KENDRIYA VIDYALAYA SANGATHAN JABALPUR REGION
PRE BOARD EXAM
CLASS – X
SUBJECT- SCIENCE [086](2025-26)

Max. Marks: 80 **Time Allowed: 3 hours**

General Instructions:

(i) ***This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.***

(ii) ***All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.***

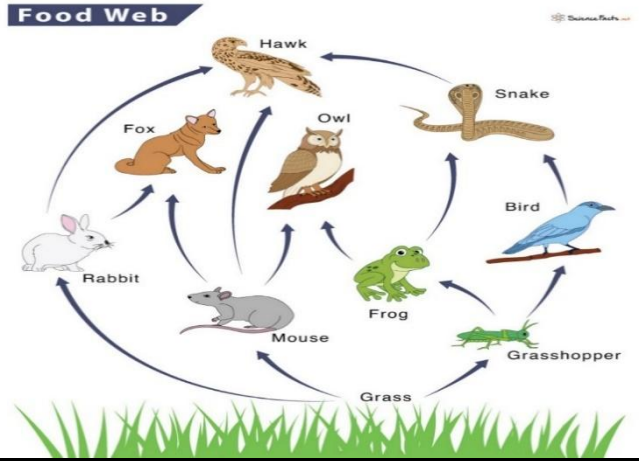
<table>
<tr><th colspan="2">Section – A (Biology Portion)</th><th>Marks</th></tr>
<tr><td>1</td><td>If both the surfaces of a leaf are coated with thick layer of wax, what will happen to the rate of transpiration, respiration and photosynthesis at daytime?

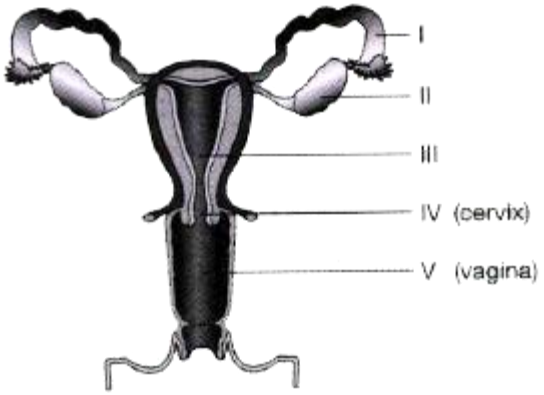
a) Rate of all the three processes – transpiration, photosynthesis and respiration will remain unaffected.
b) Rate of all the three processes - transpiration, photosynthesis and respiration will decrease.
c) Transpiration and respiration will decrease but photosynthesis may increase due to internal CO_2.
d) Transpiration decreases but respiration and photosynthesis remain unaffected due to internal exchange of gases.</td><td>1</td></tr>
<tr><td>2</td><td>Which option correctly shows the order of events when a bright light is focused on our eyes?
(a) Bright light→ receptors in eyes→ sensory neuron→ spinal cord→ motor neurons→ eyelid closes
(b) Bright light → receptors in eyes→ spinal cord→ sensory neuron→ motor neurons→ eyelid closes
(c) Bright light→ receptors in eyes→ sensory neuron→ motor neurons→ spinal cord→ eyelid closes
(d) Bright light→ receptors in eyes→ spinal cord→ motor neurons→ sensory neuron → eyelid closes</td><td>1</td></tr>
<tr><td>3</td><td>Which parts of the brain controls the blood pressure?
a) spinal cord, medulla, hypothalamus
b) Spinal cord, skull, hypothalamus
c) Pons, medulla, cerebellum
d) pons, medulla, pituitary</td><td>1</td></tr>
<tr><td>4</td><td>Look at the following table depicting different organisms and the food sources they feed upon carefully.
<table><tr><th>ORGANISMS</th><th>FOOD SOURCES</th></tr><tr><td>Chameleon</td><td>Insects</td></tr><tr><td>Eagle</td><td>Fish, Mammals, Reptiles</td></tr><tr><td>Caterpillar</td><td>Plants, Leaves, Flowers, Stem</td></tr><tr><td>Snake</td><td>Rodents, Eggs, Amphibians</td></tr></table>Suppose all of these organisms are a part of the same food chain and the amount of energy available to Caterpillar is 1000 kJ, what will be the amount of energy available to Eagle?
a) 1 KG b) 10 KG c) 100 KG d) 1000 KG</td><td>1</td></tr>
<tr><td>5</td><td>In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are-
i) Large chromosome ii) Small chromosome iii)Y-Chromosome iv)X-Chromosome
a) i and ii b) iii only c) iii and iv d) ii and iii</td><td>1</td></tr>
</table>

6.	A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that the genetic make-up of the tall parent can be depicted as: (a) TTVV (b) TTvv (c) TtVV (d) TtVv	
7.	Which group of organisms do not constitute food chain? i) Grass, lion, rabbit, wolf (ii) Plankton, man, fish, grasshopper (iii) Wolf, grass, snake, tiger (iv) Frog, snake, eagle, grass, grasshopper a) (i) and (iii) b) (iii) and (iv) c) (ii) and (iii) d) (i) and (iv)	

The following question consist of two statements – **Assertion** (A) and **Reason** (R). Answer the questions by selecting the appropriate option given below:

A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, and R is not the correct explanation of A.
C. A is true but R is false.
D. A is false but R is true.

