AIRPORT SENIOR SECONDARY SCHOOL

TERMINAL EXAMINATION - 1(2023-24)

CLASS X **SCIENCE** **MARKS: 80**

TIME: 3 hours

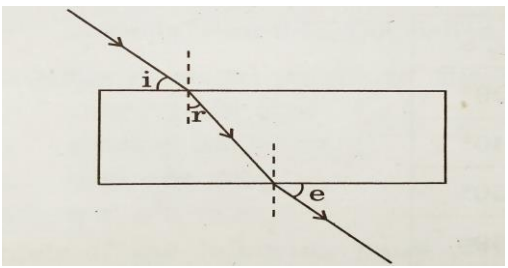
General Instructions:

- *This question paper consists of 39 questions in 5 sections.*
- *All questions are compulsory.*
- *Section A consists of 20 objective type questions carrying 1 mark each.*
- *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.*
- *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.*
- *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.*
- *Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.*

SECTION A

Select and write one most appropriate option out of the four options given for each of the questions 1 - 20

1. In torch lights and head lights of vehicles, the bulb is placed
   a. between the pole and the focus of the reflector.
   b. very near to the focus of the reflector.
   c. between the focus and the centre of curvature of the reflector.
   d. at the centre of curvature of the reflector.
2. A student is using a convex lens of focal length 10 cm to study the image formation by a convex lens for the various positions of the object. In one of his observations, he may observe that when the object is placed at a distance of 20 cm from the lens, its image is formed at
   a. 20 cm on the other side of the lens and is of the same size, real and erect.,
   b. 40 cm on the other side of the lens and is magnified, real and inverted.
   c. 20 cm on the other side of the lens and is of the same size, real and inverted.
   d. 20 cm on the other side of the lens and is of the same size, virtual and erect
3. A lens has a power of +0.5 D. It is
   a) a concave lens of focal length 5m. b) a convex lens of focal length 5m.
   c) a convex lens of focal length 2m. d) a concave lens of focal length 2m
4. A student traces the path of a ray of light passing through a rectangular glass slab and marks the angle of incidence i, angle of refraction r and angle of emergence e, as shown. The correctly marked angle (s) is/are



a) < i b) < r c) < e d) < i and < e

5. The diameter of the reflecting surface of spherical mirror is called its
   a. aperture c. radius of curvature
   b. focal length d. centre of curvature
6. The mode of nutrition in fungi is Autotrophic
   a)Autotrophic b) Heterotrophic c)Saprophytic d) parasite
7. The structure involved in gaseous exchange in woody stem of a plant is
   a) Stomata b) lenticel c) guard cell d) epidermis
8. Blood vessel which carry blood from lungs to heart is
   a) pulmonary artery b) pulmonary vein c) coronary artery d) vena cava
9. Only two of the following statements accurately describe what happens in mouth. Select the pair of correct statements.
   1. Breaks down large starch molecules into smaller maltose molecules.
   2. Chewing increases surface area of food for digestion
   3. Teeth breakup large insoluble molecules into smaller molecules..
   4. Saliva helps in emulsifying fat molecules.

   a) 1, 2 b) 2, 3 c) 3,4 d) 1,4
10. Which process occurring in human body does not involve energy from respiration?
    a) Contraction of heart muscle.
    b) Diffusion of oxygen from alveoli into the blood.
    c) Digestion of bread.
    d) Maintaining a constant body temperature
11. Calcium oxide reacts vigorously with water to produce slaked lime.

    $CaO_{(s)} + H_2O_{(l)} \rightarrow Ca(OH)_{2(aq)}$

    a) Combination reaction b) Exothermic reaction
    (c) Endothermic reaction d) Oxidation reaction

    Which of the following is a correct option?
    (i) (a) and (c) (ii) (c) and (d) (iii) (a), (c)and (d) (iv) (a) and (b)
12. A student took sodium sulphate solution in a test tube and added barium chloride solution to it. He observed that an insoluble substance has formed. The colour and molecular formula of the insoluble substance is
    (a) Grey, Ba_2SO_4 b)Yellow, $Ba(SO_4)_2$ c)White, $BaSO_4$ d) Pink, $BaSO_4$
13. Acid present in tomato is
    (a) Methanoic acid b) Acetic acid c) Lactic acid d) Oxalic acid
14. Select from the following, the statement which is true for bases.
    (a) Bases are bitter and turn blue litmus red.
    (b) Bases have a pH less than 7.
    (c) Bases are sour and change red litmus to blue.
    (d) Bases turn pink when a drop of phenolphthalein is added to them.
15. An aqueous solution with pH = 1 is
    (a) Strongly acidic (b)Strongly basic (c)Neutral (d)Weakly acidic
16. When a small amount of acid is added to water the phenomena which occur are
    (a) Neutralization (b) Dilution (c) Formation of H_3O^+ ions (d) Salt formation

    Q. no 17 to 20 are Assertion - Reasoning based questions.

    These 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
17. Assertion: Refractive index has no units.
    Reason: The refractive index is a ratio of two similar quantities.

18. Assertion: The formula connecting u, v and f for a spherical mirror is valid in all situations for spherical mirrors for all positions of the object.
    Reason: Laws of reflection are strictly valid for plane surfaces.
19. Assertion: Lungs always contain a residual volume of air.
    Reason: Sufficient time for oxygen to be absorbed and for carbon dioxide to be released.
20. Assertion: The aqueous solution of glucose and alcohol do not show acidic character.
    Reason: Aqueous solutions of glucose and alcohol do not give H^+ ions.

