

CBSE QUESTION PAPER 2014

SCIENCE Class X

Time : 3½ hrs.

M.M. : 90

General Instructions :

- The question paper comprises of **two Sections, A and B**. You are to attempt both the sections.
- **All** questions are **compulsory**.
- There is no choice in any of the questions.
- **All** questions of **Section-A** and **all** questions of **Section-B** are to be attempted separately.
- Question numbers **1 to 3** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
- Question numbers **4 to 7** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
- Question numbers **8 to 19** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
- Question numbers **20 to 24** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
- 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

- Q.1** Predict the maximum number of valence electrons possible for atoms in first period of periodic table. (1)
- Q.2** In a beetle population, the number of green beetles is more than blue and red beetles. Give a reason behind this situation. (1)
- Q.3** Name the source of energy from which an ecosystem gets energy. (1)
- Q.4** Recycling is considered as a welcome practice to deal with the environmental problems. Justify this statement with two arguments. (2)
- Q.5** What is Chipko Movement ? Why should we conserve forest ? (2)
- Q.6** A converging lens has a focal length of 250 mm. Calculate its power and express it according to sign convention. (2)
- Q.7** For plants like banana and oranges that have lost their capacity to produce seeds a different ways are used for increasing their number. Explain the method used for such plants. (2)
- Q.8** Write structure of ethyl alcohol (ethanol) and identify its functional group. Give chemical equation of its reaction with (3)
- (i) sodium (ii) excess conc H_2SO_4 at 443 K
- Q.9** The atomic number of Na and Mg is 11 and 12 respectively and they belong to the same period. (3)
- (a) Which one would have smaller atomic size ?
- (b) Which one would be more electropositive ?
- (c) To which group would each one belong ?

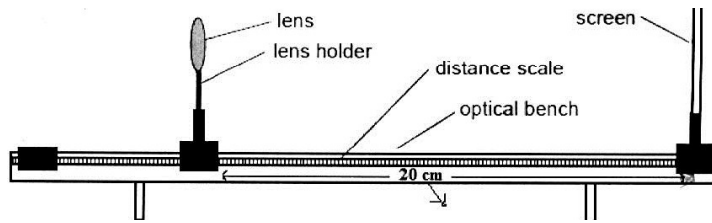
- Q.10** Explain how the tendency to gain electron changes from left to right across the period. (3)
- Q.11** Atomic no. of an element is 16. Write its configuration give the number of valence electrons. Find valency. (3)
- Q.12** “Fossils are helpful in developing evolutionary relationships”. (3)
- Give a suitable reason in support of this statement.
 - The dominant trait masks the effect of recessive trait and there is expression of only one trait. Explain briefly.
- Q.13** Explain any three methods that can be used for avoiding pregnancy. (3)
- Q.14** In an experiment, Mendel obtained 1014 plants, out of which 787 were having round seeds and 227 had wrinkled seeds in F_2 generation : (3)
- What was the approximate ratio obtained in F_2 ?
 - Under which law do you find this ratio ?
 - Why is this law so called ?
- Q.15** Variation is useful for the survival of species over time. But the variants have unequal chances of survival. Explain this statements (3)
- Q.16** Draw a neat diagram of eye and label on it – ciliary muscle, cornea, retina , iris. (3)
- Q.17** (a) Explain how are we able to see nearby as well as the distant objects clearly. (3)
- Why a rainbow is seen in the sky only after rainfall ?
- Q.18** It is desired to obtain an erect image of an object using a concave mirror of focal length 20 cm. (3)
- Mention the range of distance of the object from the mirror for which this is possible.
 - Will the image thus obtained be bigger or smaller than the object ?
 - Draw a ray diagram to show the image formation in this case.
- Q.19** Mineral riches of the crust are either extracted or used. For every ton of metal a large amount of slag is discarded which damages the environment. Explain the kind of management that we need in this regard. Give any two values attained from this management system. (3)
- Q.20** Write the general formula of alkane and alkyne. Draw the electron dot structure of ethene and ethyne and write their molecular formula with structural formula. (5)
- Q.21** (a) Identify the type of method of reproduction as used by unicellular organisms. Define the identified method. (5)
- How can the above method be classified further ?
 - Differentiate between the process of reproduction as seen in *Amoeba* and *Leishmania*.
- Q.22** (a) What is speciation ? (5)
- What are the factors that lead to speciation ?

