

BLUEBELLS SCHOOL INTERNATIONAL
PREBOARD

19th December 2023

Duration: 3 Hr
Max. Marks- 80

CLASS X

SUBJECT- SCIENCE

SET - A

SYLLABUS –

Light – Reflection and Refraction, The Human Eye and the Colourful World, Electricity, Magnetic Effects of Electric Current.

Life Processes, Our Environment, Control and Coordination, Reproduction, Heredity

Chem syllabus- Full syllabus

INSTRUCTIONS-

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.

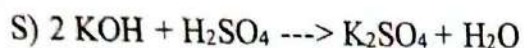
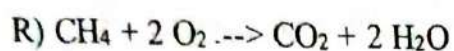
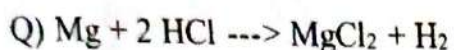
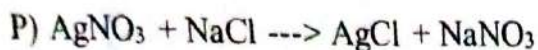
- Q1** On heating white powder of lead nitrate in a boiling tube, lead oxide, oxygen and brown gas is formed. What is this gas? **1**

(a) NO (b) NO₂ (c) N₂O (d) N₂O₅

Q2

Some types of chemical reactions are listed below. - decomposition - combination - displacement - double displacement

Which two of the following chemical reactions are of the SAME type?



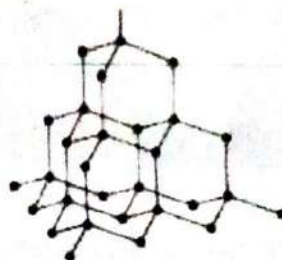
(a) P and Q (b) Q and R (c) R and S (d) P and S

Q3

The picture below shows two allotropes of carbon. Identify them.



Allotrope 1



Allotrope 2

- a) 1 is Fullerene and 2 is graphite
- b) 1 is graphite and 2 is fullerene
- c) 1 is graphite and 2 is diamond
- d) 1 is diamond and 2 is graphite

Brass is an alloy of

Q4

- a) Cu and Ag
- b) Cu and Zn
- c) Cu and Sn
- d) Cu and Fe

Q5

What is **not** true about roasting and calcination

- a) Roasting and calcination are reduction processes.
- b) Roasting and calcination are done to obtain oxide.
- c) Roasting is done in presence and calcination in absence of air
- d) Roasting is done for sulphide and calcination for carbonate ores.

Q6 Which one of the following types of medicines is used for treating indigestion?
(a) Antibiotic (b) Analgesic (c) Antacid (d) Antiseptic

1

Q7 An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?

1

- (a) Baking powder
- (b) Lime
- (c) Ammonium hydroxide solution
- (d) Hydrochloric acid

Q8 In a synapse chemical signal is transmitted from _____.

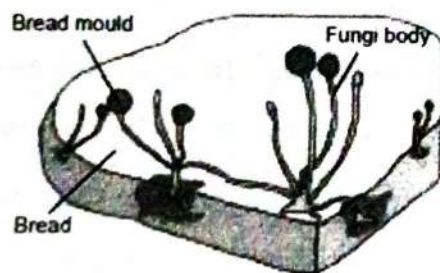
1

- A) from dendrite of one neuron to axonal end of other neuron
- B) axon to cell body of same neuron
- C) cell body to axonal end of same neuron
- D) axonal end of one neuron to dendrite of another neuron

Q9 The image shows the bread moulds on a bread. How these fungi obtain nutrition?

1

- (a) By using nutrients from the bread to prepare their own food.
- (b) By allowing other organisms to grow on the bread and then consuming them.
- (c) By breaking down the nutrients of bread and then absorbing them.
- (d) By eating the bread on which it is growing.



Q10 When a few drops of iodine solution are added to rice water, the solution turns blue-black in colour. This indicates that rice water contains:

1

- (a) fats
- (b) complex proteins
- (c) starch
- (d) simple proteins

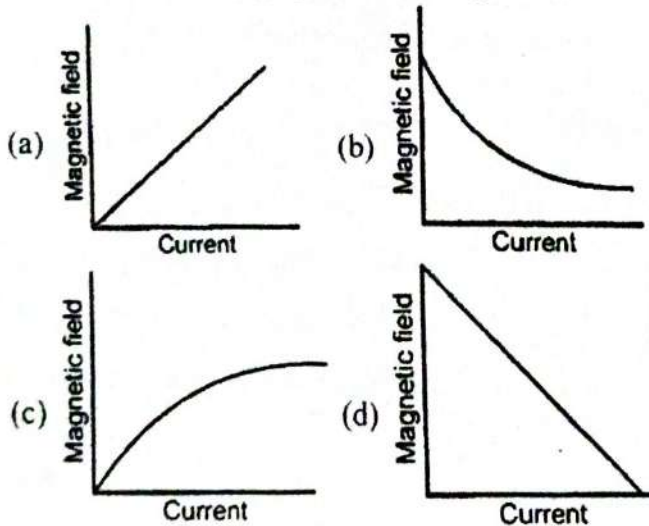
Q11 Plants like banana, rose, jasmine, orange have lost the capacity to produce 1
(a) seeds (b) buds (c) flower (d) roots

Q12 Under this circumstance, an antigen-antibody reaction will occur. A person with 1
(a) Type A blood is given type O blood
(b) Type AB blood is given type O blood
(c) Type O blood is given type A blood
(d) Type AB blood is given type B blood

Q13 A stream of alpha particles moving towards west is deflected towards north by a magnetic field. The direction of magnetic field is: 1
(a) towards south (b) towards east (c) downward (d) upward

Which of the following graphs shows magnetic field due to a current in a long solenoid?

Q14



Q15 Two pea plants, one with round green seeds ($RR yy$) and another with wrinkled yellow ($rrYY$) seeds, produce F_1 progeny that have round yellow ($RrYy$) seeds. When F_1 plants are self-pollinated, the F_2 progeny will have a new combination of characters. Choose the new combinations from the following: 1

(i) Round, yellow (ii) Round, green

- | | |
|------------------------|----------------------|
| (iii) Wrinkled, yellow | (iv) Wrinkled, green |
| (a) (i) and (ii) | (b) (i) and (iv) |
| (c) (ii) and (iii) | (d) (i) and (iii) |

Q16 Which of the following statement(s) is(are) true about excretion in human beings? 1

1. Urine is stored in the urethra until the urge of passing it out.
2. Each kidney has large numbers of filtration units called nephrons.
3. The bladder is muscular, so it is under nervous control.
4. Kidneys are the primary excretory organs.

- a). i and ii only
- b). i and iii only
- c). ii, iii, and iv only
- d). i and iv only

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R).

Answer these questions 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.

Q17 Assertion(A)- Carbon is the only element that can form large number of compounds. 1

Reason(R)- Carbon is tetravalent and shows the property of catenation.

Q18 Assertion(A): The effect of auxin hormone on the growth of root is exactly opposite to that on a stem. 1

Reason (R) : Auxin hormone increases the rate of growth in root and decreases the rate of growth in stem.

Q19 Assertion (A): Zinc oxide can be reduced to zinc metal on heating with carbon. 1

Reason (R): Carbon is less reactive with oxygen than zinc.

Q20 Assertion : Round green seeds in pea can be represented by RRyy ^{and} Rryy. 1

Reason: Round yellow seeds and green wrinkled seeds are parental combinations 1

whereas round green and wrinkled yellow are recombinants.

SECTION - B

(QUESTION NO. 21 - 26 ARE VERY SHORT ANSWER QUESTIONS)

Q21 Ethanol C_2H_5OH is heated with alkaline potassium permanganate to form compound X. 2

a) Name the compound X.

b) Write the reaction of compound X with ethanol in presence of sulphuric acid.

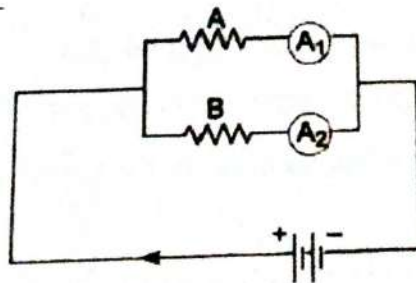
Q22 Write the causes of depletion of ozone layer. How can we prevent it? 2

Q23 How is lymph an important fluid involved in transportation? If lymphatic vessels get blocked, how would it affect the human body? Elaborate. 2

Q24 The following is the given circuit with resistors A and B that are made of the same metal and the same thickness but 'A' is twice as long as 'B'. The total current in the circuit is 6 A and the Voltage of the battery is 12 V. 2

(a) What will be the resistance in the circuit?

(b) Determine the value of resistors A and B.