8.	Assertion (A): At puberty, in boys, voice begins to crack and thick hair grows on face. Reason (R): At puberty, there is decreased secretion of testosterone in boys.	1
9.	There is a person who is suffering from pneumonia. He/she has fluid filled in his/her lungs. a) What will be the impact of above on exchange of gases in the lungs? b) What will be its impact on the working of the body? OR What type of respiration takes place in human muscles during vigorous exercise and why ?	2
10.	A person suffered a head injury, due to which he faces breathing problems. No problem was detected with his respiratory system. What could be the cause of this problem?	2
11.	Observe the following **FOOD WEB** carefully.  Which organisms featured in this food web are likely to get affected by a massive, sudden and rapid decline in the frog population? In what way are they likely to get affected?	3

12	Observe the diagram given below and answer the following questions- 1) Label parts I ,II and III 2) Explain the role of part-III  	½+1/2+ 1/2 1.5
13	A. Do genetic combination of mothers play a significant role in determining sex of a new born child. B. How is the sex of the child determined in human beings ? Draw a diagrammatic sketch showing the sex determination in human beings.	1 + 2
14	A couple does not want to have children for a few years. They consulted a doctor who advised them on the barrier method and chemical method of birth control. Yet another couple who already have two children and are middle aged also consulted a doctor for some permanent solution to avoid unwanted pregnancy. Doctor advised them to use a surgical method of birth control . i. What are the barrier methods of birth control? (a) Condom (b) Diaphragm (c) Oral pills (d) Both (A) and (B) ii. How do physical barriers prevent pregnancy? (a) They kill the sperms (b) They kill the ovum (c) They prevent sperms from meeting the ovum (d) They prevent intercourse iii. Which of the following is/are the permanent method of birth control? (a) To cut ,block or seal the fallopian tube (b) To block or cut the vas defference. (c) a and b both (d) b only . iv. Differentiate between vasectomy and Tubectomy. OR Differentiate between barrier method and surgical method of contraception.	1x4 =4

15.	(a) Define excretion. (b) Name the basic filtration unit present in the kidney. (c) Draw excretory system in human beings and label the following organs of excretory system which perform following functions: (i) form urine (ii) is a long tube which collects urine from kidney (iii) store urine until it is passed out. OR Draw a diagram of human digestive system. Label the part/s: (i) which secretes amylase (ii) which releases gastric juices (iii) where process of complete digestion takes place	5

	(iv)where water is reabsorbed (v) Mention two structural features of small intestine which add to the absorptive capacity.	
	Section – B (Chemistry Portion)	
16	Solution of Barium chloride on reacting with solution of ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved? (A) Displacement reaction (B) Precipitation reaction (C) Combination reaction (D) Double displacement reaction a) (A) and (B) b) (B) and (C) c) (C) and (D) d) (B) & (D)	1
17	The diagram below represents burning of a metal in oxygen. The product formed when dissolved in water gives pink colour with phenolphthalein. Read the statements given below and choose the correct option for the chemical reaction taking place  (i) It is an exothermic reaction. (ii) It is a combination reaction. (iii)The product formed is basic oxide. (iv) The reaction involves breakdown of reactant in presence of light. Which of the following combinations of statements is correct? a) (i) (ii) and (iii) b) (ii) (iii) and (iv) c) (i) (iii) and (iv) d) (i) (ii) and (iv)	1

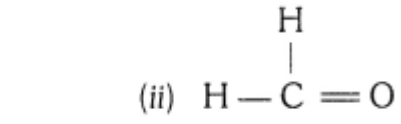
18	On adding a few drops of liquid "X" to distilled water, it was observed that pH of the water is increased. The liquid X could be? (a) Lemon juice (b) NaCl solution (c) Na_2CO_3 solution. (d) Dilute HCl	1
19	A cable manufacturing unit tested few elements on the basis of their physical properties *Which of the following elements were discarded for usage by the company?*	1

Properties	W	X	Y	Z
Malleable	Yes	No	No	Yes
Ductile	Yes	No	No	Yes
Electrical conductivity	Yes	Yes	Yes	No
Melting point	High	Low	Low	High

