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SAMPLE PAPER 02 FOR SA – II (2016-17)

SUBJECT: SCIENCE

<u>BLUE PRINT : SA-II CLASS X</u>

Unit/Topic	VSA/MCQ (1 mark)	Short answer (2 marks)	Short answer (3 marks)	Long answer (5 marks)	Total
Carbon and its Compounds	4(4)	2(1)	6(2)	5(1)	**17(8)**
Periodic Classification of elements	-	-	6(2)	-	**06(2)**
How do Organisms Reproduce ?	2(2)	2(1)	9(3)	5(1)	**18(7)**
Heredity and Evolution	1(1)	-	6(2)	5(1)	**12(4)**
Light – Reflection and Refraction	4(4)	4(2)	3(1)	10(2)	**21(9)**
Human Eye	-	-	3(1)	5(1)	**08(2)**
Our Environment	1(1)	-	-	-	**01(1)**
Management of Natural Resources	-	4(2)	3(1)	-	**07(3)**
Total	12(12)	12(6)	36(12)	30(6)	**90(36)**

MARKING SCHEME FOR SA – II

SECTION	MARKS	NO. OF QUESTIONS	TOTAL
VSA	1	3	03
SA – I	2	3	06
SA – II	3	12	36
LA	5	6	30
Practical based MCQs	1	9	09
	2	3	06
GRAND TOTAL			**90**

SUBJECT: SCIENCE   MAX. MARKS : 90
CLASS : X   DURATION   : 3 HRS

General Instructions:
1. All questions are compulsory.
2. The question paper comprises of **two Sections, A** and **B.** You are to attempt both the sections.
3. All questions of **Section-A** and **Section-B** are to be attempted separately.
4. Question numbers **1 to 3** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
5. Question numbers **4 to 6** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **7 to 18** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
7. Question numbers **19 to 24** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
8. Question numbers **25 to 33** in **Section-B** are multiple choice questions based on practical skills. Each question is a **one mark** question. You are to select one most appropriate response out of the four provided to you.
9. Question numbers **34 to 36** in **Section-B** are questions based on practical skills and are **two marks** questions.

SECTION – A

1. What is the function of ozone in the upper atmosphere?

2. Write the name and formula of the 2nd member of homologous series having general formula C_nH_{2n}.

3. List two functions performed by the testis in human beings.

4. What is meant by "sustainable management"? Why is reuse considered better than recycling?

5. Why are forests considered "biodiversity hot spots"? List two ways in which an individual can contribute effectively to the management of forests and wildlife.

6. List four characteristics of the images formed by plane mirrors.

7. Explain budding in hydra with the help of labelled diagrams only.

8. List any four methods of contraception used by humans. How does their use have a direct effect on the health and prosperity of a family.

9. "We cannot pass on to our progeny the experiences and qualifications earned during our life time". Justify the statement giving reason and examples.

10. (i) Planaria, insects, octopus and vertebrates all have eyes. Can we group eyes of these animals together to establish a common evolutionary origin? Justify your answer. (ii) "Birds have evolved from reptiles" State evidence to prove the statement.

11. What is the difference between the molecules of soaps and detergents, chemically? Explain the cleansing action of soaps.

12. How many groups and periods are there in the modern periodic table? How do the atomic size and metallic character of elements vary as we move : (a) down a group and (b) from left to right in a period

13. To construct a ray diagram we use two rays of light which are so chosen that it is easy to determine their directions after reflection from the mirror. Choose these two rays and state the path of these rays after reflection from a concave mirror. Use these two rays to find the nature and position of the image of an object placed at a distance of 15 cm from a concave mirror of focal length 10 cm.

14. With the help of a labelled diagram, explain why the sun appears reddish at the sun-rise and the sun-set.

15. After the examinations Rakesh with his friends went on a picnic to a nearby park. All friends carried cooked food packed in plastic bags or plastic cans. After eating the food some friends collected the leftover food and plastic bags etc and planned to dispose them off by burning. Rakesh immediately checked them and suggested to segregate the leftover food and peels of fruits from the plastic materials and respectively dispose them off separately in the green and red dustbins placed in the corner of the park.
(a) In your opinion, is burning plastic an ecofriendly method of waste disposal? Why? State the advantage of method suggested by Rakesh.
(b) How can we contribute in maintaining the parks and roads neat and clean?

