BLOOM PUBLIC SCHOOL
C–8 Vasant Kunj, New Delhi
Mid Term (2022-23)
Sample Paper 2022-23
Science
Class X

Date:

Time Allowed: 3 Hours **Max Marks – 80**

General Instructions:

- **The question paper comprises of four sections: Section A, Section B, Section C and Section D.**
- **There are 46 questions in the question paper. All questions are compulsory.**
- **Section – A: Question No 1 to 32 are of one mark each. These questions contain very short answer questions, multiple choice questions (MCQs) and assertion –reason questions. Answer to these should be given in one word or one sentence.**
- **Section – A: Question No 33 to 36 are of Source/ Case/ Data based integrated questions. Each question contains 5 MCQ's of 1 mark each and you have to answer any four out of these 5 MCQ's.**
- **Section – B: Question No. 37 to 40 are short answer questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.**
- **Section – C: Question No. 41 to 43 are short answer questions carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.**
- **Section – D: Question No. 44 to 46 are long answer questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.**
- **There is no overall choice in the question paper. However internal choices have been provided in some questions. You have to attempt only one of the alternatives in such questions.**
- **Wherever necessary, neat and properly labelled diagrams should be drawn.**

SECTION A (48 Marks)

1 What is a balanced chemical equation? 1

OR

Why is respiration considered an exothermic reaction?

2 What type of a reaction takes place when quick lime is added to water? 1

3 Balance the following chemical equation 1

$$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$$

4. State the law which is kept in mind when we balance a chemical equation? 1

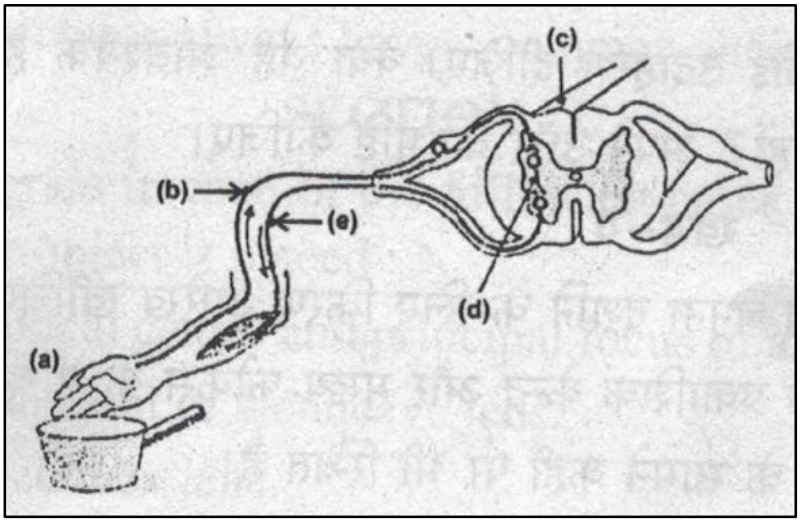
OR

Why do fireflies glow at night?

5 List any two observations when ferrous sulphate is heated in a dry test tube. 1

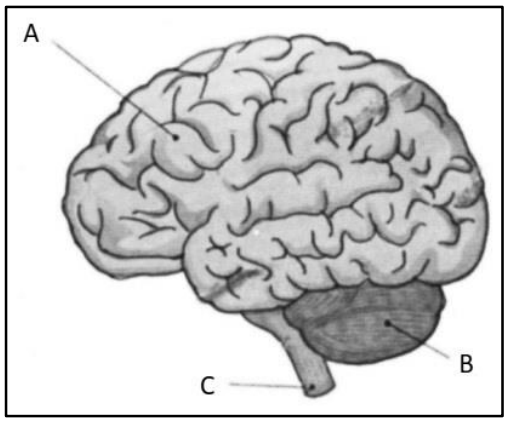
6 Is burning of a candle wax a physical or a chemical change?

