

**INSTANT SUPPLEMENTARY EXAM QUESTION PAPER WITH ANSWERS
JULY 2016**

[Time Allowed : 2½ Hours]

STD. X - SCIENCE

[Maximum Marks : 75]

**SECTION - I
(MARKS : 15)**

Note:(i) Answer all the **15** questions.

(ii) Choose the correct answer from the alternatives given in the brackets.

15 × 1 = 15

1. The theory of Natural Selection was proposed by _____.
(Charles Darwin, Hugo de Vries, Gregor Johann Mendel, Jean Baptiste Lamarck)
2. The most serious form of malaria is caused by Plasmodium _____.
(ovale, malariae, falciparum, vivax)
3. An endocrine gland found in the neck is _____.
(adrenal gland, pituitary gland, thyroid gland, pancreas)
4. In sexual reproduction of flowering plants, the first event involved in this is _____.
(fertilization, germination, regeneration, pollination)
5. Which blood cells of mammals are concerned with immunity?
(Young Erythrocytes, Leucocytes, Thrombocytes, Matured Erythrocytes)
6. The product obtained in the anaerobic respiration of yeast is _____.
(Lactic acid, Pyruvic acid, Ethanol, Acetic acid)
7. An example for fossil fuel is _____.
(copper, iron, magnesium, coal)
8. An example of water-borne disease is _____.
(scabies, dracunculiasis, trachoma, typhoid)

9. A solution that contains water as the solvent is called an aqueous solution. If carbon disulphide is a solvent in a given solution, then the solution is called _____.
(aqueous solution, non-aqueous solution)
10. To protect tooth decay, we are advised to brush our teeth regularly. The nature of the tooth paste commonly used is _____ in nature.
(acidic, basic)
11. The third period contains elements. Out of these elements, how many elements are non-metals?
(8, 5)
12. Buckminster fullerene is the allotropic form of _____.
(Nitrogen, Carbon, Sulphur)
13. The weight of a person is 50 kg. The weight of that person on the surface of the earth will be _____.
(50 N, 35 N, 380 N, 490 N)
14. _____ surface absorbs more heat than any other surface under identical conditions.
(White, Rough, Black, Yellow)
15. The defect hypermetropia can be corrected by using a _____.
(concave lens, convex lens, convex mirror, concave mirror)

SECTION - II

(MARKS : 40)

Note : Answer any **twenty** questions.

20 × 2 = 40

16. The inheritable characters vary in different species and within the same species. Name the variation in the following cases:

The eye colour among the human beings are varied as blue, black, green, brown etc.

i) This is called as _____ variation.

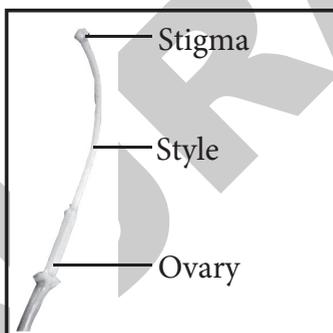
The dentition in the rabbit and the elephant are not the same.

ii) This is called as _____ variation.

17. Here are certain important hereditary jargons. Fill in the blanks by choosing a suitable one from the list given. (allele, variation, speciation, gene, allelomorphs)
- (i) _____ are the factors which form the physical basis of inheritance.
- (ii) _____ is the alternate form of the same gene.
18. Sequentially arrange the different species of man from primitive to modern man.
(Neanderthal man, Homo habilis, Homo erectus, Homo sapiens)
19. Name the tests done for the diagnosis and confirmation of HIV.
20. Copy the diagram and label any two parts in the group given.
(cyton, axon, dendron, terminal branches)



21. (a) Identify Figure A and B.
(b) Which part of A is modified into B?



(A)



(B)

22. What type of dentition is seen in mammals? What are elephant tusks?

23. The Master Chemists of our body are kidneys. Justify.
- Kidneys filter all chemicals in the body.
 - Kidneys maintain the chemical composition of blood.
 - Kidneys eliminate all chemicals absorbed by the body.
 - Kidneys store the chemicals accumulated in the body.
24. Name the three important blood proteins seen in Plasma. Add a note on their functions.
25. Sugar is converted into alcohol. In the above reaction what kind of process takes place? Which micro-organism is involved?
26. In human beings, air enters into the body through _____ and moves into _____.
In fishes, water enters into the body through _____ and the dissolved oxygen diffuses into _____.
27. Describe the change that occurs in a touch-me-not plant when it is touched?
28. Fill in the blanks with suitable answers from those given in the brackets.
(harmful, heavy metals, carbon dioxide, sulphur particles)
Generation of waste products which contain Mercury, Uranium, Thorium, Arsenic, and other _____ are _____ to human health and environment. _____ present in the coal will cause acid rain and the release of _____ a green - house gas, causes climate change and global warming.
29. Find the odd one out.
- bio-alcohol, green diesel, bio-ethers, petroleum.
 - cholera, typhoid, scabies, dysentery .
30. Pick out the appliances that can conserve electric energy.
(Fluorescent bulbs, copper choke, solar water heater, electric water heater, tungsten bulbs, electronic choke.)
31. Match the suitable renewable and non-renewable sources.

