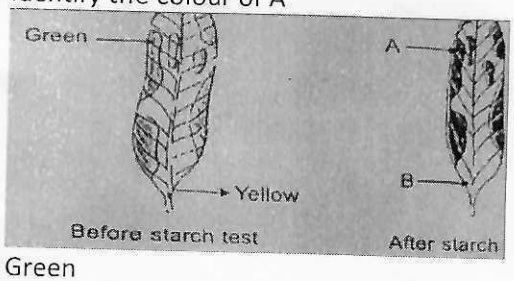
DELHI INTERNATIONAL SCHOOL
HALF YEARLY EXAMINATION (2025-26)
SUBJECT – SCIENCE (086)
CLASS – X

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.

TIME: 3 Hours **MM: 80**

S.No.	SECTION-A	Marks
1.	Which of the following contributes most to transport water from the ground to the leaves of a tall tree?	1
a)	Breakdown of ATP	
b)	Root pressure	
c)	Capillary rise of water in xylem	
d)	Cohesion of water and transpiration pull	
2.	Identify the colour of A 	1
a)	Green	
b)	Yellow	
c)	Bluish-black	
d)	Black	
3.	Gastric juice is secreted by gastric glands and contains hydrochloric acid, mucus, and pepsin. Which activity will be affected in the absence of hydrochloric acid?	1
a)	Digestion of proteins	
b)	Digestion of carbohydrates	
c)	Digestion of lipids	
d)	Digestion of starch	

4.	In living organisms during respiration, which of the following products are not formed if oxygen is not available?	1
a)	Carbon dioxide + water	
b)	Carbon dioxide + Alcohol	
c)	Lactic acid + Alcohol	
d)	Carbon dioxide + Lactic acid	
5.	Rajesh noticed that a potted plant kept in the window of his room shows bending towards sunlight. This could be due to:	1
a)	More growth in the well-lit region due to diffusion of auxin hormone	
b)	More growth in the region away from light due to diffusion of auxin hormone	
c)	More growth in the well-lit region due to diffusion of cytokinin hormone	
d)	More growth in the region away from light due to diffusion of cytokinin hormone	
6.	Select the group in which all organisms have the same mode of nutrition.	1
a)	*Cuscuta*, yeast, legumes, leeches and tapeworm	
b)	Cactus, ticks, lice, leeches and cow	
c)	*Cuscuta*, ticks, lice, leeches and tapeworm	
d)	Cactus, grass, lice, lion and tapeworm	
7.	The steps of the process of regeneration are given in a random order. Which of the following is the correct sequence of steps? (i) Regeneration is carried out by specialised cells. (ii) From the mass of cells, different cells undergo changes to become various cell types and tissues. (iii) The specialised cells proliferate and make a large number of cells. (iv) The changes take place in an organised sequence referred to as development.	1
a)	(i),(ii),(iii),(iv)	
b)	(i),(iii),(ii),(iv)	
c)	(i),(iv),(ii),(iii)	
d)	(i),(iii),(iv),(ii)	

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

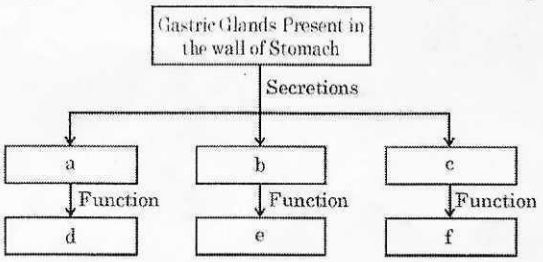
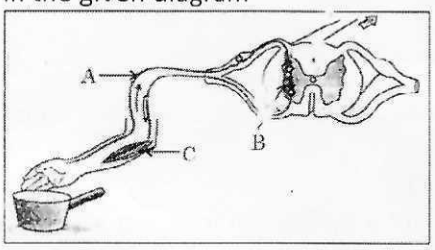
A. Both A and R are true, and R is the correct explanation of A.