7 Name the parts marked as **(d)** and **(e)** in the given diagram. 1



OR

Identify the parts marked as **A** and **B** in the given diagram:



8 What is the role of Abscisic acid in plants? 1

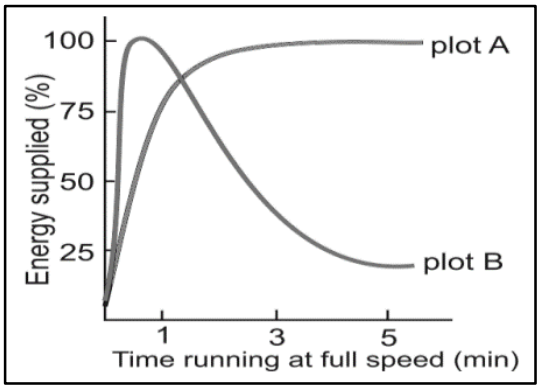
OR

Mention the effect of cytokinin in plants.

9 How do autotrophs obtain CO_2 and N_2 to make their food? 1

10 Which signals will get disrupted in case of a spinal cord injury? 1

11 Study the graph below that represents the amount of energy supplied with respect to the time while an athlete is running at full speed. 1



What does plot A and B signifies respectively?

12 What is the nature of the image formed by a convex lens if the magnification produced by the lens is, - 0.5? 1

13 State true or false and correct the statement if false: An observer must stand with his face towards the sun to observe a rainbow. 1

14 Define the term dispersion of white light. 1

OR

Name the color of light which bends (i) the most, (ii) the least while passing through a glass prism.

15 Fill in the blank: The closest distance at which the eye can focus clearly is called……. 1

16 Mention the types of mirrors used as (i) rear view mirrors, (ii) shaving mirrors. 1

For **Q. No 17 to 20,** two statements are given- one labeled **Assertion (A)** and the other labeled **Reason (R)**. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.
b) Both A and R are true, but R is not the correct explanation of the assertion.
c) A is true, but R is false.
d) A is false, but R is true.

17 **Assertion(A):** Slaking of lime is an exothermic reaction and combination reaction. 1
Reason (R): Quick lime reacts with water to produce slaked lime.

18 **Assertion (A):** Resins and gums are stored in old xylem tissue in plants. 1
Reason (R): Resins and gums facilitate transport of water molecules.

19 **Assertion (A):** The value of F in a concave mirror is taken as –ve and in a convex mirror is taken as +ve. 1
Reason(R): All distances measured to the right of the origin are taken as +ve and those measured along the left of the origin are taken as –ve.

20 **Assertion(A)**. White light on passing through a prism, splits into seven colours. 1
Reason (R) The different colours have different wavelengths.

OR

Assertion(A). Stars twinkle, planets do not.
Reason (R). It is accounted for by atmospheric refraction.

21 CO_2 gas was passed through a solution "A" taken in a test tube. The solution turned milky. The solution taken in test tube was:
a. Sodium hydroxide
b. Potassium hydroxide
c. Ammonium hydroxide
d. Calcium hydroxide

22 Tooth enamel is made up of: 1
a. Calcium phosphate
b. Calcium hydoxypatite
c. Calcium oxychloride
d. Calcium nitrate

23 Tamarind contains: 1
a. Acetic acid
b. Citric acid
c. Tartaric acid
d. Methanoic acid

24 Sodium hydrogen carbonate is a component of: 1
a. Baking powder
b. Antacids
c. Bread raising mixtures
d. All of the above

OR

Water in a locality is hard and unfit for washing clothes. It can be made suitable for washing by boiling water with a compound X. The compound X is

a. Sodium nitrite
b. Sodium acetate
c. Sodium nitrate
d. Sodium carbonate

25 Plants use completely different process for excretion as compared to animals. Which one of the following processes is **NOT** followed by plants for excretion? 1
a. They can get rid of excess water by transpiration.
b. They selectively filter toxic substances through their leaves.
c. Waste products are stored as resins and gums in old xylem.
d. They excrete waste substances into the soil around them.

26 Electrical impulse travels in a neuron from: 1
a. dendrite → axon → axon end → cell body
b. cell body → dendrite → axon → axon end
c. dendrite → cell body → axon → axon end
d. axon end → axon → cell body → dendrite

OR

A cell (or group of cells) in a sense organ which is sensitive to a particular type of stimulus is called:
a. interceptor
b. effector
c. receptor
d. acceptor

27 Select the option which gives correct function and /or characteristic: of the four parts of human respiratory system. 1
a. Alveoli: Thin-walled sac like structures for exchange of gases.
b. Diaphragm: It is pulled up when we breathe in.
c. Trachea: It is supported by bony rings for conducting inspired air.
d. Ribs: When we breathe out, ribs are lifted.

