Roll No. _____

Please check that this question paper contains 39 questions and 09 printed pages.

DAV INSTITUTIONS, CHHATTISGARH

I SET SAMPLE QUESTION PAPER: 2023-24

CLASS:X

SUBJECT- SCIENCE (086)

Time: 3Hrs. **Max. Marks:80**

General Instructions:

i. ***This question paper consists of 39 questions in 5 sections.***

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.***

iii. ***Section A consists of 20 objective type questions carrying 1 mark each.***

iv. ***Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.***

v. ***Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.***

vi. ***Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.***

vii. ***Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.***

Section-A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1Which of the following is not an acidic salts

a) **$CUSO_4$**

b) **NH_4Cl**

c) **$FeCl_3$**

d) **CH_3COONa**

2 Reena took 5 ml of lead nitrate solution in a beaker and added approximately 4 ml of potassium iodide solution to it what would she observe

a) **the solution turned red**

b) **yellow precipitate was formed**

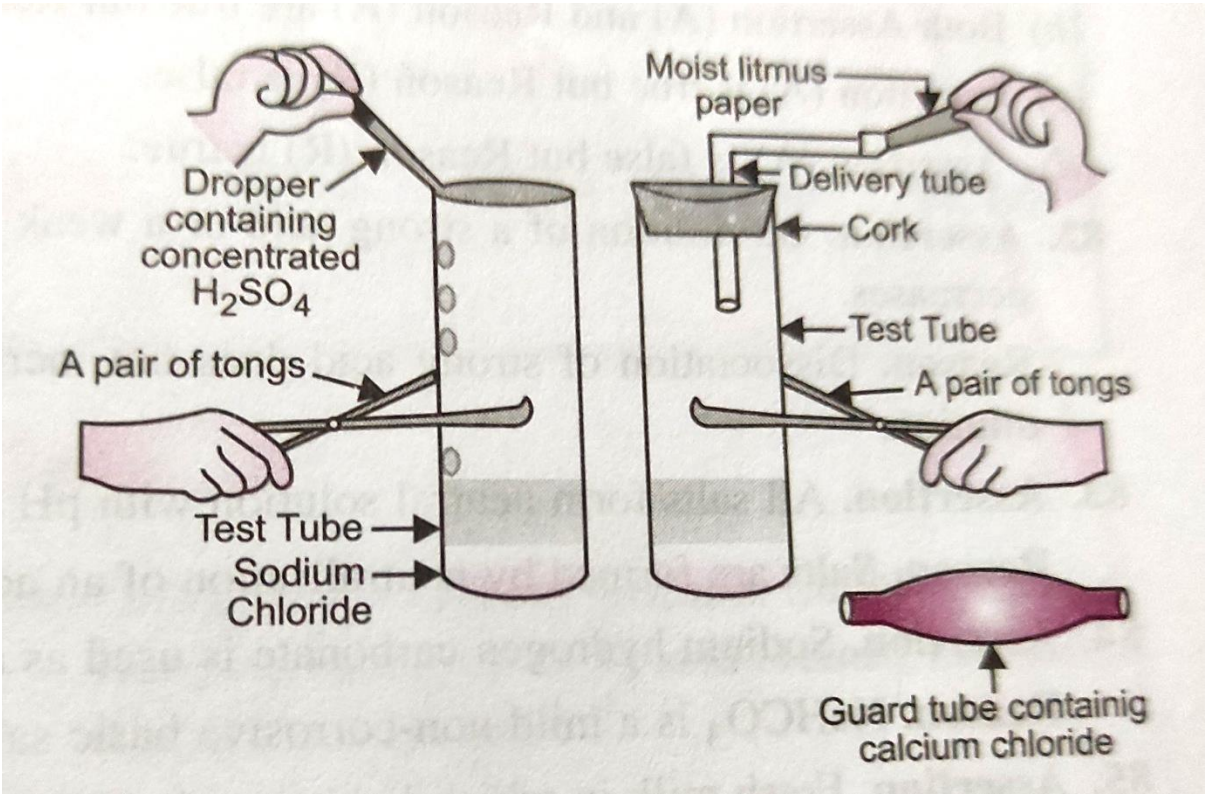
c) **white precipitate was formed**

d) **the reaction mixer became hot**

3.In the reaction 2H2S+SO2—3S+2H2O. The substance oxidized and reduce respectively are

