

Sample Question Paper
Summative Assessment II 2013-14
Class X
Science

Time 3 hrs

Max.Marks: 90

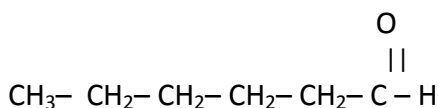
General Instructions

- i) The question paper comprises of **two Sections, A and B**. You are to attempt both sections.
- ii) **All** questions are **compulsory**.
- iii) There is **no overall** choice. However internal choice has been provided in **Five marks** category.
- iv) All questions of **Section –A** and all questions of **Section -B** are to be attempted separately.
- v) Question numbers **1 to 3** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
- vi) Question numbers **4 to 7** in **Section –A** are **two marks** questions. These are to be answered in about **30 words** each.
- vii) Question numbers **8 to 19** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
- viii) Question numbers **20 to 24** in **Section-A** are **five marks** questions. These are to be answered in **70 words** each.
- ix) Question numbers **25 to 42** 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.

SECTION –A

1. In a food chain consisting of grass, frog, bird and insects, where will be the concentration of the harmful chemicals maximum?
2. A small candle 2.5 in size is placed at 27 cm in front of concave mirror of radius of curvature 36 cm. If the candle is moved close to the mirror how will the screen has to be moved?
3. Write the formula of the sulphate of the element with atomic number 13.
4. What is the role of seminal vesicles and prostate gland in Human male reproductive system?
5. Fossil fuels are being increasingly used as source of energy. List reasons for replacing these by alternative sources of energy.
6. What are Isomers? State two properties of carbon which lead to the huge number of carbon compound.
7. Explain the three R's to save the environment with examples.
8. (a) Which two criteria did Mendeleev use to classify the elements in his periodic table?
(b) State Mendeleev's periodic law.
(c) Why is it not possible to give a fixed position to hydrogen in Mendeleev's periodic table?
9. (a) Give the structural difference between saturated and unsaturated hydrocarbons and also give one example of each.

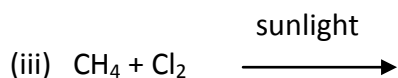
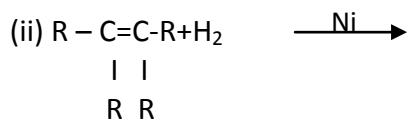
(b) Write IUPAC name of the following compound



- (c) What happens when ethanol is heated with concentrated H_2SO_4 at 443 K? Give the chemical reaction.
10. A) Properties of the element are given below: Where would you locate the following elements in the periodic table.
- A soft metal stored under kerosene oil.
 - An element with variable valency (more than one) stored under water.
 - An element which is tetra valent in organic chemistry.
 - An element which is an inert gas with atomic number 2.
- B) Why does atomic size decrease from left to right in a period and increase down the group?
11. Write the full form of DNA and briefly explain DNA copying and its significance.
12. Why are bacteria and fungi called decomposers? List any two advantages of decomposers to the environment.
13. Draw a neat diagram of human female reproductive system and label the following parts:
- The site of fertilization.
 - The part which is responsible for providing shelter to the growing embryo.
 - The part in which ovum formation takes place.
14. Define the following with one example for each:
- Genetic Drift.
 - Natural selection.
 - Reproductive isolation.
15. A) Give the laws of Refraction of Light.
- B) Two mediums A and B with refractive index 1.33 and 1.50 are given. In which case
- Bending of light is more.
 - Speed of light is more. Justify your answer.
16. A) Define Magnification.
- B) A convex lens of focal length 20 cm produces 3 times magnified real image of an object. Find the position of the object
17. A) Write the differences between real and virtual image
- B) Why convex mirror is used as rear view mirror
18. A student is not able to see clearly the questions written on the black board placed at a distance of 5 m from him.
- Name the defect of vision he is suffering from
 - What are the causes for this defect.
 - With the help of labelled ray diagrams show the defect and how this can be corrected?
19. 'Variation is beneficial to the species but not necessarily for the individual.' Give three reasons to support it.
20. A) Draw a diagram showing germination of pollen on stigma of a flower.
- B) Label pollen grain, male germ cells, pollen tube and female germ cell in the above diagram.
- C) Explain the process of fertilization in plants.

