CBSE MIXED TEST PAPER-01

(Selection Test)

CLASS - X SCIENCE & TECHNOLOGY

[Time : 3.00 hrs.] **[M. M.:** 60]

General Instructions:-

(i) All questions are compulsory.

(ii) There is no overall choice. However internal choice has been provided.

(iii) Marks allotted to each question are indicated against it.

(iv) Use the data if required:

Charge on electron e = 1.6×10^{-19}C.
Velocity of light C = $3 \times 10^8 ms^{-1}$

Section A Physics (20 marks)

1. What is the refractive index of an optical medium related to the speed of light in that medium?

2. If a light ray IM is incident on the surface AB as shown, identify the correct emergent ray. 1 mark
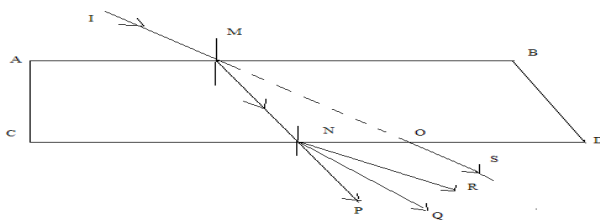
3. The following table gives the value of electrical resistivity of some material.   1 mark

Material	Copper	Silver	Constantan
Resistive (in Ω m)	1.62×10^{-8}	1.6×10^{-8}	49×10^{-8}

Which one is the best conductor of electrical resistivity?

4. Three lenses of powers 2D, -0.25D and 1.75D are placed in contact. Calculate the net power of the arrangement. Will it produce a converging or diverging effect? Will the net power charge if the order of lens placement is changed?   2 marks

5. Two wires of equal lengths, one of copper (metal) and the other of manganin (an alloy) have the same thickness. Which one can be used of

    (i)   Electrical transmission lines.

    (ii) Electrical heating devices? Why?   2 marks

6. An object 2 cm in size is placed 30 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a shape image? What will be nature and the size of the image formed? Draw a ray diagram to show the formation of the image in this case.   3 marks

7. Study the diagram given below and answer the questions that will follow it.   5 marks
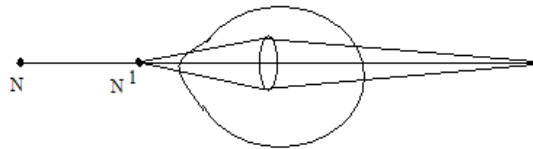
    (i)   Which defect of vision is represented in this case? Give reason for your answer.

    (ii)   What could be the two cause of this defect?

    (iii) With the help of a diagram show this can be corrected by the use of a suitable lens.

8. (i)   State the formula showing how the current I in a conductor varies when the potential difference V applied across it is increased stepwise.

    (ii)   When a potential difference of 1.2 volt is applied across a conductor, the current following in it is 0.25 ampere. Calculate the resistance of conductor.   5 marks

Or

    (a)   Draw a schematic diagram of an electric circuit and label its components.

    (b)   Calculate the amount of work dine in carrying a charge of 4 C from a point at 100 V to a point at 120 V.

    (c)   Calculate the number of electrons that must flow though a conductor per second to establish a current of 1 A.

Section B Chemistry (20 marks)

1. Two solutions A & B have PH value 6 and 8 respectively which solution will be basic in nature.

2. Identify the type of reaction in the following: 1mark

 $Na_2SO_4 + Bacl_2 ----\rightarrow BaSo_4(s) + Nacl\ (aq)$

3. From amongst the metals sodium calcium, Aluminium, copper, Magnesium, Name the metal:

 (i)   Which reacts with water only on boiling and

 (ii)   Another which doesn't react even with steam.   1 mark

4. A compared 'X' of Sodium Commonly used in Kitchen for making crispy pakoras. It is also used for curing acidity in the stomach. Identify the 'X' what is it chemical formula. State the reaction which takes place when it is heated during cooking.   2 marks

5. Describe the activity to show that acids produce ions only in aqueous solution.   2 marks

6. (i)   Metals can given different shapes according to our needs.

 (ii)   Hydrogen gas is not evolved when a metal reacts with Nitric acid.   2 marks

7. What happens when an acid reacts with a base?   3 marks

 (i)   Give chemical equation for the reaction involved with complete information.

 (ii)   What is the special name of this reaction?

 (iii)   While diluting an acid why is it recommended that acid should be added to water & not water to the acid?

8. (i)   Explain the meaning of malleable and ductile.   2marks

 (ii)   Give an example of metal which is 1mark

         (a)   Liquid at room temperature

         (b)   Very low melting point.

 (iii)   Write one reaction in which Aluminium behaves as basic oxide and another in which it behaves like acidic oxide.   3 marks

Section – C Biology (20 marks)

1. Name the hormone secretion of which is responsible for dramatic changes in appearance in girls when they approach 10 – 12 years of age.   1 mark

2. What is the role of acid produced in the stomach?   1 mark

3. What is a Synapse?   1 mark

4. What is reproduction? Mention the importance of DNA copying in reproduction.   2 marks

5. Explain the cause of shoots of the plant bending towards light. What name is given to this phenomenon?   2 marks

6. Oxidized to provide energy in various organisms. (Depict by flow chart only)   2 marks

7. Define 'Hormones'. Name the gland which secretes hormones as well as digestive enzyme. Write the function of both hormone & Enzyme secreted.   3 marks

8. What is double circulation in human beings? Why is it necessary?   3 marks

    (i)   Draw a labelled diagram of Human brain.   3 marks

    (ii)   Which part of brain regulates respiration?   1 mark

    (iii)   Name the most important & largest part of the brain.   1 mark

    ### OR

    (i)   Draw a neat & labelled diagram of the human Excretory System.   3 marks

    (ii)   Name the procedure used in working of artificial kidneys.   ½ mark

    (iii)   How is urine produced in human body?   1½ marks