- Q.23** Draw a diagram to show the formation of a distant object as well as near by object by a myopic eye. With the help of a diagrams show how such eye defect can be rectified ? State two reasons due to which this eye defect can be caused. (5)
- Q.24** (a) A converging lens forms a real and inverted image of an object at a distance of 100 cm from it. Where should an object be placed in front of the lens, so that the size of the image is twice the size of the object? Also, calculate the power of a lens. (5)
- (b) State laws of refraction.

SECTION – B

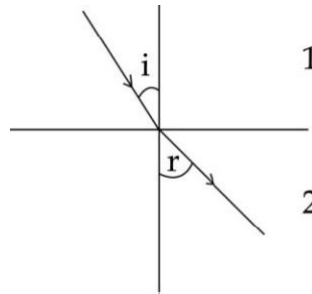
- Q.25** When CO_2 evolved during the reaction between acetic and sodium bicarbonate is passed through lime water, it first turns : (1)
- (a) Milky (b) Dense white (c) Yellow (d) Green
- Q.26** The glacial acetic acid is : (1)
- (a) 3 to 10% Acetic Acid (b) 30 to 100% Acetic Acid
- (c) 40 to 100% Acetic Acid (d) 100% Acetic Acid
- Q.27** During saponification the contents kepts in boiling tube are : (1)
- (a) natural oil, phenol and sodium hydroxide.
- (b) natural oil, sodium hydroxide and ethanol.
- (c) hot oil.
- (d) oil, ethanol and sodium hydroxide.
- Q.28** The use of alcohol in preparation of soap is : (1)
- (a) as solvent (b) as oxidising agent
- (c) as hydrolysing agent (d) as coolant
- Q.29** Name of the salt from the following which makes the water hard is : (1)
- (a) calcium hydrogen carbonate (b) potassium chloride
- (c) sodium carbonate (d) sodium bicarbonate
- Q.30** To find the focal length of a concave mirror, four students Ram, Shamim, Kamla and Ruksana obtained the image of the window grill on a wall. They measured the distance as given below : (1)
- Ram - between window grill and the wall only
- Shamim - between window girl and the mirror only
- Kamla - between mirror and wall only
- Ruksana - between window grill and wall and also between the mirror and the wall
- correct focal length will be obtained by the student :
- (a) Ram (b) Shamim
- (c) Kamla (d) Ruksana

- Q.31** During an experiment to find out the focal length of convex lens a student got a clear image of a test object at a far distance on the screen but he did some mistake in making measurements is shown below in diagram. The mistake he did while finding the focal length is : (1)



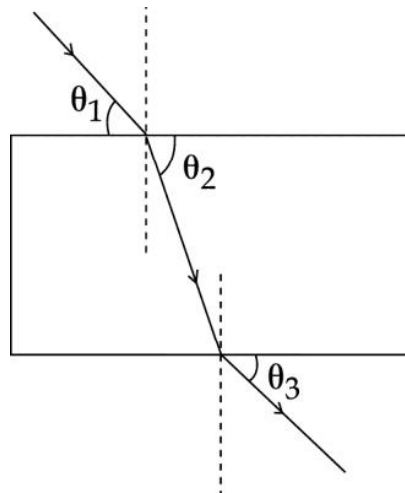
- (a) Distance of screen from object was not measured.
- (b) Object distance was not measured.
- (c) lens was not adjusted properly.
- (d) Distance of image was not measured from the optical center of the lens.