Sources	A	B	C
Renewable	Coal	Wind	Petroleum
Non – Renewable	Hydrogen	Natural gas	Solar energy

32. Distinguish between the saturated and unsaturated solution at a temperature of 25°C using the data given below (Note : Solubility of NaCl is 36 g)

- (i) 16 g NaCl in 100 g water (ii) 36 g NaCl in 100 g water.

33. Give the dispersed phase and dispersion medium in each of the following :

- (a) Cheese (b) Soda water

34. Complete the table given below:

ELEMENT	ATOMIC MASS	MOLECULAR MASS	ATOMICITY
Chlorine	35.5	71	
Ozone		48	3
Sulphur	32		8

35. Why does the colour of copper sulphate change when an iron nail is kept in it? Justify your answer.

36. The p^H values of certain familiar substances are given below:

Substance	p ^H value
Blood	7.4
Baking Soda	8.2
Vinegar	2.5
Household Ammonia	12

Analyse the data in the table and answer the following questions:

- (a) Which substances are acidic in nature?
(b) Which substances are basic in nature?

37. A process employed for the concentration of sulphide ore is _____.

(froth floatation / gravity separation)

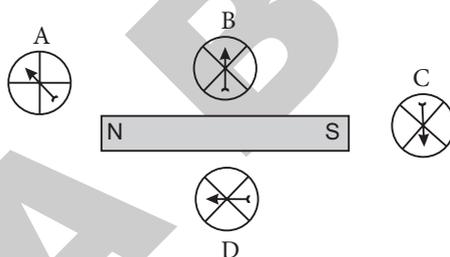
38. Any metal mixed with mercury is called an amalgam. The amalgam used for dental filling is _____. (Ag-Sn amalgam / Cu-Sn amalgam)

39. Diamond is the hardest allotrope of Carbon. Give reason for its hardness.

40. As a matter of convention, an anticlockwise moment is taken as _____ and a clockwise moment is taken as _____.
41. An object of mass 1 kg is dropped from a height of 20 m. It hits the ground and rebounds with the same speed. Find the change in momentum. (Take $g = 10 \text{ ms}^{-2}$)
42. In the list of sources of energy given below, find out the odd one.
(thermal energy, solar energy, hydroelectric power, biomass)
43. Complete the table choosing the right terms from within the brackets.
(zinc, copper, carbon, lead, lead oxide, aluminium)

+ ve electrode	Lead acid accumulator	
- ve electrode	Lechlanche cell	

44. Write about ocean thermal energy?
45. Which of the compass needle orientations in the following diagram correctly describes the magnet's field at the point?



46. A person cannot clearly see objects farther than 12 m from the eye. Name the defect in vision he is suffering from and the lens that should be used to correct this defect.
47. Match the following :
- | | |
|----------------------------|-------------------------|
| (a) Myopia | (i) Convex lens |
| (b) Hypermetropia | (ii) Hyperbolic mirrors |
| (c) Presbyopia | (iii) Concave lens |
| (d) Hubble space telescope | (iv) Bi-focal lens |

SECTION - III**(MARKS : 20)**

Note: (i) Answer any **four** questions by choosing **one** question from each part.

(ii) Draw diagrams wherever necessary.

$4 \times 5 = 20$

PART - I

48. Kala has delivered a baby.

(a) Suggest the immunization schedule for the baby, in the first six months.

(b) What are the diseases that can be cured as per the schedule?

49. Use words from the given list to complete the following paragraph.

(Skull, Vertebral column, Piamater, Arachnoid membrane, Brain, Spinal cord, Meninges, Duramater)

The central nervous system is covered by three protective coverings collectively called _____. The outermost cover lying below the _____ and _____ is double thick and is called _____. The middle covering is thin and vascularised and is called _____. The innermost cover is a very thin delicate membrane and is closely stretched over the outer surface of brain and spinal cord is called _____.

PART - II

50. What are the types of pollination? Which among them is more advantageous? Why?

51. List out the harmful effects of burning coal.

PART - III

52. Find how many moles of atoms are there in:

(i) 2 g of nitrogen

(ii) 23 g of sodium

(iii) 40 g of calcium.

