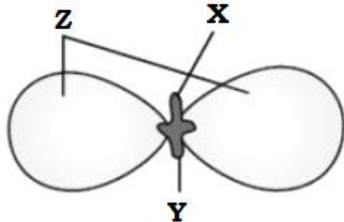
Case study (Q.41 – Q.43)

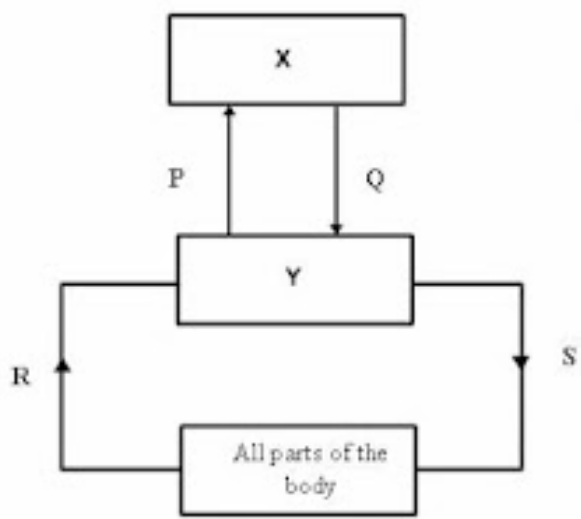
Based on the given information, answer the following questions.

In an experiment, a scientist removed some cells from the growing point of a plant and placed it a suitable medium containing nutrients and plant hormones leading to the formation of shapeless lump or mass called X. X is then transferred to another medium which lead to development of roots .X with developed roots is then transferred into another medium that induced the development of shoots. X in this way differentiated into tiny plantlets, which were transplanted into pots where they grew into mature plants.

41.	Identify 'X'.	Callus
42.	Name the process described in above paragraph.	Tissue Culturing
43.	Name the hormone responsible for formation of shapeless lump 'x'.	Auxin
44.	<p>Assertion (A): Abscisic acid is a stress hormone.</p> <p>Reason (R): Stimulation of ABA occurs in adverse conditions.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(a) Both assertion and reason are correct and reason is correct explanation of the assertion.
45.	<p>Assertion (A): Variations are prominent in sexual reproduction</p> <p>Reason (R): in sexual reproduction the offspring's are exactly similar to parents.</p> <p>(a) Both assertion and reason are correct and reason is correct explanation of the assertion.</p> <p>(b) Both assertion and reason are correct, but the reason is not the correct explanation of the assertion.</p> <p>(c) Assertion is correct, but reason is incorrect.</p> <p>(d) Assertion is incorrect, but reason is correct.</p>	(c) Assertion is correct, but reason is incorrect.

	Give one word for:	
46.	An organism that lives on or inside another living organism and obtains food from it.	Parasite
47.	The part of the human brain associated with the balance of the body.	Cerebellum
48.	Hormone responsible for the changes noticed in females at puberty.	Estrogen
49.	Biotic component that form first trophic level in any ecosystem.	Plants
50.	The biological process by which carbon is returned to its reservoir is.	Respiration
	Fill in the blank.	
51.	Multiple fission occurs under _____ environmental conditions.	Unfavourable
52.	_____ and carbon dioxide are formed during anaerobic respiration.	H ₂ O
53.	The _____ consist of the cerebellum, pons and medulla oblongata.	Hind brain
54.	Reproduction through _____ occur in Rhizopus.	Spore formation
55.	In an ecosystem the flow of _____ is unidirectional.	Energy
	Answer the following questions.	
56.	Which part of alimentary canal receives bile from the liver?	Small intestine
57.	A potted plant is made to lie horizontally on the ground. Which part of the plant will show (i) positive geotropism?	Roots
58.	A pea plant with round and green seeds (RRyy) is crossed with another pea plant with wrinkled and yellow seeds (rrYY). What would be the nature of seeds in the first generation (F ₁ generation).	Round and Yellow(RrYy)
59.	Name the parts in human body where sperms and eggs are produced.	Testis, Ovary
60.	The segment of DNA which contains all the information for synthesis of a particular protein is called.	Gene