	(a) W, X, Y (c) W, X, Z (b) X, Y,Z (d) W, Y	
20	Which of these series can be classified as homologous series? (a) $CHCl_3$, C_2H_5OH, C_3H_7OH (b) CH_3OH, $C2H_5OH$, C_3H_7OH (c) $CHCl_3$, $C4H_9OH$, CH_3COOH (d) CH_3COOH, C_4H_9OH, C_2H_5OH	1

The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by selecting the appropriate option given below:

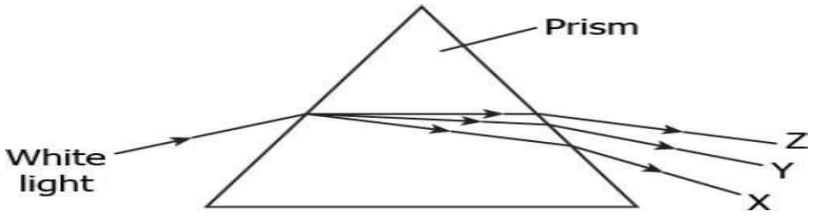
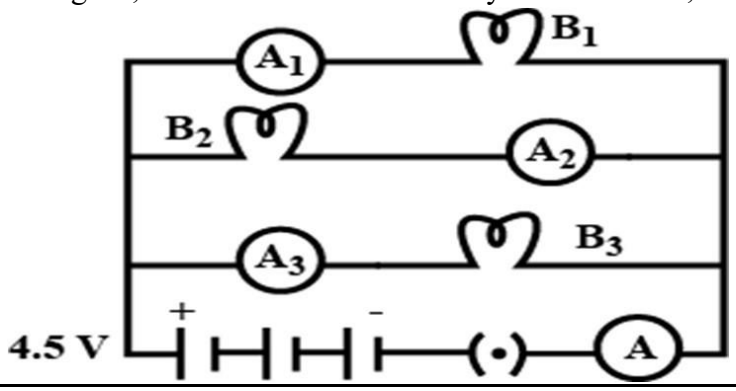
A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, and R is not the correct explanation of A.
C. A is true but R is false.
C. A is false but R is true.

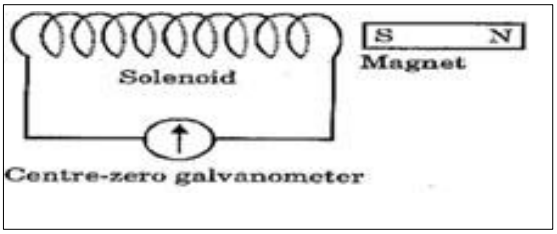
21	**Assertion (A):** The pH of a neutral solution is 7. **Reason (R):** Neutral solutions have equal concentrations of [H+] and [OH-] ions.	1
22	Name the following compounds ? (*i*) $CH_3 — CH_2 — Br$ (*ii*) 	2
23	A zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets faded gradually with the passage of time. After a few days when zinc plate was taken out of the solution, a number of holes were observed on it. (a) State the reason for changes observed on the zinc plate. (b) Write balanced' chemical equation for the reaction involved.	2
24	Kaveri kept a white powder on a paper on the window of the science lab. She comes back to pick it up after about five hours. She noticed that the white powder had turned grey. A] What could be the most likely substance on the paper? B] Why did the powder change the colour from white to grey? Identify the chemical reaction involved. C] State one application of this property of the substance in daily life.	3
25	Give reasons: (i) Pickles are not stored in tin metal container. (ii) Ionic compounds are poor conductor of electricity in solid state. (iii) Carbonate and sulphide ores are usually converted into oxides during the process of extraction. OR What is thermite reaction? Write balanced chemical equation for the reaction involved. Name the substance that are getting oxidized and reduced in the thermite reaction.	3

26	An organic compound 'A' is widely used as preservative in pickles and gives them a sour taste. When 'A' reacts with ethanol in the presence of concentrated sulphuric acid, It produces a sweet smelling compound 'B'. Based on this information, answer the following questions-	1x4=

	a) Identify compounds 'A' and ' B.' b) Write a balanced chemical equation for the reaction between 'A' and Ethanol. c) Name the type of reaction involved in the formation of compound 'B.' d) Draw the structure of the following- 1] Ethanol 2] Ethanoic acid OR Draw the next two members of homologous series of CH3OH	