SECTION B

Q. no. 21 to 26 are very short answer questions.

21. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram.
22. Name the reserved form of carbohydrate in plants and animals respectively.
23. Mention the pathway common in both aerobic and anaerobic respiration. What happens in this pathway?
24. Differentiate between
    a) the nutrition in mushroom and in cuscuta. b) Pepsin and trypsin
25. (a) Why copper can displace silver from silver nitrate solution and silver cannot displace copper from copper sulphate solution?
    (b) Oil and fat containing food items are flushed with nitrogen. Why?
26. Out of the two-hydrochloric acid and acetic acid, which one is considered a strong acid and why? Write the name and molecular formula of one more strong acid.

SECTION C

Q.no. 27 to 33 are short answer questions

27. What is meant by power of lens? Write its S.I. unit. A student uses a lens of focal length 40 cm and another of -20 cm. Write the nature and power of each lens.
28. Draw ray diagram in each of the following cases to show what happens after refraction or reflection to the incident ray when
    a. it is parallel to the principal axis & falling on a concave lens.
    b. it is falling on a convex lens while passing through its principal focus.
    c. it is coming oblique to the principal axis and falling on the pole of a convex mirror.
29. State the laws of refraction of light. Explain the term 'absolute refractive index of a medium 'and write an expression to relate it with the speed of light in vacuum.
30. Define transpiration. Write a short note on ascent of sap.
31. Write the events in photosynthesis. Do the events always occur in order? Write a balanced equation to represent photosynthesis. List two functions of the stomata.
32. The pH of three solutions is given in the table. Answer the questions that follow.

Solution	pH
P	**1**
Q	**7**
R	**14**

    a) Which of these solutions could possibly react with zinc metal to produce hydrogen gas?
    b) Which of these questions could be formed by the reaction of a metal oxide with water?
    c) Which of these solutions could be the raw material for the industrial manufacture of chlorine?

33. 2 g of ferrous sulphate crystals are heated in a dry boiling tube.
    (a) List any two observations.
    (b) Name the type of chemical reaction taking place.
    (c) Write the chemical equation for the reaction.

SECTION D

Q.no. 34 to 36 are long answer questions.

34. a. List four characteristics of the images formed by plane mirrors.
    b. A 5 cm tall object is placed at a distance of 20 cm from a concave mirror of focal length 30 cm. Use mirror formula to determine the position and size of the image formed.
35. With help of a diagram explain the structure and function of Kidney. Mention the factors responsible for the formation of urine.
36. State reason for the following statements.
    (a) Tap water conducts electricity whereas distilled water does not.
    (b) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does.
    (c) Colourless silver chloride turns grey when exposed to sunlight.
    (d) For a dilution of acid, acid is added into water and not water into acid.
    (e) Antacid is used to get relief from acidity.

SECTION E

Q.no. 37 to 39 are case - based/data -based questions with 2 or more short sub - parts.

37. A student took three concave mirrors of different focal lengths and performed the experiment to see the image formation by placing an object at different distances with these mirrors as shown in the following table.

Case No.	Object-distance	Focal length
I	45 cm	20 cm
II	30 cm	15 cm
III	20 cm	30 cm

Now answer the following questions:
    (a) List two properties of the image formed in Case I.
    (b) In which one of the cases given in the table, the mirror will form real image of same size and why?
    (c) Name the type of mirror used by dentists. Why do they use such type of mirrors?

38. *Food chains are very important for the survival of most species. When only one element is removed from the food chain it can result in extinction of a species in some cases.*
The foundation of the food chain consists of primary producers. Primary producers, or autotrophs, can use either solar energy or chemical energy to create complex organic compounds, whereas species at higher trophic levels cannot and so must consume producers or other life that itself consumes producers. Because the sun's light is necessary for photosynthesis, most life could not exist if the sun disappeared.

a) Construct an aquatic food chain.

b) If 10,000 J solar energy falls on green plants in a terrestrial ecosystem, what percentage of solar energy will be converted into food energy? Also calculate the amount of energy obtained in fourth trophic level.

c) Aimen is eating curd/yogurt. For this food intake in a food chain he should be considered as occupying

(i) 1st trophic level (ii) 2nd trophic level (iii) 3rd trophic level (iv) 4th trophic level.

d) Which of the following limits the number of trophic levels in a food chain?

(i) Decrease in energy at higher trophic levels

(ii) Less availability of food

(iii) Polluted air.

(iv) Water

39. Read the given passage and answer the questions based on passage and related studied concepts.

Taj Mahal, one of the greatest wonders of the world, is made of white marble which is composed of calcium carbonate. About 60 years ago it was discovered that this monument is being eaten away by acid rain. The archaeological survey of India that looks after this building of historical importance is of the opinion that the atmospheric pollution due to the vehicular traffic and industries, mainly Madura Refinery, may be a major cause of acid rain in and around the monument. Normal rain is slightly acidic because it absorbs some carbon dioxide from the atmospheric air. Acid rain is more acidic than normal rain because it also has absorbed oxides of nitrogen and sulphur.

(a) What is the formula of calcium carbonate?

(b) Name two gases which contribute to acid rain?

(c) What is the pH of acid rain?

(d) Name the acids and bases which will form calcium carbonate. What is the nature of salt?

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