SET – 3

Subject Code: 086

COMMON PRE-BOARD EXAMINATION 2017-2018

SCIENCE

CLASS X

Time Allowed: 3 hours | Maximum Marks: 80

General Instructions:

(i) *The question paper comprises of section **A** and **B.***

(ii) ***All** Questions are **compulsory.** However, an internal choice will be provided in three questions of three marks each, two questions of five marks and one question from section -B of two marks.*

(iii) *All questions of Section-**A** and Section-**B** are to be attempted separately.*

(iv) *Question numbers 1 to 2 in Section-**A** are one mark questions . These are to be answered in one word or one sentence.*

(v) *Question numbers 3 to 5 in Section-**A** are two mark questions. These are to be answered in about 30 words each.*

(vi) *Question numbers 6 to 15 in Section-**A** are three mark questions. These are to be answered in 50 words each.*

(vii) *Question numbers 16 to 21 in Section-**A** are five mark questions. These are to be answered in 70 words each.*

(viii) *Question numbers 22 to 27 in section B are explanatory questions based on practical skills and each question carry two marks.*

SECTION- A

1. Give the correct sequence of various tropic levels in a food chain. (1)

2. Write the next homologue of each of the following: (1)

   a) C_2H_4 b) C_4H_{10}

3. Define absolute refractive index of a medium. Light enters from air to water having refractive index $4/3$. Find the absolute refractive index of a medium if the speed of light in vacuum is 3×10^8 m/s. (2)

4. Identify the type of reaction from the following equations: (2)

a) $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$

b) $Pb(NO_3)_2 + 2KI \longrightarrow PbI_2 + 2KNO_3$

c) $CaO + H_2O \longrightarrow Ca(OH)_2$

d) $CuSO_4 + Zn \longrightarrow ZnSO_4 + Cu$

5. Using the electronic configurations, explain how magnesium atom combines with oxygen atom to form magnesium oxide to form magnesium oxide by transfer of electrons. (2)

6. A hot plate connected to a 220V line has two resistance coils A and B, each of 22 **Ω** resistance. Calculate the amount of electric current flowing when these coils are : (3)

(a) used individually

(b) connected in series

(c) connected in parallel

7. Explain giving reason why the sky appears blue to an observer from the surface of the earth?. What will be the colour of the sky for an astronaut staying in the international space station orbiting the earth? Justify your answer giving reason. (3)

8. (a) List any two criteria for selecting a good fuel. (3)

(b) Explain how does burning of fossil fuels cause air and soil pollution.

9. (a) Draw the diagram of cross section of a leaf and label the following parts. (3)

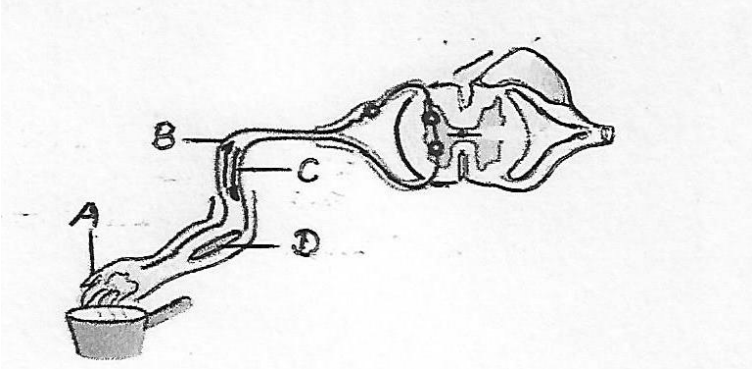
(i) Chloroplast (ii) Cuticle

(b) When do the desert plants take up carbon dioxide and perform photosynthesis?

10. In the given diagram of reflex arc: (3)

(a) Name the parts labelled A, B, C, and D.

(b) Write the functions of B and D.



11. How did Chipko Andolan ultimately benefit the local population? Give any three benefits. (3)

12. The following table shows the position of six elements A,B,C,D,E and F in the modern periodic table: (3)

Group → / Period ↓	1	2	3 - 12	13	14	15	16	17	18
2	A					B			C
3				D	E				F

Using the above table, answer the following questions:

a) Name the element which forms only covalent compounds.

b) Name the element which is a metal with valency 3.

c) Name the element which is a non-metal with valency 3.

d) Out of D and E, which one is bigger in size and why?

e) Write the common name for the family of elements C and F.