28 In a person the tubule part of the nephron is not functioning at all. What will its effect be on urine formation? 1
a. The urine will not be formed.
b. Quality and quantity of urine is unaffected.
c. Urine is more concentrated.
d. Urine is more diluted.

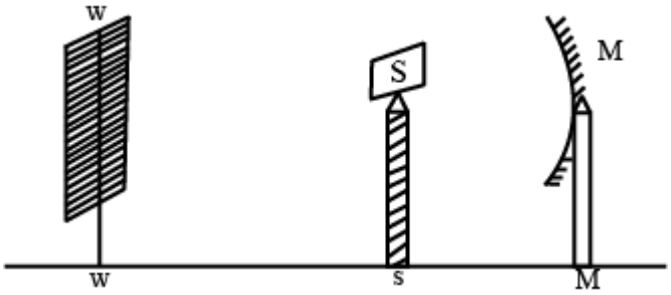
29 A student obtained a sharp image of the grills of a window on a screen using a concave mirror. His teacher remarked that for getting better results a well-lit distant object (preferably the sun) should be focused on the screen. What should be done for this purpose? 1
a. Move the screen slightly away from the mirror
b. Move the mirror slightly towards the screen
c. Move the screen and the mirror away from the object
d. Move the screen and the mirror towards the object

OR

A student traces the path of a ray of light through a rectangular glass slab for the different values of angle of incidence. He observes all possible precautions at each step of the experiment. At the end of the experiment, on analysing the measurements, which of the following conclusions is he likely to draw?

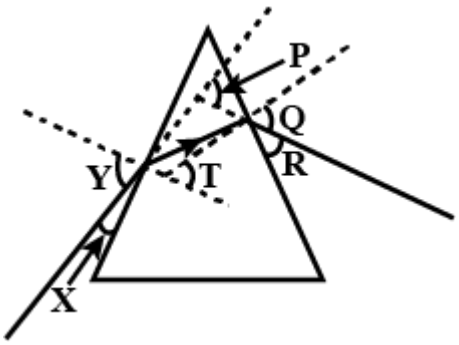
a. $\angle i = \angle e < \angle r$
b. $\angle i < \angle e < \angle r$
c. $\angle i > \angle e > \angle r$
d. $\angle i = \angle e > \angle r$

30 A student obtains a sharp image of the distant window (W) of the school laboratory on the screen (S) using the given concave mirror (M) to determine its focal length. Which of the following distance should he measure to get the focal length of the mirror? 1



a. MW
b. MS
c. SW
d. MW - MS

31 In the following diagram, the path of a ray of light passing through a glass prism is shown: In this diagram the angle of incidence, the angle of emergence and the angle of deviation respectively are (select the correct option): 1



a. X, R, T
b. Y, Q, T
c. X, Q, P
d. Y, Q, P

32 The change in focal length of an eye lens is caused by the action of the 1
a. pupil.
b. retina.
c. ciliary muscles.
d. iris.

33 **Read the passage given below and answer the following questions and answer any four questions from (i) to (v):** 4

The reaction between MnO_2 and HCl was studied. It was observed that a gas with bleaching abilities was released.

33.i The chemical reaction between MnO_2 and HCl is an example of:

a. Displacement reaction
b. Combination reaction
c. Redox reaction
d. Decomposition reaction

33.ii Chlorine gas reacts with ----------to form bleaching powder.

a. dry $Ca(OH)_2$
b. dil. solution of $Ca(OH)_2$
c. conc solution of $Ca(OH)_2$
d. dry CaO

33.iii Identify the correct statement from the following:

a. MnO_2 is getting reduced whereas HCl is getting oxidised.
b. MnO_2 is getting oxidised whereas HCl is getting reduced.
c. MnO_2 and HCl both are getting reduced.
d. MnO_2 and HCl both are getting oxidised.

