

KENDRIYA VIDYALAYA SANGATHAN RANCHI REGION (2024-25)

PRE – BOARD : 1

SET-III

SCIENCE (086)

MAX. MARKS: 80

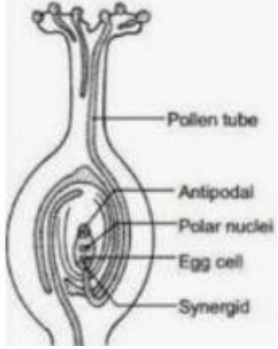
CLASS - X

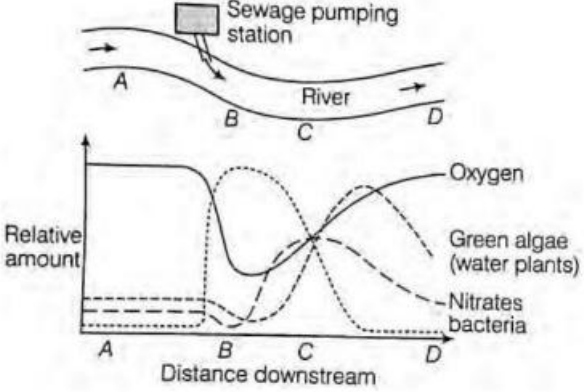
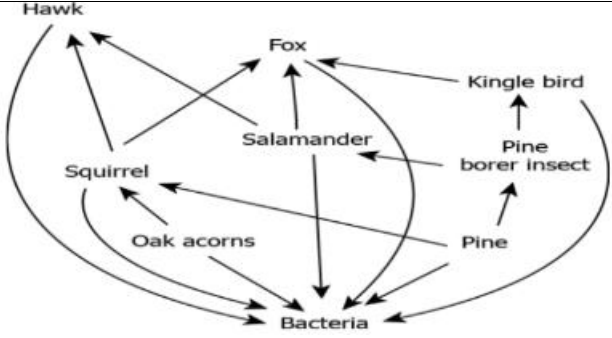
DURATION : 03 HRS

General Instructions:

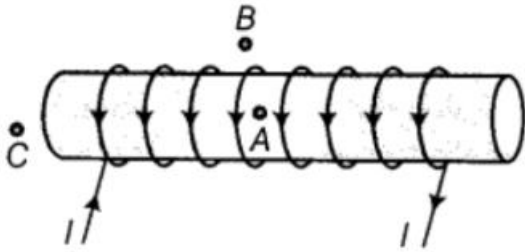
- 1. All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.**
- 2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.**
- 3. Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.**
- 4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.**
- 5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.**
- 6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1/2/3 marks.**

S.No.	SECTION A	Marks
1	Name the non-metal is commonly used for preserving food materials? (a) Carbon (b) Phosphorus (c) Sulphur (d) Nitrogen	1
2	Which of the following is correct observation of the reaction shown in the following set up? a. Brown powder of Magnesium oxide is formed b. Colourless gas which turns lime water milky is evolved c. Magnesium ribbon burns with brilliant white light d. Reddish brown gas with a smell of burning Sulphur has evolved.	1
3	Sita buys a silver jewellery and used to wear that. After a long time of use she observed that ,When silver jewellery is exposed to air it gets a black coating of (a) AgNO ₃ (b) Ag ₂ S (c) Ag ₂ O (d) Ag ₂ CO ₃	1
4	A substance 'X' is used in white-washing by a painter and is obtained by heating limestone in the absence of air. Identify 'X'. (a) CaOCl ₂ (b) Ca (OH) ₂ (c) CaO (d) CaCO ₃	1