Q25 Define resistivity. What are the factors affecting the resistivity of a conductor? 2

(a) What happens when a mature Spirogyra filament attains considerable length. 2

Q26 (b) Name two simple organisms having the ability of regeneration

(c) Draw labelled diagrams to illustrate budding in Hydra.

SECTION - C

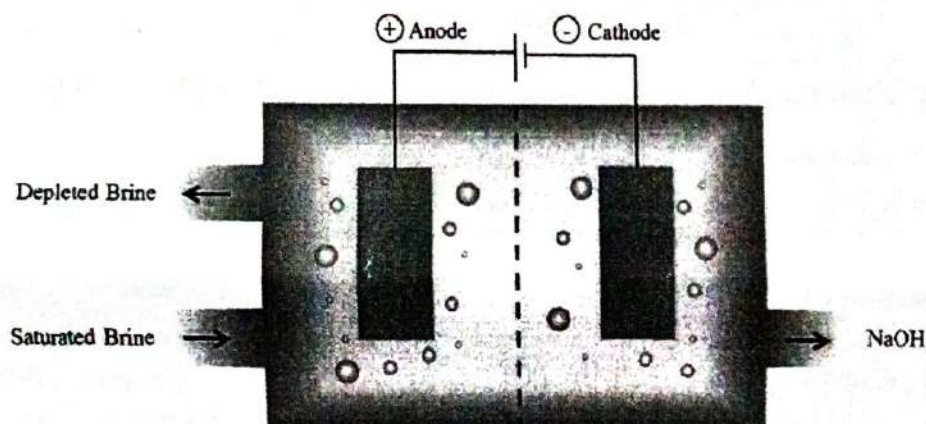
(QUESTION NO. 27 – 33 ARE SHORT ANSWER QUESTIONS)

Q27 Ria finds a paper covered with a white substance . She keeps the paper near the window and comes back to pick it after five hours. She noticed that the white substance has turned grey. 3

- What could most likely be the substance on the paper?
- Write the reaction for the change from white to grey? What are such type of reactions called?
- Mention one application of this property of the substance seen in daily life.

Q28 A sanitary worker uses a white chemical having strong smell of chlorine gas to disinfect the water tank. (i) Identify the chemical compound, write its chemical formula. (ii) Write the chemical equation for its preparation. (iii) Write its two uses 3

OR



- Identify the process depicted in the figure? Write chemical reaction related to the process.
- Name the substance evolved at cathode and anode respectively.
- Mention one use of the substance evolved at each electrode.

Q29 (a) Why did Mendel carry out an experiment to study inheritance of two traits in garden pea? 3

- What were his findings with respect to inheritance of traits in F_1 and F_2 generation?
- State the ratio obtained in the F_2 generation in the above mentioned experiment.

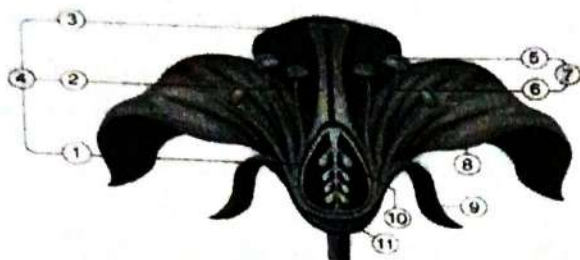
Q30 (a) Fill in the blanks :

- The development of a fully-formed animal directly from an unfertilised ovum is called _____.

(ii) The fertilisation of the human egg normally occurs in the _____.

(iii) Human gestation period is for about _____ days.

(b) Labell any 5 parts of flower



Q31 What is a solenoid? Draw the pattern of magnetic field lines of (i) a current carrying solenoid and (ii) a bar magnet. 3

Q32 Absolute refractive indices of two media P and Q are 1.33 and 2.52 respectively. The speed of light in medium P is 2×10^8 m/s. 3

(a) What would be the speed of light in medium Q?

(b) If the angle of incidence for a ray of light travelling from medium P to Q is 0° , then what will be the path of light in the medium Q?

Q33 3

Kaveri conducted an experiment to study the energy efficiency of different bulbs. She connected a bulb A having a resistance of 100 ohms to a 240 V power supply in a laboratory.

(a) How much energy will be consumed by the bulb, if it is kept ON for 4 hours each day for a week? Express your answer in kJ.

(b) Kaveri connects another similar bulb B in series with bulb A and connects the combination to a 240 V supply. Will there be any change in the brightness with which bulb A glows now? Explain mathematically.