a) **H2S &SO2.**
b) **SO2&H2S**
c) **SO2&S.**
d) **H2S and S**

4.the change in colour of the moist litmus paper in the given setup is due to



i)Presence of acid

ii) presence of base

iii) presence of H+ in the solution

iv) presence of litmus which act as an indicator

a) **i & ii.**
b) **b) only ii**
c) **only iii.**
d) **only. Iv**

5 silver articles turns black after sometime this is due to the formation of

a) **a)Ag2O**
b) **Ag2S**
c) **AgCl**
d) **AgBr**

6 oils on heating with hydrogen in presence of palladium or nickel catalyst form fat this is an example of

a) **addition reaction**
b) **substitution reaction**
c) **displacement reaction**
d) **oxidation reaction**

7 in which of the following compounds- OH is the functional group.

a) **butanone**
b) **butanol**
c) **butanoic acid**
d) **butanal**

8 The hormone not secreted by Ovary is :

a) **Relaxin**
b) **Progesterone**
c) **Estrogen**
d) **Testosterone**

9 The nature of nerve impulse is :

a) **Chemical**
b) **Magnetic**
c) **Electro Chemical**
d) **Electro Magnetic**

10 In case the ova does not fertilyze which of the following events will take place.

a) **Menstruation**
b) **Pregnancy**
c) **Implantation**
d) **Ovulation**

11 which of the following is the correct sequence regarding the flow of an impulse in a neuron.

a) **Dendrite→ Axon → cell body**
b) **Axon → Dendrite → Cell body**
c) **Axon → cell body → dendrite**
d) **Cell body → Axon → nerve terminal**

12 Which of the following is not associated with growth of plant.

a) **Auxin**
b) **Gibberellins**
c) **Cytokinins**
d) **Abscisie acid**

13. Which of the following mirror shows lateral inversion

a) **concave mirror**
b) **convex mirror**
c) **plane mirror**
d) **all of the above**

14 When a ray of light enters a glass prism its wavelength

a) **decreases**
b) **increases**
c) **remain unchanged**
d) **becomes zero**

15 if a grasshopper is eaten by a frog then the energy transferred will be from:

a) **Producer to decomposer**
b) **Producer to primary consumer**
c) **Primary consumer to secondary consumer**
d) **Secondary consumer to primary consumer**

16 which of the following are not constituents of a food chain:

a) **Grass, Lion, Rabbit**
b) **Plankton, man, fish, grasshopper**
c) **Wolf, grass, snake, tiger**
d) **Frog, snake, eagle, grass, grasshopper**

For QN 17 to Q20

a) **Both Assertion and Reason are true and Reason is the correct explanation of Assertion.**
b) **Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.**
c) **Assertion is true but Reason is false**
d) **Assertion is false but Reason is true**

17

Assertion : after white washing the walls a shiny white finish on walls is obtained after two or three days.

Reason: calcium oxide reacts with the carbon dioxide to form calcium hydrogen carbonate which gives shiny white finish.

18

Assertion: In human beings the female play a major role in determining the sex of the offspring.

Reason: woman have two X chromosomes.

19.

ASSERTION: The magnetic field lines inside the solenoid are in the form of straight lines.

REASON: The magnetic field is non uniform at all points inside the solenoid.

20

Assertion: Biodegradable waste and non-biodegradable waste should be discarded separately.

Reason: Bio-degradable waste are not harmful.

Section-B

Question No. 21 to 26 are very short answer questions

21.A metal salt MX when exposed to light split up to form metal M and the gas X2. metal M is used in making ornaments where as gas X2 is used in making bleaching powder the salt MX itself is used in black and white photography identify metal M and gas X2 mention the type of chemical reaction when the salt is exposed to light

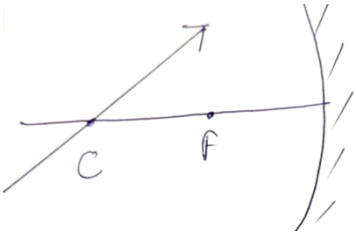
22 Draw a labeled diagram to show the parts of a seed.