	<p>plant (rryy),the seeds produced in F1 generation are:</p> <p>(a) wrinkled and yellow</p> <p>(b) round and green</p> <p>(c) wrinkled and green</p> <p>(d) round and yellow</p>											
11	<p>Choose the option with correct match.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Glands</td> <td style="width: 50%;">secretions</td> </tr> <tr> <td>1.Salivary glands</td> <td>i. trypsin</td> </tr> <tr> <td>2.Gastric glands</td> <td>ii. Salivary amylase</td> </tr> <tr> <td>3.pancreas</td> <td>iii. Bile juice</td> </tr> <tr> <td>4.liver</td> <td>iv. pepsin</td> </tr> </table> <p>a) (1,i) (2,ii) (3,iii) (4,iv)</p> <p>b) (2,i) (1,ii) (3,iii) (4,iv)</p> <p>c) (1,ii) (2,iv) (3,i) (4,iii)</p> <p>d) (1,iii) (2,ii) (1,iii) (4,iv)</p>	Glands	secretions	1.Salivary glands	i. trypsin	2.Gastric glands	ii. Salivary amylase	3.pancreas	iii. Bile juice	4.liver	iv. pepsin	1
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12	 <p>Growth of pollen tube towards ovule during fertilization is an example of</p> <p>(a) Phototropism</p> <p>(b) Hydrotropism</p> <p>(c) Geotropism</p> <p>(d) Chemotropism</p>	1										
13	<p>Akash is studying in class X. He thinks about various changes related to light in his surroundings after the completion of a chapter about light in his school. The teacher taught him that light is a form of energy which involves the phenomena of reflection, refraction, polarization etc. He also learnt about the formation of image. When light rays actually meet, these results in formation of real image and when they appear to meet, a virtual image is formed</p> <p>The image formed on a cinema screen and image formed in our eyes, are examples of:</p>	1										

	<p>A. Real and Virtual</p> <p>B. Real and Real</p>	<p>C. Virtual and Real</p> <p>D. Virtual and Virtual</p>	
14	<p>The colour represented by 'X' and "Y" respectively in the diagram given below are</p> <p>(a) Red and violet</p> <p>(b) Violet and red</p> <p>(c) Violet and orange</p> <p>(d) Orange and indigo</p>		1
15	<p>The diagram shows part of a river into which sewage is being pumped. Some of the effects of adding sewage to the river are shown in the graph. At which point in the river are decomposers most active?</p>  <p>The diagram shows a river with a sewage pumping station at point B. The river is divided into four sections: A, B, C, and D. A graph below shows the relative amount of three factors: Oxygen (solid line), Green algae (water plants) (dashed line), and Nitrates bacteria (dotted line) as they change from point A to D. At point A, Oxygen is high, Green algae is low, and Nitrates bacteria is low. At point B, Oxygen drops sharply, Green algae drops to zero, and Nitrates bacteria rises sharply. At point C, Oxygen rises to a peak, Green algae rises to a peak, and Nitrates bacteria drops to zero. At point D, Oxygen is high, Green algae is low, and Nitrates bacteria is low.</p> <p>(a) D</p> <p>(b) C</p> <p>(c) B</p> <p>(d) A</p>		1
16	 <p>Which is correct as per above food web.</p> <p>(a) Fox feeds on hawk obtain energy.</p> <p>(b) Hawk feeds on oak acorn to obtain energy.</p> <p>(c) Squirrel feeds on pine borer to obtain energy.</p> <p>(d) Salamander feeds on pine borer to obtain energy.</p>		1
	<p>Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>(a) Both A and R are true, and R is the correct explanation of A.</p> <p>(b) Both A and R are true, and R is not the correct explanation of A.</p> <p>(c) A is true but R is false.</p> <p>(d) A is false but R is true.</p>		