16. With the help of an example, explain the process of hydrogenation. Mention the essential conditions for the reaction and state the change in physical property with the formation of the product.

17. From the following elements : $_4Be$; $_9F$; $_{19}K$; $_{20}Ca$
(i) Select the element having one electron is the outermost shell.
(ii) two elements of the same group.
Write the formula of and mention the nature of the compound formed by the union of 19K and element X(2, 8, 7).

18. What is DNA copying? State its importance.

19. Explain why carbon forms compounds mainly by covalent bond. Explain in brief two main reasons for carbon forming a large number of compounds. Why does carbon form strong bonds with most other elements ?

20. (a) Write the functions of the following in human female reproductive system :
                    Ovary, oviduct, uterus.
(b) How does the embryo get nourishment inside the mother's body ? Explain in brief.

21. (a) How many pairs of chromosomes are present in human beings? Out of these how many are sex chromosomes ? How many types of sex chromosomes are found in human beings? "

(b) The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it". Draw a flow chart showing determination of sex of a newborn to justify this statement.

22. (a) 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. (b) The absolute refractive indices of two media 'A' and 'B' are 2.0 and 1.5 respectively. If the speed of light in medium 'B' is 2×10^8 m/s, calculate the speed of light in: (i) vacuum, (ii) medium 'A'.

23. "A convex lens can form a magnified erect as well as magnified inverted image of an object placed in from of it." Draw ray diagram to justify this statement stating the position of the object with respect to the lens in each case. An object of height 4 cm is placed at a distance of 20 cm from a concave lens of focal length 10 cm. Use lens formula to determine the position of the image formed.

24. A student is unable to see clearly the words written on the blackboard placed at a distance of approximately 4 m from him. Name the defect of vision the boy is suffering from. Explain the method of correcting this defect. Draw ray diagram for the:
 (i) defect of vision and also
 (ii) for its correction.

SECTION – B

25. Study the following diagram and select the correct statement about the device 'X' :
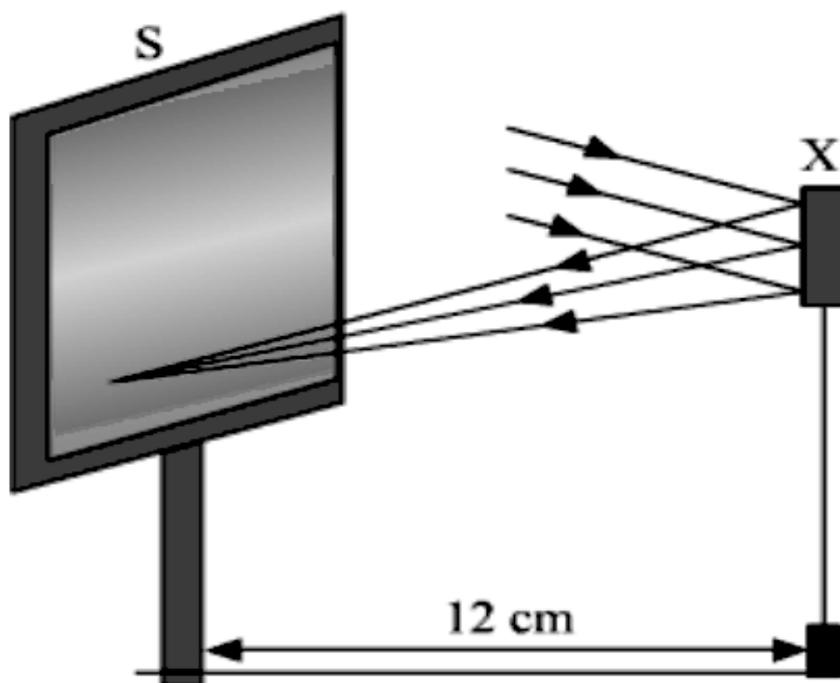
 (a) Device 'X' is a concave mirror of radius of curvature 12 cm
 (b) Device 'X' is a concave mirror of focal length 6 cm
 (c) Device 'X' is a concave mirror of focal length 12 cm
 (d) Device 'X' is a convex of mirror of focal length 12 cm

26. A student has obtained a point image of a distant object using the given convex lens. To find the focal length of the lens he should measure the distance between the :
 (a) lens and the object only
 (b) lens and the screen only
 (c) object and the image only
 (d) lens and the object and also between the object and the image