23 Why is it advised to use Iodized salt in our diet.

OR

Plants do not have any nervous system but yet ,if we touch a sensitive plant,some observable changes take place in its leaves. Explain how could this plant respond to the external stimuli and how it is communicated.

24. (a)Complete the given ray diagram for concave mirror



(b) Write the value of angle of incident and angle of reflection.

25. Two lamps rated 100 W, 220 V and 200 W, 220 V are connected in parallel to 220 V supply. Calculate the total current through the circuit.

OR

How will you infer with the help of an experiment that the same current flows through every part of the circuit containing three resistors R_1 ,R_2 and R_3 in series connected to a battery of V volts.

26 In a food chain consisting of grass, deer and lion 100 J of energy is available to lion. How much energy was available to grass from sun.

Section-C

Question No. 27 to 33 are short answer questions

27.An organic compound X of molecular formula C2H6O on oxidation with alkaline KMnO4 gives a compound Y. on heating compound X with the compound Y in presence of concentrated sulphuric acid a sweet smelling compound Z is produced identify X,Yand Z .writet a chemical equation for the reaction involved

OR

Compound A get oxidised in presence of strong oxidizing agent to produce an acid B which is present in ant . write the formula and IUPAC name of both compounds. Give the formula and IUPAC name of next two members of their homologous series

28.a) What is meant by electrolytic reduction b) How is sodium obtained from its molten sodium chloride. explain

29 Name the following:

a) **The process in plants that links light energy with chemical energy.**
b) **Organisms that can prepare their own food.**
c) **The cell organelle where photo synthesis occurs.**

30 In the following crosses write the characteristics of the progeny

Cross	Progeny
a) **RRYY x RRYY** **Round yellow x round yellow**	
b) **RrYy x RrYy** **Round, Yellow and Round Yellow**	
c) **rryy x rryy** **Wrinkled green and wrinkled green**	

31.

a) **Draw a labelled ray diagram to show the path of a ray of light incident obliquely on one face of a glass slab .**
a) **Calculate the speed of light in a glass slab. Given that the refractive index of glass is 1.5 and speed of light in air is 3×10^8 m/s.**

32. Two resistors X and Y of resistances 2 Ω and 3 Ω respectively are first joined in parallel and then in series. In each case the voltage supplied is 10 V.

i. **Draw circuit diagrams to show the combination of resistors in each case.**
ii. **Calculate the voltage across the 2 Ω resistor in the series combination of resistors.**

33. Draw the pattern of the magnetic field produced around a vertical current carrying straight conductor passing through a horizontal cardboard. Mark the direction of current and the magnetic field lines. Name and state the rule which is used to determine the direction of magnetic field associated with a current carrying conductor.

Section-D

Question No. 34 to 36 are long answer questions.

34.An ore on treatment with dilute hydrochloric acid produces briskeffervescene. what step will be required to obtain metal from the enriched ore.Explain

b) copper coin is kept immersed in silver nitrate solution for sometime what change will takes place in coin and colour of the solution write balanced chemical equation of the reaction involved

OR

A) In the formation of compound between two atoms A and B, A loses two electrons and B gains one electron what is the nature of bond between A and B. suggest formula of the compound formed between A and B

B) Give reasons

i. platinum gold and silver are used to make jewellery

ii. sodium potassium and lithium are stored under oil

iii. Aluminium is highly reactive metal yet it is used to make utenses for cooking

iv. carbonate and sulphur ore are usually converted into oxide during the process of extraction

35 How does water enter continuously into the root xylem. Explain with labeled diagram.

OR

Design an activity to show that chlorophyll is essential for photosynthesis

36 A person suffering from certain type of defect of vision. He was advised to wear correcting lens of power -- 5 D . The same spherical lens of same focal length was taken in the laboratory. Find the focal length of correcting lens.

a) At what distance should a student place an object from this lens so that it forms an image at a distance of 40 cm from the lens?