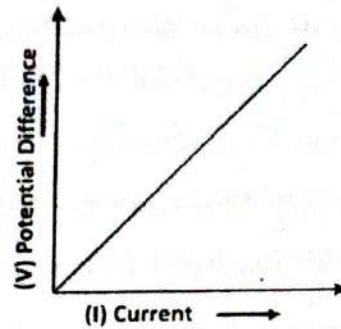
OR

(a) A current of 10 A flows through a conductor for two minutes.

(i) Calculate the amount of charge passing through the conductor.

(ii) Calculate the total number of electrons flowing through the conductor.

(b) V-I graph for a conductor is as shown in the figure. What do you infer from this graph?



SECTION- D

(Q34-36 ARE LONG ANSWER QUESTIONS)

Q34

5

(a) (i) Draw a diagram of human respiratory system and label: Trachea, Bronchi and Diaphragm.

Give reasons for the following:

(ii) Lungs always contain residual volume.

(b) Name the hormones secreted by the following endocrine glands and specify one function of each:

(i) Thyroid

(ii) Pituitary

(iii) Pancreas

Q35 Account for the following (any five)

- a) Ionic compounds have high melting point.
- b) Metals with low reactivity can be extracted from the oxides by heat alone.
- c) Rusting of iron can be prevented by galvanisation.
- d) During electrolytic refining of copper, size of impure rod decrease.
- e) Sodium atom can loose electrons while carbon can not.
- f) The reaction of Ferric oxide with aluminium is used to join broken railway tracks.

Q36 An object is placed at a distance of 18 cm from a convex lens of focal length 20 cm.

5

- (i) Use lens formula to determine the distance of image from lens.
- (ii) List characteristics of the image (nature, size, erect/inverted) in this case.
- (iii) Draw a labelled diagram to justify your answer of part (ii).

OR

An object is placed at a distance of 10 cm from a convex mirror of focal length 5 cm. (i) Draw a ray diagram showing the formation of image, (ii) State two characteristics of the image formed, (iii) Calculate the distance of the image from mirror, (iv) Why convex mirror used for rear view mirror of a vehicle?

SECTION – E

(Q37 – 39 ARE CASE BASED/ DATA BASED QUESTIONS)

Q37 All these carbon compounds which contain only carbon and hydrogen are called hydrocarbons. Among these, the saturated hydrocarbons are called alkanes. The unsaturated hydrocarbons which contain one or more double bonds are called alkenes. Those containing one or more triple bonds are called alkynes. 4

As the molecular mass increases in any homologous series, a gradation in physical properties is seen. This is because the melting and boiling points increase with increasing molecular mass. Other physical properties such as solubility in a particular solvent also show a similar gradation. But the chemical properties, which are determined solely by the functional group, remain similar in a homologous series.

- a) Write the name and draw electron dot structure of first member of alkene series.
- b) Out of methane and propane which one has higher boiling point?
- c) You have bromine in lab, which hydrocarbon you shall be able to surely identify- alkane, alkene or alkyne? Explain your answer.

OR

C) Write the reaction of ethene with bromine. What type of reaction is this?

Q38 We also think about our actions. Writing, talking, moving a chair, clapping at the end of a programme are examples of voluntary actions which are based on deciding what to do next. So, the brain also has to send messages to muscles. This is the second way in which the nervous system communicates with the muscles. The communication between the central nervous system and the other parts of the body is facilitated by the peripheral nervous system consisting of cranial nerves arising from the brain and spinal nerves arising from the spinal cord. The brain thus allows us to think and take actions based on that thinking. 4

Attempt any Four:

- i) what are the three major parts of the brain?
- ii) what are the function of medulla?
- iii) Which fluid is present in our brain?
- iv) What is the function of hypothalamus?
- v) What is the function of mid brain?

Q39

The hotter air is lighter (less dense) than the colder air above it and has a refractive index slightly less than that of colder air. Since the physical condition of refracting medium (air) are not stationary, therefore, the light goes from rarer medium to denser medium in atmosphere. This phenomenon is called atmospheric refraction. The twinkling of stars and advanced sunrise and delayed sunset are common examples of atmospheric refraction.

4

- (i) Which color scatters least when light enters the atmosphere?
- (ii) Write the seven colors of white light in increasing order of wavelength.
- (iii) Why is the color of the clear sky blue? Why does the sky appear dark instead of blue to an astronaut?

OR

Explain the reason why stars appear to twinkle and the planets do not twinkle.