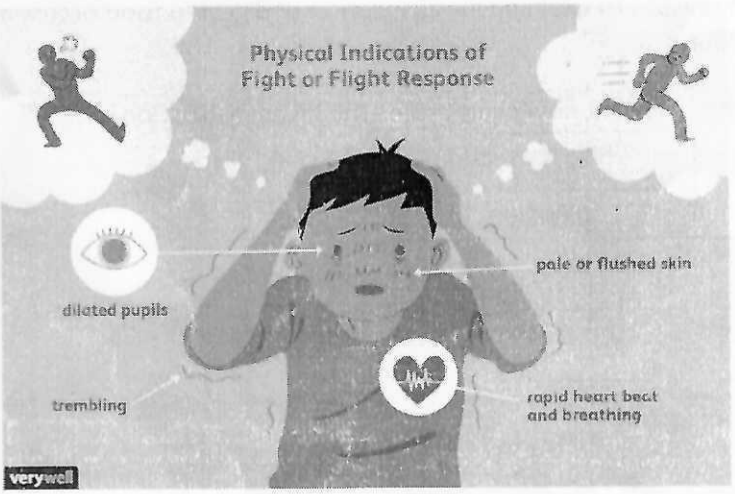
B. Both A and R are true, and R is not the correct explanation of A.

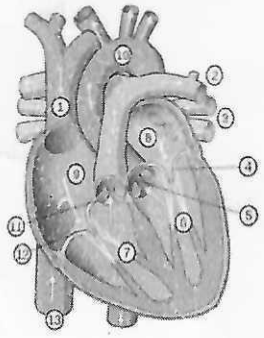
C. A is true but R is false.

D. A is false but R is true.

8.	**Assertion (A):** All proteins in our food are digested in the small intestine only. **Reason (R):** The protein digesting enzymes are released into the small intestine and stomach.	1
9.	**Assertion (A):** Plants raised by vegetative propagation can bear flowers and seed earlier than those produced from seeds. **Reason (R):** Plants which have lost the capacity to bear viable seeds, can propagate through vegetative propagation.	1
10.	Explain how the movement of leaves of a sensitive plant is different from movements of shoots towards light?	2

11.	Students to attempt either option A or B. A. Write one specific function each of the following organs in relation with excretion in human beings: i) Renal Artery ii) Urethra iii) Glomerulus iv) Tubular part of nephron **OR** B. i) Briefly explain Dental caries and Dental plaque. ii) Give two reasons to explain why absorption of digested food occurs mainly in the small intestine.	2
12.	Complete the following flow chart as per the given instructions  	2
13.	In the given diagram  a) Name the parts labelled A, B, and C. b) Write the functions of A and C. c) Reflex arcs have evolved in animals? Why?	3
14.	a) Mention one function for each of the following hormones. i) Thyroxine ii) Abscisic acid iii) Releasing hormones iv) Gibberellins b) Briefly explain how do auxins promote the growth of a tendril around a support?	3

15.	Read the text carefully and answer the following questions: Adrenaline is secreted directly into the blood and carried to different parts of the body. The target organs or the specific tissues on which it acts include the heart. As a result, the heart beats faster, resulting in the supply of more oxygen to our muscles. The blood to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs. This diverts the blood to our skeletal muscles. The breathing rate also increases because of the contractions of the diaphragm and the rib muscles. All these responses together enable the animal body to be ready to deal with the situation. Such animal hormones are part of the endocrine system which constitutes the second way of control and coordination in our body.  a) Why is adrenaline called an emergency hormone? How does it affect the human body? (2) b) What is feedback mechanism? Briefly explain. (1) d) Co-ordination in human beings is performed jointly by the nervous and hormonal system. Justify the statement. (1)	4