17	<p>Assertion:- Aluminium oxide is an amphoteric oxide. Reason:- Amphoteric oxides are those which reacts both acid as well as base.</p>	1
18	<p>Assertion :- Recessive traits can only be expressed in homozygous condition . Reason:- Dominant trait cannot be expressed in heterozygous condition .</p>	1
19	<p>Assertion (A).The value of F in a concave mirror is taken as –ve and in a convex mirror is taken as +ve. Reason(R). All distances measured to the right of the origin are taken as +ve and those measured along the left of the origin are taken as –ve.</p>	1
20	<p>Assertion : Flow of energy in a food chain is unidirectional. Reason : Energy captured by autotrophs does not revert back to the solar input and it passes to the herbivores.</p>	1
SECTION B (2 x 6)		
21	<p>i. Identify the reducing agent in the following reaction. $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ ii. What is Reduction reaction?</p>	
22	<p>In each of the following situations, what happens to the rate of photosynthesis? i) Cloudy days ii) No rainfall in the air iii) Good manuring in the area iv)Stomata get blocked due to dust</p> <p style="text-align: center;">OR</p> <p>Mention the major events during photosynthesis</p>	
23	<p>What is the difference between arteries & veins?</p> <p style="text-align: center;">OR</p> <p>What are the functions of gastric glands present in the wall of the stomach?</p>	
24	<p>Draw a ray diagram in each of the following cases to show the formation of an image when an object is placed a) at 2F1 of a convex lens b) at C of a concave mirror.</p>	
25	<p>For the current carrying solenoid as shown below, draw magnetic field lines and giving reason explain that out of the three points A, B and C at which point the field strength is maximum and at which point it is minimum.</p>	



OR

State the factors on which strength of magnetic field at a point due to a current carrying conductor depends?

26 According to the 'solid waste management Rule 2016' waste should be differentiated into three categories: - wet waste, dry waste and hazardous waste.

Differentiate the following waste into wet waste, dry waste and hazardous waste

Tea, plastic bags, Expired medicines and coffee waste

SECTION C (3 x 7)



i) From the above pH scale which are the bases

a. B and C b. A and B c. D and C d. A and D

ii) if a person suffers from acidity he should avoid taking

a. A b. B c. C d. D

iii. Between c and A which is more basic?

OR

What will be the action of the following substances on litmus paper? Dry HCl gas, Moistened NH₃ gas, Lemon juice, Carbonated soft drink, Curd, Soap solution.

28 A teacher asks students to identify a metal, M. She gives them the following clues to help them.

I) Its oxide reacts with both HCl and NaOH.

II) It does not react with hot or cold water but reacts with steam.

III) It can be extracted by electrolysis of its ore.

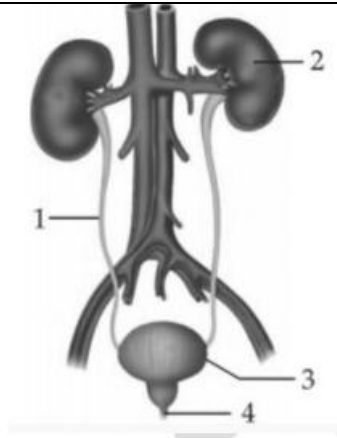
Basing on the clues

a) Identify the metal M.

b) List the chemical equations of the reaction of the oxide of the metal M with HCl and NaOH.

c) Mention the type of oxide into which the oxide of metal M can be categorized.

29 Study the following diagram and label the following organs of excretory system which perform following functions:-



- (a) Forms urine
- (b) Is a long tube which collects urine from kidney.
- (c) Stores urine until it is passed out.

30 A hybridization experiment of garden pea plant was conducted between pure breeding pea plant with round, yellow seeds and wrinkled and green seeds. Based on the above experiment answer the following.

- i) Write the phenotype of F1 progeny and state the reasons for your answer.
- ii) What will be the type of phenotypes one would obtain in F2 progeny when F1 progeny was selfed?

31 Arun went to see a cricket match in a stadium. He was not able to see the score in the score board from his seat in the stadium. . Answer the following questions:

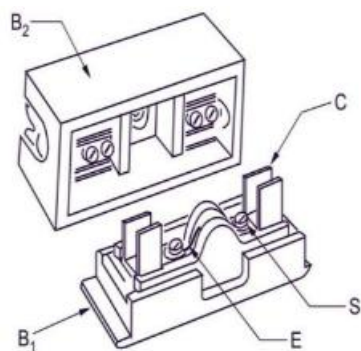
- a) Name the defect of vision he is suffering from? Write one reason for this defect
- b) Name the type of lens used to correct this type of defect.
- c) With the help of a suitable diagram, show how this defect can be corrected.

