

10th Class Exam 2018 SAMPLE PAPER Solved -1

Time Allowed: 3 hours

Subject: Science

Maximum

marks: 80

General Instructions

- (1) Question numbers 1 and 2 in Section-A are one mark question. They are to be answered in one word or in one sentence.
- (2) Question numbers 3 to 5 in Section - A are two marks questions. These are to be answered in 30 words each.
- (3) Question numbers 6 to 15 in Section - A are three marks questions. These are to be answered in about 50 words each.
- (4) Question numbers 16 to 21 in Section - A are 5 marks questions. These are to be answered in 70 words each.
- (5) Question numbers 22 to 27 in Section - B are based on practical skills. Each question is a two marks question. These are to be answered in brief.
- (6) There is no overall choice. However, there is an internal choice in two questions of three marks each and one question of five marks. SECTION – A

1. What does presence of coliform in water indicate? 1
2. Name the scientist who proposed the theory of natural selection? 1
3. Why should a magnesium ribbon be cleaned before burning in air? 2
4. The sky appears black when viewed from the surface of moon but blue from the Earth. Explain why? 2
5. How do you support the statement that 'Pancreas are the overall controller of the blood glucose level'? 2
6. 2g 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.

Or

How does oxidation affect the metals and fats? What are these processes called? How can it be prevented? 3

7. A milkman adds a very small amount of baking soda to fresh milk.
 - (a) Why does he shift the pH of the fresh milk from 6 to slightly alkaline?
 - (b) Why does this milk take a long time to set as curd? 3
8. An element X has atomic number 20. Stating reason answer each of the following questions:
 - (a) Is 'X' a metal or non-metal?
 - (b) Will its atomic radius be larger or smaller than that of potassium with atomic number 19?

- (c) Write the formula of its oxide. 3
9. What is solenoid? Draw the field lines of magnetic field produced on passing current through and around a current carrying solenoid? 3
10. What are magnetic field lines? Justify the following statements:
- a) Two magnetic field lines never intersect each other.
- b) Magnetic field lines are closed curves.
11. Which lens is used for the correction of hypermetropia. The near point of a hypermetropic eye is 1m. What is the power of the lens required to correct this defect? 3
12. Charles Darwin set on a historic voyage in H.M.S. Beagle ship to Galapagos Islands and later gave important theory of evolution.
- a) Name the theory of evolution given by Charles Darwin.
- b) Name the book written by him connected to this theory.
- c) What is meant by 'Artificial Selection'? 3
13. Mention three limitations of harnessing wind energy on a large scale. 3
14. Draw the well labeled structure of a neuron and explain its function. 3
15. 'Damage to ozone layer is a cause of concern'. Justify this statement.
- Suggest any two ways to limit this change? 3
16. The students were told in the class that reproduction is the process by which organisms increase their population and population explosion is a cause of concern for us. A student wanted to know more about the reproductive health. Therefore, the teacher also explained in the class about the diseases that can be transmitted, if proper care is not taken.
- a) Why is population explosion a cause of concern for all of us?
- b) Name two diseases that can be sexually transmitted?
- c) State one value each displayed by the student and his teacher.
- d) Why do you think that the students need to be updated with this kind of information? 5
17. (a) Draw a well labeled diagram of human digestive system. Label stomach, small intestine, pancreas and liver on
- it. (b) State the role of liver and pancreas in it. Or
- a) Draw a well labeled diagram of Human heart? Label the four chambers, pulmonary artery and dorsal aorta in it.
- b) Draw a schematic diagram to show the path of circulation of blood in it. 5
18. (a) State the relation between object distance, image distance and focal length of a spherical mirror.
- (b) Draw a ray diagram to show the image formed by a concave mirror when an object is placed between pole and focus of the mirror
- (c) A concave mirror of focal length 15cm forms an image of an object kept at a distance of 10cm from the mirror. Find the position, nature and size of the image formed by it. 5
19. Explain the following.

- (a) Tungsten is used almost exclusively for filament of electric lamps?
- (b) The conductors of electric heating devices, such as bread-toasters and electric irons, are made of an alloy rather than a pure metal?
- (c) The series arrangement is not used for domestic circuits.
- (d) How does the resistance of a wire vary with its area of cross-section?
- (e) Copper and aluminium wires are usually employed for electricity transmission. Give reason. 5

20. A metal M is stored under kerosene. When a small piece of it is left open in air, it catches fire. When the product is dissolved in water, it turns red litmus to blue. 5

- a) Name the metal M(b) Write the chemical equations for the reaction when it is exposed to air and when the product is dissolved in water.
- c) Explain the process by which the metal is obtained from its molten chloride.

21. An organic compound A of molecular formula C_2H_6O on heating with excess of conc. H_2SO_4 gives compound B of molecular formula C_2H_4 . Compound B on addition reaction with Hydrogen gives compound C of molecular formula C_2H_6 .

- a) Name A, B, C.
- b) Write the chemical equation for the conversion of A to B and B to C.
- c) What is the role of conc. H_2SO_4 in the above reaction? 5

SECTION- B (2marks each)

- 22. Draw a diagram of stomata showing guard cells. What is the role of guard cells?
- 23. When a student added zinc granules to dil. HCl acid, a colorless and odourless gas was evolved, which was then tested with a burning matchstick; What would be observed and why?
- 24. Draw a path of ray of light passing through a glass prism. Label angle of incidence and angle of deviation in the ray diagram.
- 25. In a voltmeter there are 20 divisions between 0 and 1 mark. Calculate the least count of the voltmeter.
- 26. Why safranin and glycerine are used to prepare the temporary mount of a leaf peel to show stomata?
- 27. Draw a schematic diagram of a circuit consisting of a battery of three cells of 2 volt each, a 5Ω Resistor, 8Ω resistor and 12Ω resistor and a plug key all connected in series. Also calculate the total Resistance of the circuit.