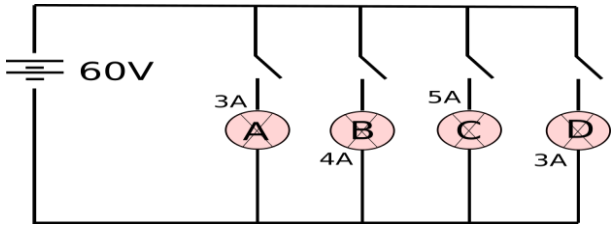
27	(i)	Four samples A, B, C and D change the colour of pH paper or solution to Green, Reddish-pink, Blue and Orange. Their pH was recorded as 7, 2, 10.5 & 6 respectively. Which of the samples has the highest amount of Hydrogen ion concentration? Arrange the four samples in the decreasing order of their pH.	1+1
	(ii)	Rahul found that the Plaster of Paris, which he stored in a container, has become very hard and lost its binding nature. What is the reason for this? Also, write a chemical equation to represent the reaction taking place.	1+1
	(iii)	Give any one use of Plaster of Paris other than for plastering or smoothening of walls.	1
		OR	
		(i) What happens when a solution of sodium chloride is electrolysed ? Write balanced chemical equation of the reaction involved. (ii) Why is the above process known as chlor-alkali process? (iii) Name the products of chlor-alkali process. (iv)State uses of each of these products.[1 each]	1+1+1.5 +1.5

	Section – C (Physics Portion)	
28	 The image shows the dispersion of the white light in the prism. What will be the sequence of colours dispersed in the form of X, Y and Z? (a) X: red; Y: green; Z: violet (b) X: violet; Y: green; Z: red *(c) X: green; Y: violet; Z: red* *(d) X: red; Y: violet; Z: green*	1
29	B_1, B_2 and B_3 are three identical bulbs connected as shown in figure. When all the three bulbs glow, a current of 3A is recorded by the ammeter A, what happens to 	1

	the glow of the two bulbs when the bulb B_1 gets fused? **(a)** Glow of the remaining bulbs increased **(b)** Glow of the remaining bulbs Decreased **(c)** Glow of the remaining bulbs remains unchanged. (d) None of above.	
30	An electric iron draws a current of 4A when connected to 220V mains. Its resistance must be (a) 1000Ω (b) 55 Ω (c) 44 Ω (d) None of these	1
31	In the given diagram, when the magnet is pushed into the solenoid, the pointer of the galvanometer deflects slightly to the left.  Which of the following would produce a deflection of the pointer towards the right? (a) Move the solenoid towards the magnet. (b) Move the solenoid away from the magnet. (c) Move the magnet faster into the solenoid. (d) By placing the magnet above the coil.	1
The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true.		
32	**Assertion (A):** Light does not travel in the same direction in all the media. **Reason (R):** The speed of light does not change as it enters from one transparent medium to another.	1
33	**Assertion (A):** The mirrors used in search lights are concave spherical .**Reason (R):** In concave spherical mirror the image formed is always virtual	1
34	A spherical mirror produces an image of magnification –1 on a screen placed at a distance of 50 cm from the mirror. (a) Find the distance of the image from the object. (b) What is the focal length of the mirror? OR Draw a ray diagram to show the path of the refracted ray in each of the following cases: A ray of light incident on a concave lens is (i)Passing through its optical centre. (ii)Parallel to its principle axis.	2

35	What is the function of an earth wire ? Why is it necessary to earth metallic appliances ?	2
36	Noopur needs a lens of power - 4.5 D for correction of her vision. a) What kind of defect in vision is she suffering from? b) What is the focal length and nature of the corrective lens? c) Draw ray diagrams showing the (a) defected eye and (b) correction for this defected eye	3

37	Three equal resistances are connected in series and then in parallel. What will be the ratio of their change in resistances?	3

38	Rohan was studying the venation of leaves in the garden. He found it difficult to see vein pattern in small leaves. Then the teacher gave him a magnifying glass A. now he could better see the pattern of leaves. Teacher give another glass 'B' to see even smaller insect on The leaves. i) Where should Rohan keep the leaf to get a better enlarged view. Draw diagram to support your answer. ii) What will happen if he use a glass slab instead of magnifying glass? Which phenomena will take place? iii) If the power of magnifying glass A and B are in the ratio of 1:3 what would be the ratio of the focal length of A and B? OR The absolute refractive indices of water and glass is 4/3 and 3/2 respectively. If the speed of light in glass is 2 x10 8 m/s, find the speed of light in vacuum.	1+2+1
39	In the given circuit, A, B, C and D are four lamps connected with a battery of 60V. Analyse the circuit to answer the following questions.  (i) What kind of combination are the lamps arranged in (series or parallel)? (ii) Explain with reference to your above answer, what are the advantages (any two) of this combination of lamps? (iii) Explain with proper calculations which lamp glows the brightest? (iv) Find out the total resistance of the circuit. OR (i) Consider a conductor of resistance 'R', length 'L', thickness'd' and resistivity 'ρ'. Now this conductor is cut into four equal parts. What will be the new resistivity of each of these parts? Why? (ii) Find the resistance if all of these parts are connected in: (a) Parallel (b) Series (iii) Out of the combinations of resistors mentioned above in the previous part, for a given voltage which combination will consume more power and why?	1+2+1+1