OR

- What are the different methods of asexual mode of reproduction?
 - Explain two methods—Fragmentation and regeneration with proper diagram.
21. A) Explain Mendel's experiment with peas on inheritance of traits considering two visible contrasting characters.
- B) Define the term Evolution. "Evolution cannot be equated with progress". Justify this statement.
22. A) Complete the following reactions.
- (i) $\text{CH}_3\text{COOH} + \text{NaOH} \longrightarrow$



- B) Draw the structures of (i) ethanoic acid (ii) butanone
 C) What are esters? Give one use of ester.

OR

- A) What are soaps? Why do soaps not produce lather in hard water?
 B) Explain the mechanism of cleansing action of soap.
 C) Will a micelle be formed in other solvents like ethanol also? Justify your answer.
23. Image characteristics of mirror and lens are given below.

- A) Complete the table
 B) Draw the ray diagram for any one case

Sl No.	Device	Position of Object	Position of Image	Nature of Image
1	Concave mirror	Beyond C		
2	Convex mirror		Behind the mirror	
3	Concave lens	For any position		
4	Convex lens		Away from 2f	

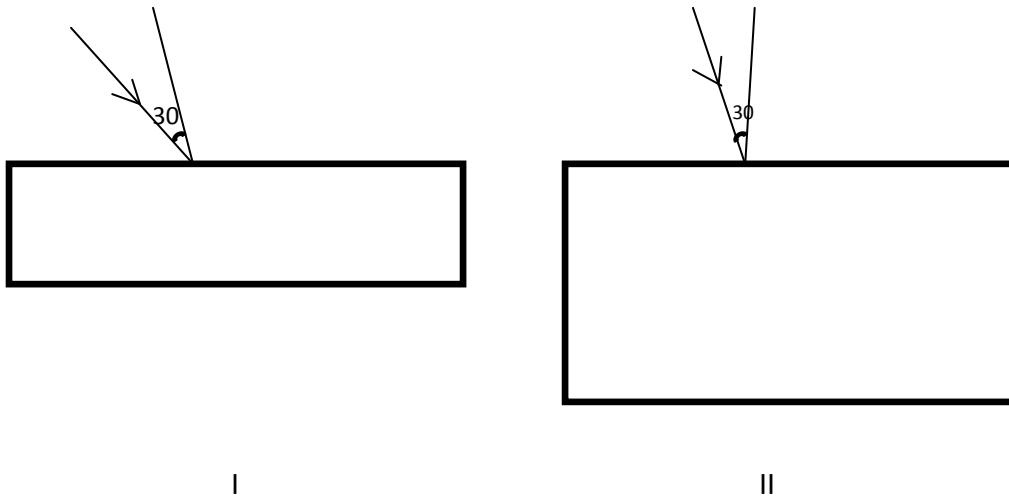
24. Two friends were playing in the garden. Suddenly, Akshay noticed seven colours in the sky. He said to Sudeep "wow, what is this?". Sudeep explained
- A) What is the name of this natural phenomena?
 B) Which device can be used to obtain such a phenomena? Draw the diagram.
 C) If Akshay was facing the colours then where was the sun?
 D) What is the moral value which is shown by Sudeep.

SECTION- B

25. On adding concentrated NaOH solution to a test tube containing phenolphthalein, the colour change observed by a student would be :
- A. Pink to colourless
 B. Pink to blue
 C. colourless to pink
 D. Red to blue
26. Four students observed the colour and odour of acetic acid and its reaction with sodium hydrogencarbonate. They tabulated their observations as given below.