16.	a) Draw a well labeled diagram of the human digestive system. b) Explain the various processes of breakdown of glucose in living organisms. **OR** Carefully observe the figure below and answer the following questions.  i) a) Which chamber of the heart (6, 7, 8 or 9) pumps blood to the body? name it? Identify and name the blood vessel associated in this transfer.of blood. b) Identify the structure at number 2 and state its function. c) Identify the structures 1 and 3. Name them and state their functions. ii) Differentiate between the components of the transport system in highly organized plants.	5
	SECTION-B	
17.	Which one of the following processes involve chemical reactions? (a)Storing of oxygen gas under pressure in a gas cylinder (b) Liquification of air (c) keeping petrol in a china dish in the open (d) Heating copper wire in presence of air at high temperature	1
18.	The pair(s) which will show displacement reaction is/are (i)NaCl solution and copper metal. (ii)$AgNO_3$ solution and copper metal. (iii)Al 2 (SO4) 3 solution and magnesium metal. (iv) ZnSO 4 solution and iron metal. (a) (i) only (b) (ii) and (iii) (c) (i) and (ii) (d) (iii) and (iv)	1
19.	A small amount of copper oxide is taken in a test tube and dilute acid is added to it with stirring .Which colour will be obtained in the test tube? (a)Blue-green (b) Pink (c) Black (d) Colorless	1

20.	Metals are lustrous and shine especially when their freshly cut Surfaces are exposed. Salma cut pieces and compared the lustre of the freshly cut surfaces of the following metals: aluminium, sodium, copper, iron The freshly cut surface of which of these metals is likely to lose its lustre first on exposure to air ? (a) Aluminium (b) Sodium (c) Copper (d) Iron	1
21.	The colour of the solution observed after 30 minutes of placing zinc metal in copper sulphate solution is (a) Blue (b) Colourless (c)Dirty green (d) Reddish brown	1
22.	What is the product obtained when lead nitrate is heated? (a) Lead oxide (b) Lead nitride (c) Lead sulphate (d) Lead chloride	1
23.	Which colour will be acquired by an aqueous solution of ammonium hydroxide when drops of phenophatein indicator are added to it:- (a) Yellow (b)Orange (c)Red (d) Pink	1
The following ~~two~~ questions consist 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.		
24.	Assertion: When an acid reacts with a metal carbonate or metal hydrogen carbonate,it gives the corresponding salt, carbon dioxide gas and water. Reason: Acidic and basic solutions in water conduct electricity because they produce hydrogen and hydroxide ions respectively.	1
25.	Show ionic compound formation of Aluminium chloride.	2
26.	(a)Why sodium is kept immersed in kerosene oil? (b)Write the equations for the reactions of (i) iron with steam (ii)calcium and potassium with water	3
27.	What is ionic bond? Write any four general properties for ionic Compounds?	3

28.	Read the passage given below and answer the following questions: Copper sulphate crystals which seem to be dry contain water of crystallisation. When we heat the crystals, this water is removed and the salt turns white.If you moisten the crystals again with water, you will find that blue colour of the crystals reappears. Water of crystallisation is the fixed number of water molecules present in one formula unit of a salt. Five water molecules are present in one formula unit of copper sulphate. Chemical formula for hydrated copper sulphate is $CuSO_4 .5H_2 O$. Now you would be able to answer the question whether the molecule of $Na2CO_3 .10H_2 o$, is wet. One other salt, which possesses water of crystallisation is gypsum. It has two water molecules as water of crystallisation. It has the chemical formula$CaS0_4. 2H_2 0$. (a) What is the colour of anhydrous copper sulphate ? (b) What do you mean by water of crystallisation? (c) What is efflorescence? Write one example. OR A white powder is used by the doctors for supporting fractured bones. What is the chemical name of powder? Write chemical equation when this white powder is mixed with water.	4
29.	(a)The colour of freshly prepared solution of copper sulphate gradually changes when an iron nail is dipped in it. (i) Define the reaction. (ii) Also give a balance chemical equation mentioning the state of the reactants and the products. (b)Write the balance chemical equation for Potassium bromide + Barium iodide→Potassium iodide + barium bromide (c)Why is respiration considered an exothermic reaction? Explain. OR a) Account for the following : (i) White silver chloride turns grey in sunlight. (ii)Brown coloured copper powder on heating in air turns into black coloured substance. (b) What do you mean by : (i)Displacement reaction? (ii) Reduction reaction? (iii) Combination reaction? Write the balanced chemical equations.	5
	SECTION-C	
30. a) b) c) d)	What is the observed colour of sky as seen from the moon surface? Black Blue Red None of these.	1
31. a) b) c) d)	Find the focal length of a convex mirror of radius of curvature 1 m. 0.25 m None of these 0.5 m 1 m	1