27. For students P, Q, R and S traced the path of a ray of light passing through a glass slab for an angle of incidence 40° and measured the angle of refraction. The values as measured them were 18°; 22°; 25° and 30° respectively. The student who has performed the experiment methodically is
 (a) P   (b) Q   (c) R   (d) S

28. Four students A, B, C and D reported the following set of organs to be homologous. Who is correct ?
(a) Wings of a bat and a butterfly
(b) Wings of a pigeon and a bat
(c) Wings of a pigeon and a butterfly
(d) Forelimbs of cow, a duck and a lizard

29. A student adds 2 mL of acetic acid to a test tube containing 2 mL of distilled water. He then shakes the test tube well and leaves it to settle for some time. After about 5 minutes he observes that in the test tube there is :
(a) a clear transparent colourless solution
(b) a clear transparent pink solution
(c) a precipitate settling at the bottom of the test tube
(d) a layer of water the layer of acetic acid

30. A student Prepared 20% sodium hydroxide solution in a beaker to study saponification reaction. Some observations related to this are given below :
(I) Sodium hydroxide solution turns red litmus blue
(II) Sodium hydroxide readily dissolves in water
(III) The beaker containing solution appears cold when touched from outside
(IV) The blue litmus paper turns red when dipped into the solution

The correct observations are :
(a) I, II and IV   (b) I, II and III
(c) only III and IV   (d) only I and II

31. After tracing the path of a ray of light through a glass prism a student marked the angle of incidence ($\angle i$), angle of refraction ($\angle r$) angle of emergence ($\angle e$) and the angle of deviation ($\angle D$) as shown in the diagram. The correctly marked angles are :
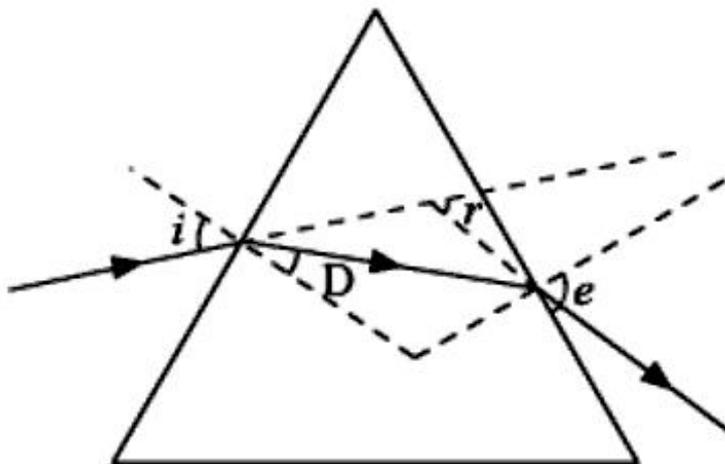
(a) $\angle i$ and $\angle r$ (b) $\angle i$ and $\angle e$
(c) $\angle i$, $\angle e$ and $\angle D$ (d) $\angle i$, $\angle r$ and $\angle e$

32. Hard water is not available for an experiment. Some salts are given below :
(I) Sodium chloride
(II) Sodium sulphate
(III) Calcium chloride
(IV) Calcium sulphate
(V) Potassium chloride
(VI) Magnesium sulphate

Select from the following group of these salts, each member of which may be dissolved in water to make it hard.

(a) I, II, V   (b) I, III, V
(c) III, IV, VI   (d) II, IV, VI

33. A student identified the various parts of an embryo of a gram seed and listed them as given below :
(I) Testa
(II) Plumule
(III) Radicle
(IV) Cotyledon
(V) Tegmen

Out of these the actual parts of the embryo are :

(a) I, II, III   (b) II, III, IV
(c) III, IV, V   (d) II, IV, V

34. List two observations which you make when you add a pinch of sodium hydrogen carbonate to acetic acid in a test tube. Write chemical equation for the reaction that occurs.

35. Name the type of asexual reproduction in which two individuals are formed from a single parent and the parental identity is lost. Draw the initial and the final stages of this type of reproduction. State the event with which this reproduction starts.

36. To find the image-distance for varying object-distances in case of a convex lens, a student obtains on a screen a sharp image of a bright object placed very far from the lens. After that he gradually moves the object towards the lens and each time focuses its image of the screen.
(a) In which direction – towards or away from the lens, does he move the screen to focus the object?
(b) What happens to the size of image – does it increase or decrease?
(c) What happen when he moves the object very close to the lens?

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