- Q.32** Refracted ray of an incident ray of light is shown in the given figure. The medium 2 is : (1)



- (a) Denser
- (b) Rarer
- (c) May be denser or rarer
- (d) Neither denser nor rarer

- Q.33** A student, while doing the experiment, on the tracing the path of a ray of light passing through a rectangular glass slab, measured the three angles marked as θ_1 , θ_2 and θ_3 in the figure. His measurements could be correct if he were to find : (1)



- (a) $\theta_1 < \theta_2 < \theta_3$
- (b) $\theta_1 < \theta_2$ but $\theta_1 = \theta_3$
- (c) $\theta_1 < \theta_3 < \theta_2$
- (d) $\theta_1 < \theta_2$ but $\theta_2 = \theta_3$

Q.34 Binary fission and budding are examples of (1)

- (a) Sexual reproduction (b) Vegetative propagation
(c) Asexual reproduction (d) Fission

Q.35 The steps involved in observing a slide under a microscope are given below : (1)

- (i) Focus the object under high power of the microscope.
(ii) Place the slide on the stage of the microscope.
(iii) Arrange the mirror to reflect maximum light to the slide.
(iv) Focus the object under low power of the microscope.

The proper sequence of step is :

- (a) (iv), (iii), (ii), (i) (b) (iii), (i), (ii), (iv)
(c) (i), (iii), (ii), (iv) (d) (ii), (iii), (iv), (i)

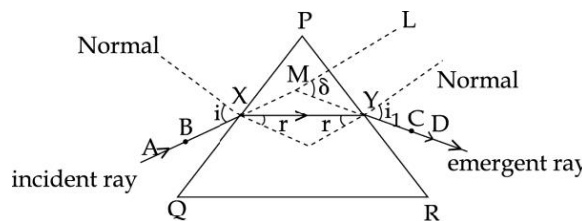
Q.36 While doing the experiment of tracing the path of ray of light through a triangular glass prism a student takes precautions : (1)

- (A) position of prism should be fixed while doing experiment.
(B) angle of incidence should not be less than 30°
(C) two pins taken as object should be placed on incident ray at proper distance.
(D) locate the position of image keeping both eyes open.

One of the precautions is not appropriate, it is

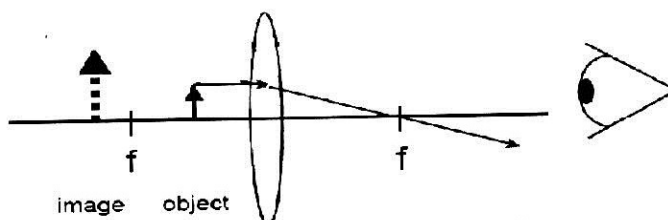
- (a) (A) (b) (B)
(c) (C) (d) (D)

Q.37 In the given figure showing path of ray of light on passing through a glass prism, the angle YML represent: (1)



- (a) angle of prism (b) angle of deviation
(c) angle of incidence (d) angle of refraction

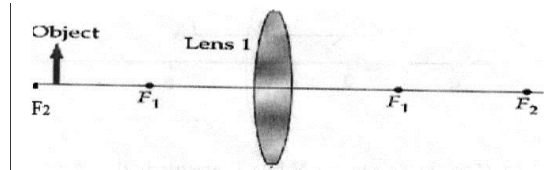
Q.38 While completing the given ray diagram, four student gave their opinion : for finding correct position of image as : (1)



- (A) the second ray may be taken as the one passing through the optical center of lens.
- (B) second ray may be taken as the one passing through the focus of the lens.
- (C) second ray may be taken as the one passing through the top edge of the lens.
- (D) second ray may be taken as the one passing through the lower edge of the lens.

(a) A, B (b) C, D (c) A, C (d) B, D

Q.39 For the given setup of an experiment the nature and position of the image of object will be (1)



- (a) Real and diminished (b) Real and magnified
- (c) Virtual and diminished (d) Virtual and enlarged

Q.40 The wings of bat and wings of insect are analogous as : (1)

- (a) both are structurally similar but dissimilar in function
- (b) both are modifications of forelimbs
- (c) both are structurally dissimilar but functionally similar
- (d) both are modifications of hindlimbs

Q.41 The similarity of bone structure in the forelimbs of most vertebrates is an example of (1)

- (a) analogy (b) homology
- (c) diversity (d) variations

Q.42 The area between the radicle and the place of origin of cotyledon is termed as : (1)

- (a) Hypocotyl (b) Radicle
- (c) Plumule (d) Micropyle