Student	Colour of acetic acid	Odour of acetic acid	Action with sodium hydrogencarbonate
A	Blue	Fruity	Gas evolves without bubbles
B	Colourless	Smell of vinegar	Effervescence
C	Light green	Odourless	Gas evolves without bubbles
D	Light brown	Rotten egg	Effervescence

35. Which part of the embryo develops into shoot?
 a) Plumule b) Radicle c) Cotyledon d) seed leaves
36. Analogy refers to similarity in
 a) morphology b) Origin c) Function d) Size
37. Which of the following lenses would you prefer to use while reading small letters in a book
 a) A convex lens of focal length 50 cm
 b) A concave lens of focal length 50 cm
 c) A convex lens of focal length 5 cm
 d) A concave lens of focal length 5 cm
38. A student carries out the experiment of tracing the path of a ray of light through a rectangular glass slabs for same radius of angle of incidence. The student reported the following observation



- a) Angle of emergence is equal to angle of incidence
 b) Lateral shift is greater for glass slab II
 c) Lateral shift in both cases are equal

The correct observation is

- a) I and II b) I c) I and III

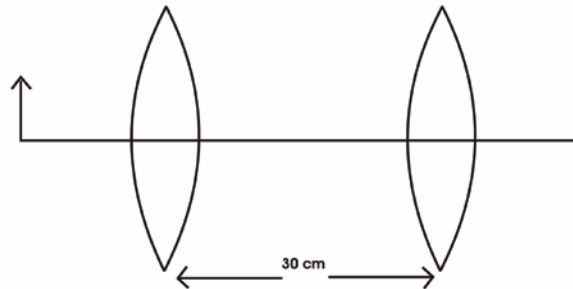
39. A student obtained the sharp image of a candle flame using a concave mirror of radius of curvature 20 cm and tabulated as follows.

Sl No	Object Distance in cm	Image distance in cm
I	15	30
II	60	13
III	20	35

In the above observation

- a. The image will be enlarged for the observation II
 b. The observation III is wrong
 c. Both I and II are correct
 d. I is correct and II is wrong
40. Blue colour of the sky and twinkling of stars are due to
 a) Reflection and Atmospheric refraction of sunlight.
 b) Scattering and Atmospheric refraction of sunlight.
 c) Dispersion and scattering of sunlight.
 d) Atmospheric refraction and scattering of sunlight.

41. Convex lens of focal length 10 cm each is placed as in shown in the diagram. An object is placed at a distance of 20 cm. Image of the first lens will act as the object for the second lens. Then,
- Then the final image will be formed at the principle focus of the second lens.
 - Then the final image will be formed at infinity.
 - Then the final image will be formed at $2f$.
 - Then the final image will be formed between f and $2f$.



42. A student obtained a sharp image of the grills of a window on his 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?
- Move the screen slightly away from the mirror
 - Move the mirror slightly towards the screen
 - Move the screen and the mirror away from the object
 - Move the screen and the mirror towards the object
-

ANSWER KEY
CLASS X
SUMMATIVE ASSESSMENT II
SCIENCE
Code No. 086

1. Bio magnification- concentration of harmful chemicals will be maximum at fourth trophic level- bird. 1
2. The screen has to be moved away from the mirror. 1
3. $Al_2(SO_4)_3$ 1
4. Seminal vesicles are a pair of thin walled muscular sac which secretes fluid for nourishment of Sperms. Prostate glands-nourishment and transportation of sperm. 1+1
5. Sustainable management of natural resources is necessary so that it lasts for a longer period and future generations can benefit from it. 1+1
- Any example for alternative sources of energy. 1+1
6. Those compounds which have same molecular formula but different structural formulae are called Isomers. Catenation, tetravalency. 1 + 1
7. Reduce, recycle, reuse. Explain giving examples. 2
- 8.a) (i)Increasing order atomic mass as physical properties and similarities in chemical properties of Elements. (ii)The formulae and nature of hydrides and oxides formed by elements was treated as basic chemical properties for its classification.
- b. Periodic law.
- c. It is because it resembles both with alkali metals as well as halogens. 1+1+1
9. A. Saturated hydrocarbons- single bond- general formula C_nH_{2n+2} , Alkane Unsaturated hydrocarbons- double or triple bond- Alkene- C_nH_{2n} , Alkyne- C_nH_{2n-2} $\frac{1}{2}+\frac{1}{2}$
- B. Hexanal 1
- C. $CH_3 - CH_2OH \xrightarrow[H_2SO_4]{Hot\ conc} CH_2=CH_2+H_2O$ 1
10. A. (a) Sodium or potassium. (b) Phosphorus (c) Carbon (d) helium 1
- B. (i) Atomic size decreases from left to right because one proton and one electron is being added therefore force of attraction between valence electron and nucleus increases. 1
- (ii) Number of shells keep on increasing therefore distance between nucleus and valence electron increases, hence atomic size increases down the group. 1
11. DNA- deoxy riboneuclic acid $\frac{1}{2}$