32 (a) Nichrome wire of length 'L' and radius 'R' has resistance of 10Ω . How would the resistance of the wire change when

- (i) only length of the wire is doubled?
- (ii) only diameter of the wire is doubled? Justify your answer.
- (b) Write Joules law of heating.

33 Observe the following figure and answer

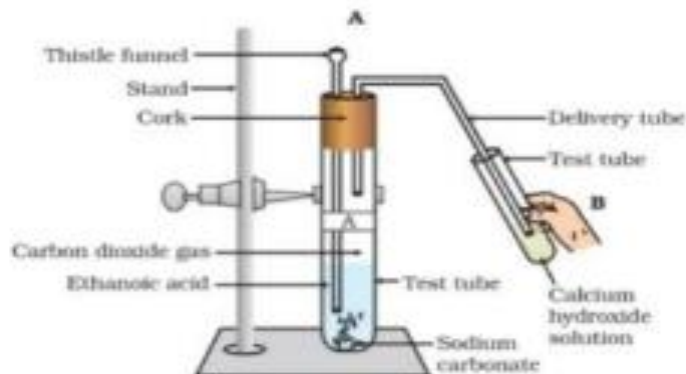
- i. What is the name of this device?



- ii. What is the use of this device?
- ii. What about the resistance of this device?

SECTION D (5x3)

34 Look at the given figure and answer the following questions



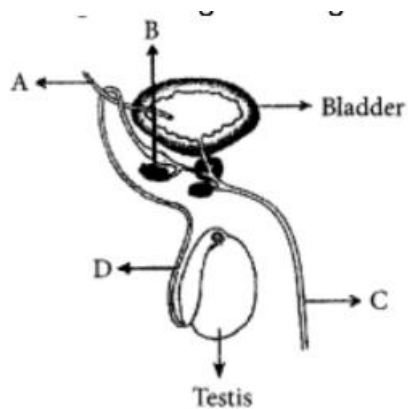
- a. What change would you observe in the calcium hydroxide solution taken in tube B?
- b. Write the reaction involved in test tubes A and B respectively.
- c. If ethanol is given instead of ethanoic acid, would you expect the same change?
- d. How can a solution of lime water be prepared in the laboratory?

OR

A compound X is formed by the reaction of a carboxylic acid $C_2H_4O_2$ and an alcohol in the presence of a few drops of H_2SO_4 . The alcohol on oxidation with alkaline $KMnO_4$ followed by acidification gives the same carboxylic acid as used in this reaction. Give the names and structures of

(a) carboxylic acid, (b) alcohol and (c) the compound X. Also write the reaction.

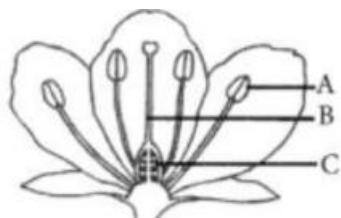
35 Based on the given diagram answer the questions given below:



- (a) Label the parts A, B, C and D.
- (b) Name the hormone secreted by testis and mention its role.
- (c) State the functions of B and C in the process of reproduction.

OR

A) Name the parts A, B and C shown in the following diagram and state one function of each.

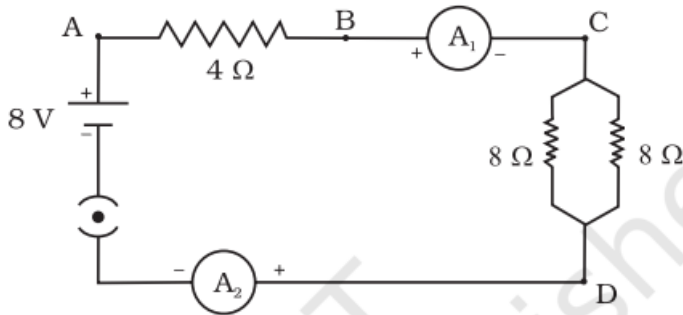


1/4X4

2

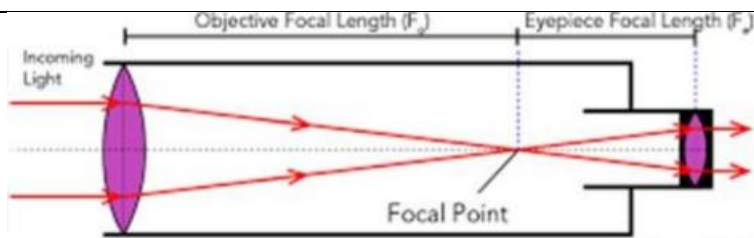
2

(3+2)