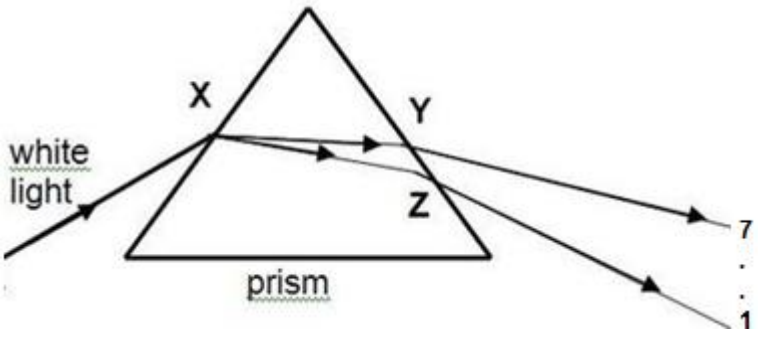
b) Name the type of defect of vision the person is suffering from.

c) What is the cause of that defect of vision?

d) Draw diagram of corrected eye by using the above correcting lens.

OR

A beam of white light falling on the glass prism split up into seven colour . Name the phenomena occur. A student allot number 1 to 7 for each colour from bottom side and makes following statement about the observed pattern.



a) **The colours marked 4 is similar to the colour of part of plant which help to prepare food and the colour marked 6 is a colour of citrus fruit respectively.Is the above statement made by the student correct or incorrect? Justify.**

b) **Which two positions out of marked sequence 1,2,3,4,5,6,7 correspond closely to the colour of (i) sky during day time (ii) used by married women to decorate their hairline**
write the colours corresponds to (i) and (ii)

c) **Which colour deviate least ,name that colour, by which number that colour is marked**

SECTION - E

Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37.Read the given passage and answer the questions based on passage and related studied concepts.
Alcohols form a homologous series with general formula CnH2n+1- OH and hydroxyl (-OH) group as functional group. Alcohols are colourless liquids, boiling points higher than hydrocarbons, soluble in water. Lower alcohols have specific smell and burning taste. Their boiling point increases with increase in molecular weight but solubility in water decrease. Methanol is called wood spirit used as disinfectant. Ethanol is commonly called alcohol and is used in alcoholic drinks. It is good solvent, used in medicines, m cough syrups, tonics. Consumption of alcohol leads to loss of muscular and nervous control. Intake of small amount of pure alcohol can be fatal and long term consumption of alcoholic drinks cause many health problems and ruin family life. Drinking methanol may lead to blindness and even death.

a) **what happens when an oxidizing agent is added to propanol. explain with the help of a chemical equation**

OR

What is esterification reaction. Explain with the help of an equation.

b) **identify the functional group present in methanal. & butanone**

c) **what happens when ethanol is heated with excess of concentrated sulphuric acid at 443 Kelvin .state the role of concentrated sulphuric acid in this reaction**

38 If we cross breed tall (Dominant) Pea plant with pure breed dwarf pea plant, we will get plants of F_1 generation. If we now self cross the pea plant of F_1 generation, we obtain Pea plants of F_2 generation.

a) **What name is given to such type of cross?**

b) **Make a flow diagram cross between the parents showing F_1 and F_2 generation.**

c) **Write the genotype of (i) parents (ii) F_2 generation**

OR

c) If we take round and wrinkled seed what will be the phenotypic ratio and genotypic ratio of F_1 and F_2 generation.

39 Once fire broke out near PALM MALL that resulted in heavy loss to many near by shops including some lives. Cause of fire is short circuit. It is always advised to use good quality of electric wire for domestic wiring with proper rating of fuse if required .

a) When does an electric short circuit occur?

b) What is the function of earth wire? Why it is necessary to earth metallic casing of electric appliances?

c) An electric lamp is marked 200W -220V. It is used 10 hours daily.Calculate the energy consumed in kWh per day.

OR

c) Establish the relationship between 1 kWh and 1 joule.

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