ANSWER KEY Pre-board-II (2017-18) Science Class – X

Time allowed: 03 Hours

Maximum Marks: 80

1. Presence of coliform in water is an indicator of contamination of water source by disease causing microbes indicating faecal pollution.
2. Charles Robert Darwin
3. The layer of MgO formed on its surface is stable enough and prevents its further reaction with oxygen; so it needs to be removed before burning.
4. Because there is no atmosphere on moon. Whereas, on the Earth the atmosphere present on it causes scattering of light and blue colour having the lowest wavelength scatters the most.
5. Pancreas releases Insulin which lowers blood glucose levels. It also releases glucagon which increases blood glucose. Therefore, Pancreas are the overall
6. a) Green colour of FeSO_4 disappears ; reddish brown Fe_2O_3 is formed; Smell of burning S.
b) Decomposition Rx.
c) $2\text{FeSO}_4 \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$
or
Oxidation of metals causes them to lose their luster. – CORROSION
Prevention: Any two methods.
Oxidation of fats leads to unpleasant smell and taste. – RANCIDITY.
Prevention: air tight containers and packaging with nitrogen gas.
7. a) To increase the shelf life of milk.
b) Because the lactic acid being formed has to neutralize the alkali present in it.
8. X (20) = 2,8,8,2
a) X is a metal because it has 2 electrons in its outermost shell and thus is electropositive.
b) X has smaller at. radius (suitable reason) c) XO
9. An insulated copper wire wound on a cylindrical cardboard or plastic tube such that its length is greater than its diameter is called a solenoid.
Proper diagram
10. It is defined as the path along which the unit North pole (imaginary) tends to move in a magnetic field if free to do so.
a) If two magnetic field lines intersect, then two drawn tangents at the point of intersection indicates that there will be two different directions of the same magnetic field which is not possible.
b) Magnetic field lines are closed continuous curves. They emerge out from the N-pole and go into the S-pole. Inside the magnet, they move from S-pole to N-pole.

11. Convex lens.

$$x' = 1\text{m} = 100\text{cm}; d = 25\text{cm}$$

$$f = \frac{x' d}{x' - d} = \frac{100 \times 25}{100 - 25} = 33.3\text{cm}$$

$$P = \frac{100}{f} = \frac{100}{33.3} = 3\text{D}$$

12. Theory of Natural Selection; The Origin of Species; Artificial Selection is the process by which man selects traits useful to him for improving the qualities of domesticated plants and animals.

13. Any three limitations.

14. Correct diagram.

Neuron is the structural and functional unit of the nervous system. It receives, conducts and transmit impulses.

15. Ozone layer prevents harmful UV radiations to enter into the earth's atmosphere and hence prevents us from its harmful effects. Thus, its depletion is a cause of concern for us.

Any two preventive measures

16. a) Brief explanation

b) Syphilis, Gonorrhoea, AIDS, Trichomoniasis (any 2)

c) any relevant value (for each)

d) Brief explanation

17. Diagram with given labeling

a) Liver: secretes bile juice that helps in emulsification of fats.

b) Pancreas: Its secretion provides acidic medium to the food in small intestine.

Pancreatic amylase causes breakdown of starch; lipase breaks lipids and trypsin causes digestion of proteins.

Or

a) Proper diagram with required labeling.

b) Schematic representation showing circulation of blood

18. a) $1/f = 1/v + 1/u$

b) Proper ray diagram

c) $f = -15\text{cm}$; $u = -10\text{cm}$; $v = ?$; Nature of the image=? ; $h_2 = ?$

$$1/f = 1/v + 1/u$$

$$v = 30 \text{ cm}$$

Nature of the image = virtual, erect and magnified

$m = -v/u = 30/10 = 3$. Thus, the image is three times the size of the object

19. a) High resistance and high m.pt.

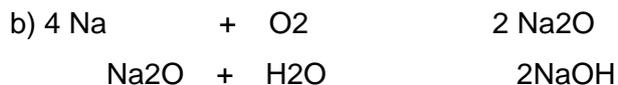
b) very high R

c) In series arrangement, if one device fails the whole circuit is disrupted; the voltage gets divided;

d) R is inversely proportional to its area of cross section

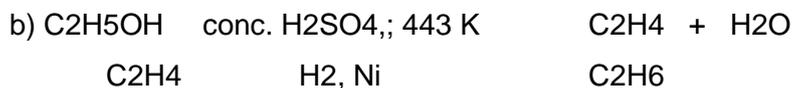
e) Cu and Al wires have low resistivity and good conductance.

20. a) M is sodium which catches fire in moisture.



c) Electrolytic reduction: with brief explanation and reaction

21. a) A = Ethanol, C₂H₅OH; B = Ethene, C₂H₄; C = Ethane, C₂H₆



c) Conc. H₂SO₄ acts as a dehydrating agent.

SECTION- B

22. Diagram ; Guard cells are used to open and close stomata.

23. H₂ gas is evolved because Zn displaces H₂ from its acid as Zn is more reactive than H₂.

24. Diagram with required labeling

25. 0.05

26. Safranin is a stain;

Glycerine prevents drying of plant cells.

27. Circuit diagram; 25 ohm