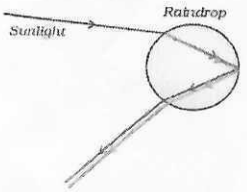
The following two questions consist of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true.		
32.	**Assertion (A):** Danger signals are made of red colour. **Reason (R):** Wavelength of red is maximum and hence scattering of red colour is minimum.	1
33.	How are the power and focal length of a lens related? You are provided with two lenses of focal length 20 cm and 40 cm respectively. Which lens will you use to obtain more convergent light?	2
34.	a)Why does the power to see near objects as well as far off objects clearly diminish with age? Name the defects that are likely to arise in eye in such a condition. b)The far point of a myopic eye is 60 cm. Find the focal length of the lens used to correct it.	2
35.	An object 5 cm high is placed at a distance of 10 cm from a convex mirror of radius of curvature 30 cm. Find the nature, position and size of the image.	3
36.	Explain the refraction of light through a triangular glass prism using a labelled ray diagram. Hence define the angle of deviation.	3
37.	Draw a ray diagram to represent the nature, position and size of the image formed by a convex lens for the object placed at (a) F (b) Between F and optical centre (O)	3

38. **Question No. 1 to 5 are based on the given text. Read the text carefully and answer the questions:** 4

A rainbow is a natural spectrum appearing in the sky after rain. It is caused by the dispersion of sunlight by tiny water droplets, present in the atmosphere.

1. The clear sky appears blue because
   i. blue light gets absorbed in the atmosphere.
   ii. ultraviolet radiations are absorbed in the atmosphere.
   iii. violet and blue lights get scattered more than lights of all other colours by the atmosphere.
   iv. light of all other colours is scattered more than the violet and blue colour lights by the atmosphere.

   a. Option (iii) b. Option (ii) c. Option (iv) d. Option (i)
2. Which of the following phenomena of light are involved in the formation of a rainbow?



   i. Reflection, refraction and dispersion
   ii. Refraction, dispersion and total internal reflection
   iii. Refraction, dispersion and internal reflection
   iv. Dispersion, scattering and total internal reflection

   a. Option (iv) b. Option (i) c. Option (iii) d. Option (ii)
3. Why sky appears dark to passengers flying at very high altitudes?
   i. None of these
   ii. Eyesight became weak at height
   iii. As scattering is not prominent at such heights.
   iv. Scattering is maximum at height
4. Which of the following statement is correct?
   i. Sunlight is always in the opposite direction of the sun
   ii. A rainbow is a natural spectrum appearing the sun
   iii. Only dispersion helps in rainbow formation
   iv. Rainbow is formed by cloud

   a.(i) and (ii)
   b.(ii) and (iv)
   c. (i), (ii) and (iv)
   d. (i) and (iv).

39.	i.Define optical centre of spherical lens. ii.A divergent lens has a focal length of 20 cm. At what distance should an object of height 4 cm from the optical centre of the lens be placed, so that its image is formed 10 cm away from the lens. Find the size of the image also. iii.Draw a ray diagram to show the formation of image in above situation. OR i. An object of size 7.0 cm is placed 27 cm in front of concave n irror of focal length 18 cm. At what distance should the screen be placed so that a sharp focused image can be obtained ? Find the size and nature of the image. Ii A concave lens of focal length 15 cm forms a image 10 cm from the lens. How far is the object placed from the lens? Draw ray diagram. Iii. The refractive indices 1.0003, 1.31 1.5 respectively of Air, Ice and Benzene in which of these does the light travels fastest?	5
	**********	