33.iv In the above discussed reaction, what is the nature of MnO_2?

a. Acidic oxide
b. Basic oxide
c. Neutral oxide
d. Amphoteric oxide

33.v What will happen if we take dry HCl gas instead of aqueous solution of HCl?

a. Reaction will occur faster
b. Reaction will not occur
c. Reaction rate will be slow
d. Reaction rate will remain the same

34 **Question numbers 34(i) - 34(v) are based on the two tables given below. Study these tables related to blood sugar levels and answer the questions that follow.** 4

Table A (Blood glucose chart)

	Mean Blood Glucose Level (mg/dL)
Doctor's advice needed	380
	350
	315
	280
	250
	215
Good	180
	150
Excellent	115
	80
	50

Table B (Blood Report of Patient X and Y)

Time of check	Blood Glucose ranges (mg/dL)	
	Patient X	Patient Y
Before breakfast (Fasting)	< 100	70 – 130
Before lunch, supper and snack	< 110	70 – 130
Two hours after meals	< 140	< 180
Bedtime	< 120	90- 15

34.i Refer to Table B showing the blood report of the levels of glucose of patients X and Y. Infer the disease which can be diagnosed from the given data.

a. X- diabetes, Y- normal
b. X- normal, Y- diabetes
c. X- diabetes, Y- diabetes
d. X- normal, Y- normal

34.ii Identify the hormone whose level in the blood is responsible for the above disease.

a. Glucagon
b. Insulin
c. Thyroxine
d. Growth hormone

34.iii Which one of the following diets would you recommended to the affected patient?

a. High sugar and low-fat diet.
b. Low sugar and high protein diet.
c. High Fat and low fiber diet.
d. Low sugar and high fiber diet.

34.iv Refer to the Table A and suggest the value of the mean blood glucose level beyond which doctor's advice is necessary:

a. 180 mg/dL
b. 115 mg/dL
c. 50 mg/dL
d. 80 mg/dL

34.v Which endocrine gland is responsible for secretion of hormone responsible for regulating blood glucose level?

a. Pancreas
b. Pituitary gland
c. Adrenal gland
d. Parathyroid gland

35 **Read the passage given below and answer the following questions and answer any four questions from (i) to (v):** 4

Some organisms use simple food material obtained from inorganic sources in the form of carbon dioxide and water. Other organisms utilize complex substances. Carbon and energy requirements of the autotrophic organisms are fulfilled by photosynthesis during which autotrophs take in substances from outside and convert them into stored forms of energy**.**

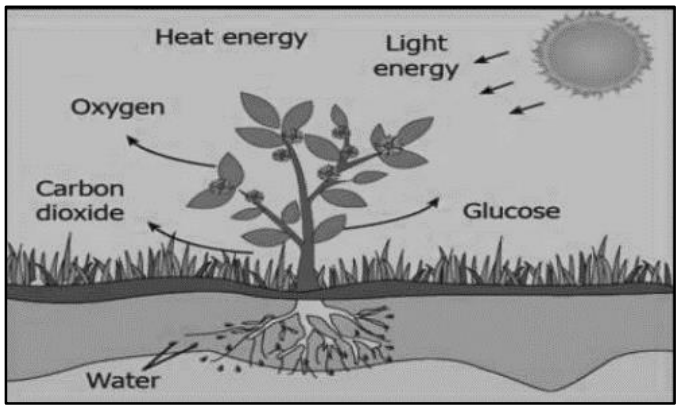
35.i During the process of photosynthesis carbon dioxide is:

a. Dehydrated
b. Oxidized
c. Oxidized and reduced simultaneously
d. Reduced

35.ii Name the tissue in a leaf where plastids are present:

a. Mesophyll
b. Epithelial cell
c. Mitochondria
d. Endodermis

35.iii The image shows the process of making food by a plant. Which of the following is correct?



a. Plants absorb CO_2 from air and H_2O from the soil as raw materials and convert them into glucose.
b. Plants absorb CO_2 from the soil and H_2O from the air as raw materials and convert them into glucose.
c. Plants absorb O_2 from air and glucose from the soil as raw materials and convert them into glucose.
d. Plants absorb O_2 from air and minerals from the soil as raw materials and convert them into glucose.

35.iv Why it is not advisable to sleep under a tree at night?

a. Plants respire at night and release O_2.
b. Plants respire at night and release CO_2.
c. Plants perform photosynthesis and release CO_2.
d. None of the above

35.v In dark, the guard cells are:

a. more turgid
b. not turgid
c. less turgid
d. none of them

36 **Read the passage given below and answer the following questions:** 4

The spherical mirror forms different types of images when the object is placed at different locations. When the image is formed on the screen, the image is real and when the image does not form on-screen, the image is virtual. When the two reflected rays meet, the image is real and when they appear to meet, the image is virtual.
A concave mirror always forms a real and inverted image for different positions of the object. But if the object is placed between the focus and pole, the image formed is virtual and erect.