DNA copying is called DNA replication. In this process one copy each of replicated DNA will be passed to daughter cells.

1

Variations may be introduced during DNA copying. This inbuilt tendency for variation during reproduction form the basis of evolution.

1 1/2

12. Bacteria and fungi break down the dead and waste products of organisms. They breakdown the complex organic substances into simple inorganic substances that go into the soil and used by the plants.

Any two advantages

2

13. Diagram

1 1/2

A. Fallopian tube or oviduct B. Uterus C. ovary

1/2 + 1/2 + 1/2

14. Definition

1/2 + 1/2 + 1/2

Example for each

1/2 + 1/2 + 1/2

15 . a) Snell's law and other law-

2

b)(i) bending is more in A – refracted ray bends towards normal when it moves from rarer to denser medium
1/2

(ii) Speed of light is more in rarer medium, that is in A

1/2

16. it is the ratio of height of image to height of object

1

$1/v - 1/u = 1/f$

1/2

$m = 3, \quad v/u = 3, \quad v = 3u$

1/2

ie $1/3u - 1/u = 1/20$

1/2

$u = 13.33 \text{ cm}$

1/2

17a) image can be obtained on a screen –real

1/2

image can not be obtained on a screen –virtual

1/2

Image is of the same size as the object -real

1/2

Image is not of the same size as the object –virtual

1/2

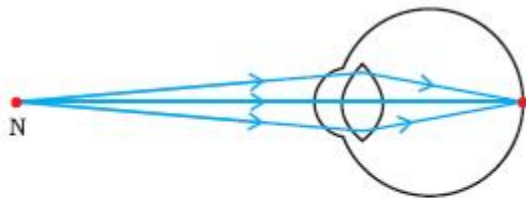
b) They have a wider view as they are curved upwards hence it has got larger area –

1

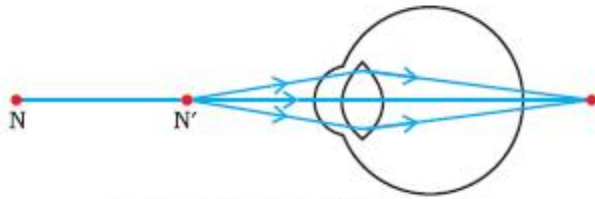
18. a) hypermetropia or far sightedness

1/2

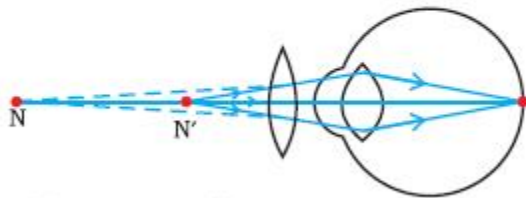
b) This defect arises because – i) focal length of the eye lens is long & ii) The eye ball has become too small –



(a) Near point of a Hypermetropic eye



(b) Hypermetropic eye



(c) Correction for Hypermetropic eye

1

1 marks (only 2nd diagram is required)

Corrected by using a convex lens of appropriate power

½

19. 1. It brings in the resistivity wherever required (survival)

2. It is responsible for acclimatization in varied environmental conditions (adjustment)

3. It also makes on species different from the other (diversity)

1+1+1

20. Diagram

2

Labeling

1

Process of fertilization (Page 135 NCERT Text book)

2

OR

Explanation and examples- Methods of asexual mode of reproduction(Page No.131 &132 NCERT book.)

