Deeksha - CBSE-10

Subject	Topic	Test – KA	Date
Science	Model Paper – 2	CBSE – 10 – S **CBSE1020170218**	18th Feb 2016

Max. Marks: 90 **Duration: 3 Hours**

General Instructions

This paper is formatted as follows:

1. **The question paper contains 2 sections A and B, in which section B contains the questions based on the practical performed.**

2. **All the questions are compulsory.**

3. **Section A: (consists of Descriptive type of Questions only)**
   - *Questions 1 to 3 carries 1 mark per question. Answer in one word or in one sentence.*
   - *Questions 4 to 6 carries 2 marks per question. Answer in about thirty words.*
   - *Questions 7 to 18 carries 3 marks per question. Answer in fifty words.*
   - *Questions 19 to 24 carries 5 marks per question. Answer in about seventy words.*

4. **Section B: (consists of both Objective & Descriptive type of Questions)**
   - *Questions 25 to 33 carries 1 mark per question & are objective types of questions.*
   - *Questions 34 to 36 carries 2 marks per question & are descriptive types of questions.*

5. **Answers without relevant diagram / figure / circuit wherever necessary will not carry any marks.**

6. **Numerical problems solved without writing the relevant formulae carry no marks.**

7. **Use of calculators is prohibited.**

8. **There is no overall choice.**

9. **No clarification will be entertained during the examination. Doubts in the paper can be reported to the coordinator after the exam.**

All the best!!

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Section – A

Answer the questions in one word or in one sentence. Each correct answer carries 1 mark.

3 x 1 = 3

1. Select saturated hydrocarbons from the following:

   C_3H_6; C_5H_{10}; C_4H_{10}; C_6H_{14}; C_2H_4

2. List two natural ecosystems.
3. We often use the word environment. What does it mean?

Answer the questions in about thirty words. Each correct answer carries 2 marks.

3 x 2 = 6

4. Explain giving example where active involvement of local people lead to efficient management of forest.
5. The refractive indices of glass and water with respect to air are $\frac{3}{2}$ and $\frac{4}{3}$, respectively. If speed of light in glass is 2×10^8 m/s ,find the speed of light in water.
6. List four measures that can be taken to conserve forests.

Answer the questions in fifty words. Each correct answer carries 3 marks. 12 x 3 = 36

7. When ethanol reacts with ethanoic acid in the presence of cons. H_2SO_4, a substance with fruity smell is produced. Answer the following:

   (i) State the class of compounds to which the fruity smelling compounds belong. Write the chemical equation for the reaction and write the chemical name of the product formed.

   (ii) State the role of cons. H_2SO_4 in the reaction.

8. What are the functions of testes in the human male reproductive system? Why are these located outside the abdominal cavity? What is responsible for bringing about changes in appearance seen in boys at the time of puberty?
9. An element 'X' belong to 3rd period and group 13 of the Modern Periodic Table.

   (a) Determine the number of valence electrons and the valences of 'X'.

   (b) What is the molecular formula of the compound formed when 'X' reacts with an element 'Y'? atomic number = 18 .

   (c) Write the name and formula of the compound formed when 'X' combines with chlorine.

10. The image formed by a spherical mirror is real, inverted and is of magnification – 2. If the image is at a distance of 30 cm from the mirror, where is the object placed? Find the focal length of the mirror. List two characteristics of the image formed if the object is moved 10 cm towards the mirror.

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11. What happens when:
    (a) Planaria gets cut into two pieces?
    (b) A mature spirogyra filament attains considerable length?
    (c) On maturation sporangia burst?
12. "We cannot pass on to our progeny the experiences and qualifications earned during our life time". Justify the statement giving reason and examples.
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 $15cm$ form a concave mirror of focal length $10cm$.
14. What is the difference between the molecules of soaps and detergents, chemically? Explain the cleansing action of soaps.
15. What is speciation? List four factors responsible for speciation.
16. Two elements 'P' and 'Q' belong to the same period of the modern periodic table and are in Group-1 and Group-2 respectively. Compare their following characteristics in tabular form:
    (a) The number of electrons in their atoms
    (b) The sizes of their atoms
    (c) Their metallic characters
    (d) Their tendencies to lose electrons
    (e) The formula of their oxides
    (f) The formula of their chlorides
17. If the image formed by a 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 ray diagram to justify your answer. Where and why do we generally use this type of mirror?
18. (a) State the laws of refraction of light. Explain the term absolute refractive index of a medium and write an expression to relate 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 $2\times10^8 m/s$ calculate the speed of light in:
    (i) vacuum, (ii) medium 'A'.

Answer the questions in about seventy words. Each correct answer carries 5 marks.