13. What is Plaster of Paris chemically? How is it prepared? Write balanced chemical equation for the same. List its two important uses. (3)

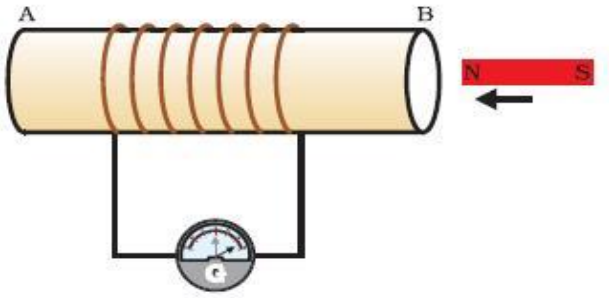
OR

(a) Acids as well as bases ionizes in water. Name the ions produced by each in water.
(b) If we have hydrochloric acid and acetic acid of equal concentration, which will be a stronger acid and why?
(c) How will the concentration of hydrogen ions gets affected if an acid is diluted?

14. What is a solenoid? Draw the field lines of the magnetic field produced on passing current through and around a current carrying solenoid. (3)

OR

The given figure shows a closed coil connected to a galvanometer G. The galvanometer shows a deflection to the right when the North pole of the bar magnet is brought closer to the coil AB.



a) Why does the deflection occur in the galvanometer?

b) State the observation when :

i) The coil is moved away from North pole.

ii) When the magnet is moved towards and backwards continuously.

15. What are fossils? How are they formed? Describe in brief two methods of determining the age of fossils. (3)

OR

What are homologous structures? Give an example. Is it necessary that homologous structures always have a common ancestor?

16. (a) Draw a diagram of human respiratory system and label the following: (5)

(i) part where air is filtered by fine hair and mucus.

(ii) part which terminates in balloon like structures where exchange of gases take place.

(iii) balloon like structures where exchange of gases takes place.

(iv) part which separates chest cavity from abdominal cavity

(b) Write any two differences between aerobic and anaerobic respiration.

OR

(a) State two advantages of transpiration to the plant body.

(b) (i) List in tabular form, two ways in which transpiration is different from translocation.
(ii) Why do plants have a slow transport system?

17. (a) Mr. R. Sharma was suffering from various types of diseases presently. He went for thorough health checkups and was diagnosed as HIV^{+ve}. Soon this news spread in his neighbourhood and on account of this, he faced social isolation. (5)

Comment upon:-

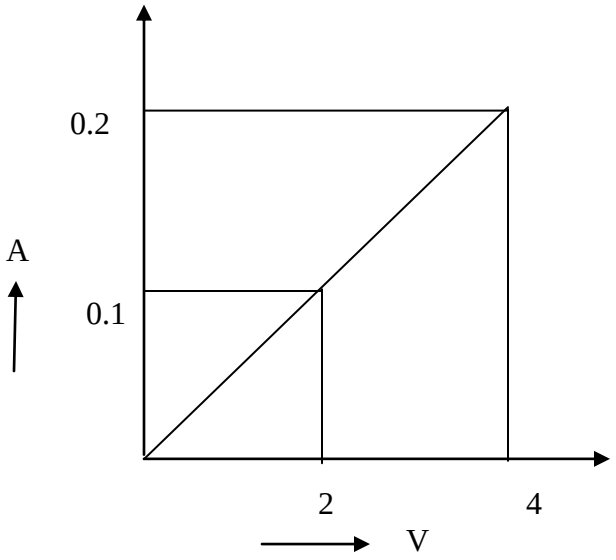
(i) Do you think people's indifference towards HIV^{+ve} people is justifiable? What kind of approach should we have towards the persons suffering from AIDS?

(ii) How can one protect oneself from these diseases?

(b) Write any two sexually transmitted diseases. Mention any two ways to prevent them.

18. (a) Draw schematic diagram of a circuit consisting of a battery of five 2V cells, a 5Ω, a 10Ω and a 15Ω resistor and a plug key, all connected in series. Calculate the electric current passing through the above circuit when the key is closed. (5)

(b) Calculate the resistance of the wire using the graph given below



19. Name the following: (5)

a) A metal which is preserved in kerosene.

b) A metal which is a poor conductor of heat.

c) A metal which acquires a green colour coating on its surface on exposure to air.

d) A metal that can be used to reduce metal oxides to metals.

e) The gas which is liberated when a metal reacts with an acid. How will you test the presence of this gas?