A convex mirror always forms a virtual, erect, and diminished image. A concave mirror is used as a doctor's head mirror to focus light on body parts like eyes, ears, nose, etc., to be examined because it can form erect and magnified images of the object. The convex mirror is used as a rear-view mirror in automobiles because it can form a small and erect image of an object.

36.i When an object is placed at the centre of curvature of a concave mirror, the image formed is

a. larger than the object
b. smaller than the object
c. same size as that of the object
d. highly enlarged.

36.ii No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be:

a. Plane
b. concave
c. convex
d. either plane or convex

36.iii A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

a. Plane, convex and concave
b. Convex, concave and plane
c. Concave, plane and convex
d. Convex, plane and concave

36.iv To get an image larger than the object, one can use:

a. convex mirror but not a concave mirror
b. a concave mirror but not a convex mirror
c. either a convex mirror or a concave mirror
d. a plane mirror

36.v A convex mirror has wider field of view because:

a. the image formed is much smaller than the object and large number of images can be seen
b. the image formed is much closer to the mirror
c. both (a) and (b)
d. none of these.

Section-B

8 marks

37 Out of the two-hydrochloric acid and acetic acid, which one is considered a strong acid and why? Write the name/ molecular formula of one more strong acid. 2

OR

What are amphoteric oxides? Give an example.

38 Explain giving reasons the bending of the shoot tip of a plant towards light source coming from one side of the plant. 2

39 Match the following columns. 2

Column I	column II
A. Power of convex lens is	P. focal length of the lens
B. Power of concave lens is	Q. algebraic sum of powers of individual lenses
C. power of combination of lenses	R. Negative
D. Power of lens varies inversely with	S. Positive

40 A person needs a lens of power +3 D for correcting his near vision and -3 D for correcting his distant vision. Calculate the focal lengths of the lenses required to correct these defects. 2

Section-C

9 marks

41 The pH of a salt used to make tasty and crispy pakoras is 10. Identify the salt and write a chemical equation for its formation. List it's two uses. 3

42 A squirrel is in a scary situation. Its body must prepare for either fight or running away. State the immediate changes that takes place in its body so that the squirrel can either fight or run. 3

43 A convex mirror with a radius of curvature 4m is used as a rear view mirror in a car. If a truck is located at a distance of 6m from the mirror. Find the position, nature and size of the image. 3

OR

Define refractive index. If the refractive indices of glass and water with respect to air are 3/2 and 4/3 respectively and if speed of light in glass is 2×10^8 m/s, find the speed of light in water.

Section-D

15 marks

44 (i) Three acidic solutions A, B and C have pH= 0, 3, 5 respectively. 5

a. Which solution has higher concentration of H^+ ions?

b. Which solution has lowest concentration of H^+ ions?

(ii) How can concentrated sulphuric acid be diluted? Explain the process.

OR

State reasons for the following statements:

(a) Tap water conducts electricity but distilled water does not.

(b) Dry hydrogen chloride gas does not turn blue litmus red whereas hydrochloric acid does.

(c) During summer season, a milkman usually adds a very small amount of baking soda to fresh milk.

(d) For dilution of an acid, acid is added to water and not water to acid.

(e) Ammonia is a base but does not contain hydroxyl group.

45 a. Explain the process of double circulation with the help of a flow chart (3+2)
b. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

OR

a. Explain the mechanism of urine formation in human kidney.
b. Name the organs that form excretory system in human beings.

46 A 14 year old student is not able to see questions written on the blackboard placed at a distance of 5m from him. 5

(a) name the defect vision he is suffering from. (1)

(b) List its two possible causes. (1)

(c) With the help of ray diagram show how this defect can be corrected (2)

(d) Name the type of lens used to correct the defect. (1)

OR

(a) A person cannot read newspaper placed nearer than 50 cm from his eyes. Name the defect of vision he is suffering from. (1)

(b) List its two possible causes. (1)

(c) Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length. (2)

(d) Name the type of lens used to correct the defect. (1)