6 x 5 = 30

19. (a) Write the function of each of the following parts of the human eye:
    Cornea: iris: crystalline lens; caliary muscles

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(b) Millions of people in the developing countries of the world are suffering from cornel corneal blindness. These persons can be cured by replacing the defective cornea with the cornea of a donated eye. A charitable society of your city has organised a campaign in your neighborhood in order to create awareness about this fact. If you are asked to participate in this mission, how would you contribute in this noble cause?

(i) State the objective of organising such campaigns.

(ii) List two arguments which you would give to motivate the people to donate their eyes after death.

(iii) List two values which are developed in the persons who actively participate and contribute in such programs.

20. A carbon compound 'P', on heating with excess conc. H_2SO_4 ,forms another carbon compound 'Q' , which, on addition of hydrogen in the presene of nickel catalyst, forms a saturated carbon compound 'R'. One molecule of 'R', on combustion, forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved.
21. Explain why carbon forms compounds mainly by covalent bond. Explain in brief two main reasons for carbons forming a large number of compounds. Why does carbon form strong bonds with most other elements?
22. What is biodiversity? What in the importance of forest as a resource?
23. Write the importance of ciliary muscles in the human eye. Name the defect of vision that arises due to gradual weakening of the ciliary muscles in old age. What type of lenses are required by the persons suffering from this defect to see the objects clearly?

    Akshay, sitting in the last row in his class, could not see clearly the words written one the blackboard. When the teacher noticed it, he announced if any student sitting in the front row could volunteer to exchange his seat with Akshay. Salman immediately agreed to exchange his seat with Akshay. He could now see the words written on the blackboard clearly. The teacher thought it fit to send the message to Akshay's parents advising them to get his eyesight checked.

    In the context of the above event, answer the following questions:

    (a) Which defect of vision is Akshay suffering from? Which type of lens is used to correct this defect?

    (b) State the values displayed by the teacher and Salman.

    (c) In your opinion, in what way can Akshay express his gratitude towards the teacher and Salman?
24. 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?

    "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 new born to justify this statement.

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Section – B

Answer all the questions. Each correct answer carries 1 mark. 9 x 1 = 9

25. Consider the following comments about saponification reactions:

(I) Heat is evolved in these reactions.

(II) For quick precipitation of soap, sodium chloride is added to the reaction mixtrues.

(III) Saponification reactions are a special kind of neutralisation reaction.

(IV) Soaps are basic salts of long-chain fatty acids.

The correct comments are

(a) I, II and III (b) II, III and IV (c) I, II and IV (d) Only I and IV

26. A student has to perform the experiment "To identify the different parts of an embryo of a dicot seed". Select from the following an appropriate group of seeds:

(a) Pea, gram, wheat (b) Red kidney bean, pea, maize, gram

(c) Maize, wheat, red kidney bean (d) Red kidney bean, pea, gram

27. Under which of the following conditions, a convex lens forms an image larger than the actual object

(a) When object is kept at distance equal to its radius of curvature

(b) When the object is kept at a distance equal to its focal length

(c)When the object is kept at a distance greater than its radius of curvature

(d) When the object is kept at a distance less than its focal length

28. For preparing soap in the laboratory, we require an oil and a base. Which of the following combinations of an oil and a base would be best suited for the preparation of soap?

(a) Caster oil and calcium hydroxide (b) turpentine oil and sodium hydroxide

(c) Caster oil and sodium hydroxide (d) Mustard oil and calcium hydroxide

29. In the neighbourhood of your school, hard water require for an experiment is not available. From the following groups of salts available in your school, select a group of salts, each member of which, if dissolved in distilled water, will make it hard:

(a) Sodium chloride, calcium chloride (b) Potassium chloride, sodium chloride

(c) Sodium chloride, magnesium chloride (d) Calcium chloride, magnesium chloride

30. A student is testing water to know which is best for cleansing purposes with soaps. He would find that the cleansing action of soaps is best when he uses water obtained from

(a) rain (b) tap (c) hand pump (d) pond

31. Four 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

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32. A student takes about 4 mL of distilled water in four test tubes marked P, Q, R and S. He then dissolves in each test tube an equal amount of one salt in one test tube, namely sodium sulphate in Q, calcium sulphate in R and magnesium sulphate in S. After that he adds an equal amount of soap solution in each test tube. On shaking each of these test tubes well, he observes a good amount of lather (foam) in the test tubes marked

    (a) P and Q (b) Q and R (c) P, Q and S (d) P,R and S

33. 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 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

Answer all the questions. Each correct answer carries 2 marks. 3 x 2 = 6

34. An object of height 2 2.5cm is placed at a distance of 15cm from the optical centre 'O' of a convex lens of focal length 10 cm. Draw a ray diagram to find the positon and size of the image formed. Mark the optical centre 'O', principal focus F and height of the image on the diagram.

35. In which asexual reproduction 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 to justify your Ans. Write the event which this process starts.

36. 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.