3

Fragmentation ,regeneration – explanation with proper diagram

1+1

21. A.Mendel took pea plants with two different characteristics such as a tall plant with round seeds and short plant with wrinkled seeds

F₁ progeny are all tall with round seeds. Thus tallness and round seeds are dominant traits.

F₂ Progeny are tall plants with round seeds and some short plants with wrinkled seeds.

But some F₂progeny showed new mixtures like tall having wrinkled seeds and short having round seeds

Therefore tall and short trait and round and wrinkled seed trait are independently inherited.

3

B. Definition

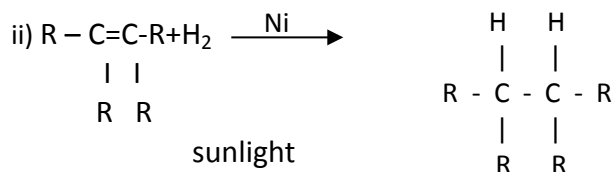
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Evolution can not be equated to progress from lower forms to higher form. It seems to have given rise to more complex body designs even while the simpler body designs continue to flourish. Eg. human beings have not evolved from chimpanzees but both have common ancestor

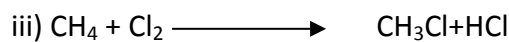
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1



1



1

B) Structure of ethanoic acid and butanone

$\frac{1}{2} + \frac{1}{2}$

C) Esters are pleasant fruit-smelling compounds. They are formed by the reaction of carboxylic acids and alcohols. They are used in making perfumes. (any other use)

$\frac{1}{2} + \frac{1}{2}$

OR

A) Soap is a sodium or potassium salt of fatty acid. It does not give lather in hard water because hard water contains Ca^{2+} and Mg^{2+} ions react with soap to form calcium and magnesium salts of fatty acids which are insoluble in water.

1+1

B) Cleansing action of soap- page 75 NCERT text book

2

C) A soap micelle is not formed in other solvents like ethanol. It is because soap molecule will not ionize in ethanol and no micelle formation can take place.

1

23..A 4

Sl No.	Device	Position of Object	Position of Image	Nature of Image
1	Concave mirror	Beyond C	Between F & C (1/2)	Real and inverted (1/2)
2	Convex mirror	At infinity (1/2)	Behind the mirror	Virtual and erect (1/2)
3	Concave lens	For any position	Between focus and optical centre (1/2)	Virtual and erect (1/2)
4	Convex lens	Between f and 2f (1/2)	Away from 2f	Real & inverted (1/2)

B. Any ray diagram

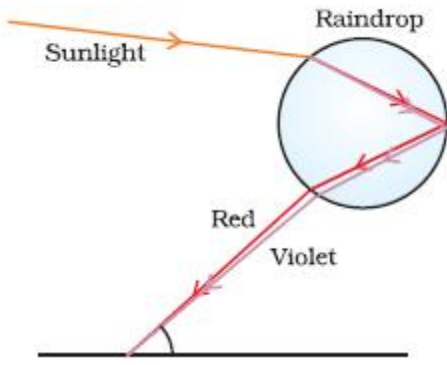
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24. A. rainbow

$\frac{1}{2}$

B. prism

$\frac{1}{2}$



2

C. rainbow is always forming opposite to sun -

1

D. any one moral value -

1

MCQ

25. (C)

26. (B)

27. (A)

28. (B)

29. (D)

30. (C)

31. (D)

32. (C)

33. (D)

34. (B)

35. (A)

36. (C)

37. (A)

38. (C)

39. (D)

40. (B)

41. (C)

42. (B)