	B. List two advantages of practising vegetative propagation in plants. Select two plants raised by this method from the list given below : Banana, Gram, Pea, Rose, Tomato, Wheat	
36	<p>Three resistors of $5\ \Omega$, $10\ \Omega$ and $15\ \Omega$ are connected in series and the combination is connected to battery of $30\ \text{V}$. Ammeter and Voltmeter are connected in the circuit. Draw a circuit diagram to connect all the devices in proper correct order. What is the current flowing and potential difference across $10\ \Omega$ resistance?</p> <p style="text-align: center;">OR</p> <p>Find out the following in the electric circuit given in Figure</p>  <p>(a) Effective resistance of two $8\ \Omega$ resistors in the combination</p> <p>(b) Current flowing through $4\ \Omega$ resistor</p> <p>(c) Potential difference across $4\ \Omega$ resistance</p> <p>(d) Power dissipated in $4\ \Omega$ resistor</p> <p>(e) Difference in ammeter readings, if any.</p>	
SECTION E (4x3)		
37	<p>Carbon compounds can be easily oxidised on combustion. In addition to this complete oxidation, we have reactions in which alcohols are converted to carboxylic acids. We see that some substances are capable of adding oxygen to others. These substances are known as oxidising agents.</p> <p>i) Give two example of good oxidising agent.</p> <p>ii) Complete the reaction: $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{Alk. KMnO}_4?$</p> <p>iii) Why Acidified potassium dichromate is called an oxidising agent?</p> <p>Or</p> <p>iii) What is the use of Alcohol and Ethanoic acid?</p>	1+1+2
38	<p>You must have noticed many dramatic changes in your appearance as well as that of your friends as you approached 10-12 years of age. These changes associated with puberty are because of the secretion of testosterone in males and oestrogen in females. Do you know anyone in your family or friends who has been advised by the doctor to take less sugar in their diet because they are suffering from diabetes? As a treatment, they might be taking injections of insulin. This is a hormone that is produced by the pancreas.</p> <p>i. What happens if Insulin is not secreted in the proper amount?</p> <p>ii. Name the hormone which is secreted by males and females during adolescence.</p> <p>iii. Why is pancreas a dual gland?</p> <p style="text-align: center;">OR</p>	<p>1</p> <p>1</p> <p>2</p>

iii. List two different functions performed by pancreas in our body.

39



1+1+2

Suman wanted to see the stars of night sky. She knows that she needs a telescope to see those distant stars. She finds out that telescopes, which are made of lenses are called refracting telescope, the ones which are made of mirrors are called reflecting telescopes. So she decided to make a refracting telescope.

She bought two lenses out of which one is bigger and another is smaller. The larger lens gather and bend the light while the smaller lens magnifies the image. Big, thick lenses are more powerful. So to see far away, she needed a big powerful lens. Unfortunately She realized that a big lens is very heavy. Heavy lenses are hard to make and difficult to hold in the right place. Also since the light is passing through the lens, the surface of the lens has to be extremely smooth. Any flaws in the lens will change the image. It would be like looking through a dirty window.

(a)Based on the diagram shown, what kind of lenses Suman need to make telescope?

(b)If the power of objective lens and eyepiece lens are in the ratio 4:1. What will be the ratio of focal length of objective lens and eye piece lens?

(c) Suman did some preliminary experiments with the lenses and found out that the magnification of eyepiece lens is 3.If in her experiment with eyepiece she found an image at 24 cm from the lens, what distance did she put the object?

OR (choice for 'c' only)

(c) Draw a ray diagram to show image formation by a concave mirror when a ray of light incident parallel to the principal axis.