<p>61.</p>	<p>Which activity is illustrated in the diagram of an Amoeba shown below?</p> 	<p>Phagocytosis</p>
<p>62.</p>	<p>What is depicted in following diagram?</p>  <p><i>Fig. 2.3. Neuromuscular junction.</i></p>	<p>Neuromuscular junction</p>
<p>63.</p>	<p>The picture shows the different trophic levels of an ecosystem. Which level will have maximum amount of available energy.</p> 	<p>T₁</p>
<p>64.</p>	<p>Observe the given diagram and answer the question that follows:</p> <p>Identify the labeled part which is responsible for</p> <p>(i) Shoot formation</p> <p>(ii) Root formation</p> 	<p>i-X ii-Y</p>

65.	<p>The diagram below shows the circulation of blood in the human body.</p>  <pre> graph TD Y[Y] -- P --> X[X] X -- Q --> Y Y -- S --> Body[All parts of the body] Body -- R --> Y </pre>	<p>X-Lungs Y-Heart</p>
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Section-E

English

Read the following passage carefully and answer the following questions.

There are three main groups of oils—animal, vegetable and mineral. Great quantities of animal oil come from whales, creatures of the sea, which are the largest of the animals remaining in the world. To protect the whales from the cold of the Arctic seas, nature has provided them with a thick covering of fat, called blubber. When the whale is killed, the blubber is stripped off and boiled down. It produces a great quantity of oil which can be made into food for human consumption. A few other creatures yield oil, but none so much as the whale. The livers of the cod and halibut, two kinds of fish, yield nourishing oil. Both cod liver oil and halibut oil are given to sick children and other invalids who need certain vitamins.

Vegetable oil has been known from very old times. No household can get on without it, for it is used in cooking. Perfumes may be made from the oils of certain flowers. Soaps are made from eatable and animal products and the oils of certain flowers.

Answer the following questions:

66.	<p>The main source of animal oil, is – (a) fish (b) whale (c) seaweeds (d) plants</p>	(b) whale
67.	<p>The thick protective covering of fat on a whale is called a – (a) skin (b) cell (c) blubber (d) fins</p>	(c) blubber

68.	_____ are made from vegetable, animal products and the oils of certain flowers. (a) Perfumes (b) Cosmetics (c) Cooking medium (d) Soaps	(d) Soaps
<p>Read the passage given below and fill in the blanks by choosing the most appropriate word/phrases from the given options.</p> <p>One of the most interesting new books published recently is "Spaceship" by Prof. E. C. Walker. Our earth he says (69) ____ like a spaceship, and all the 400 million people (70) _____ earth are passengers on it. And we are heading (71) _____ a disaster.</p>		
69.	(a) is (b) have been (c) will be (d) has	(a) is
70.	(a) over (b) on (c) upon (d) above	(b) on
71.	(a) about (b) to (c) towards (d) by	(c) towards
72.	<p>Directions: In the following questions, some parts of the sentence have been jumbled up. You are required to rearrange these parts which are labelled P, Q, R and S to produce the correct sentence. Choose the option with proper sequence.</p> <p>Technology transfer _____</p> <p>(P) from one country to another (Q) either through a government policy (R) or via private channels of communications (S) implies the transfer of technical knowledge</p> <p>(a) SPRQ (b) PSQR (c) SPQR (d) PSRQ</p>	(c) SPQR
73.	What is the jumbled word of 'RTSA'?	STAR
74.	<p>Choose the group of words that shows the same relationship as</p> <p>Paw: Cat :: Hoof: ?</p> <p>(a) Lamb (b) Elephant (c) Lion (d) Horse</p>	(d) Horse
75.	<p>Select the most appropriate meaning of the given phrase/idiom.</p> <p><i>Take with a pinch of salt</i></p> <p>(a) To accept with doubt (b) To be a little sad (c) To be a little happy (d) Related to food</p>	(a) To accept with doubt

Rough Work