20. a) An organic compound 'X' is a liquid at room temperature. It is also a very good solvent and has the molecular formula C_2H_6O. On oxidation 'X' gives 'Y' which gives brisk effervescence on reacting with $NaHCO_3$. X reacts with Y in the presence of con. H_2SO_4 to give another compound 'Z' which has a pleasant smell. Identify X , Y and Z, also write the chemical equation to show the formation of Y and Z. (5)

b) Write any two uses of ethanol.

OR

a) What is homologous series of compounds? List any two characteristics of a homologous series.
b) What would be observed on adding a 5% solution of alkaline potassium permanganate solution drop by drop to some warm ethanol taken in a test tube? Give balanced chemical equation for the reaction.
c) Give a chemical test to distinguish between ethanol and ethanoic acid.

21. a)"A convex lens can form a magnified erect as well as magnified inverted image of an object placed in front of it". Draw ray diagram to justify this statement by stating the position of the object with respect to lens in each case. (5)

b) An object of height 4cm is placed at a distance of 20cm from a concave lens of focal length 10cm. Use lens formula to determine the position of the image formed.

SECTION – B

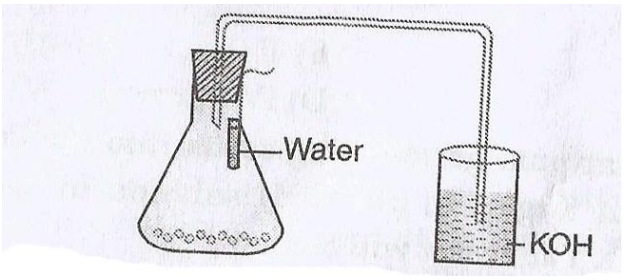
22. If two resistors of value R are connected in series and then in parallel, what is the difference in equivalent resistance in both case? (2)

23. (a) Name the type of asexual reproduction in which two individuals are formed from a single parent. (2)

(b) Draw the initial and final stages of this type of reproduction.

24. In the preparation of soap, a small quantity of sodium chloride is added to the mixture of fat and sodium hydroxide. State the role of common salt and also name the byproduct formed during saponification reaction. (2)

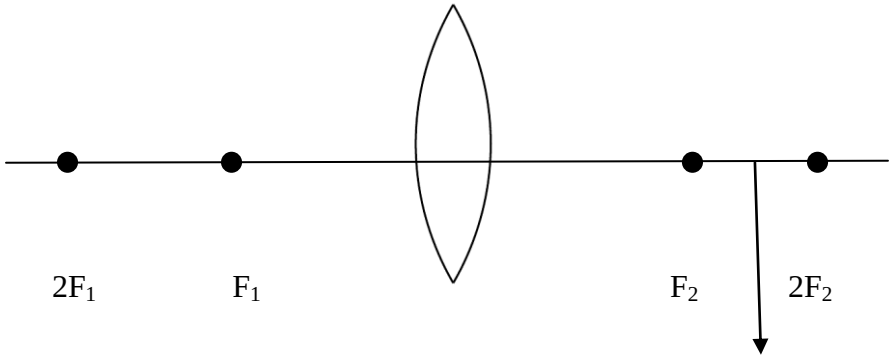
25. (a) A student while setting up the experiment to show that CO_2 is given out during respiration made some errors shown in the diagram. What changes should be made in the set up to get the desired results? (2)



(b) Why KOH solution kept in the test- tube inside the air - tight conical flask while doing the experiment of respiration of seeds?

26. Why is HCl gas unable to change the colour of a dry blue litmus paper? What happens if the litmus paper is moistened? (2)

27. Observe the following incomplete ray diagram of an object where the image is formed after refraction through a convex lens as shown in the figure. (2)



a) The position of the object would be at_____.

b) Size of the object would have been_____than the size of the image.

OR

A 4cm tall object is placed on the principal axis of a convex lens. The distance of the object from the optical centre of the lens is 12cm and its sharp image is formed at a distance of 24cm from it on a screen on the other side of the lens. If the object is now moved a little away from the lens , in which way (towards the lens or away from the lens) will he have to move the screen to get a sharp image of the object on it again? How will the magnification of the image be affected?