(iv) 1.4 g of lithium

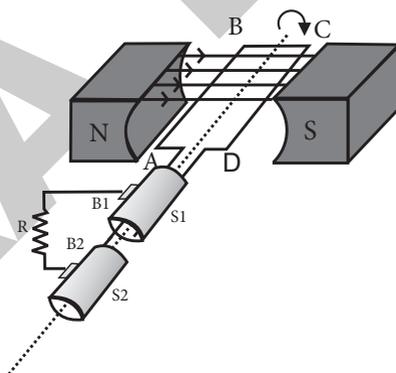
(v) 32 g of sulphur.

53. Fill in the blanks in the given table using suitable formulae.

No.	Alkane	Alkene	Alkyne
1.	C_2H_6 ethane	_____ ethene	C_2H_2 ethyne
2.	_____ Propane	C_3H_6 Propene	_____ propyne
3.	C_4H_{10} Butane	_____ Butene	_____ Butyne

PART - IV

54. (a) 'Space Stations are used to study the effects of long-space flight on the human body'. Justify.
- (b) $F = G \frac{m_1 m_2}{d^2}$ is the mathematical form of Newton's law of gravitation, G -gravitational constant, m_1, m_2 , are the masses of two bodies separated by a distance d , then give the statement of Newton's law of gravitation.
55. i) Redraw the diagram.
 ii) This diagram represents _____
 iii) Label the parts of the diagram.
 iv) Mention the principle used in the device denoted by this diagram.

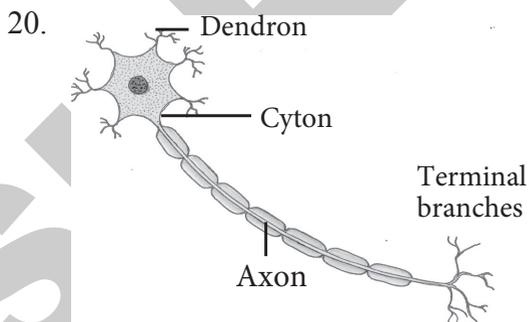


ANSWERS**Section - I**

- | | |
|-------------------------|----------------|
| 1. Charles Darwin | 2. falciparum |
| 3. thyroid gland | 4. pollination |
| 5. Leucocytes | 6. Ethanol |
| 7. coal | 8. typhoid |
| 9. non-aqueous solution | 10. basic |
| 11. 5 | 12. Carbon |
| 13. 490 N | 14. Black |
| 15. convex lens | |

Section - II

16. i) intra specific ii) inter generic
17. i) genes ii) allele
18. Homo habilis, Homo erectus, Neanderthal man, Homo sapiens.
19. Test for HIV virus causing AIDS:-
- 1) Enzyme Linked Immuno Sorbent Assay (ELISA)
 - 2) Western blot - a confirmatory test.



21. (a) A : Gynoecium, B : fruit
- (b) Ovary part of A is modified into B. i.e. fruit.

22. Mammals have heterodont dentition with different types of teeth that are highly specialized to match specific eating habits. For example, the carnivorous animals have canine teeth to tearing flesh.

The tusks of elephants are modified incisors and are used in defence.

23. (b) Kidneys maintain the chemical composition of blood.

24. **Plasma proteins** **Functions**
- (a) Globulin - for immunity
- (b) Fibrinogen - for blood clotting
- (c) albumin - for water balance.

25. Fermentation, Yeast

26. nostrils, lungs, mouth, blood

27. When we touch the leaves of touch-me-not plant, they begin to fold up and droop immediately. In this movement no growth takes place.

If we touch the plant at one point, all the leaflets show the folding movement. This indicates that the stimulus at one point is communicated. The folding is caused by a change in the turgidity of the leaflets brought about by the movement of water into and out of the parenchymatous cells of the pulvinus or swollen leaf base.

28. heavy metals, harmful, sulphur particles, carbon di oxide.

29. (a) petroleum - It is a fossil fuel and the others are bio-fuels.

(b) scabies - It is a water washed disease and the others are water-borne diseases.

30. To conserve electric energy, following appliances are used:

- (i) Fluorescent bulbs.
- (ii) Solar water heater.
- (iii) Electronic choke.

- 31.

Sources	A	B	C
Renewable	Hydrogen	Wind	Solar energy
Non – Renewable	Coal	Natural gas	Petroleum

32. (i) A solution in which the solute is in lesser amount in comparison with the solvent is called unsaturated solution. So the solution containing 16 g of NaCl in 100 g of water is an unsaturated solution.
- (ii) A solution in which no more solute can be dissolved in a definite amount of solvent at a given temperature is called a saturated solution. So the solution containing 36 g of NaCl in 100 g of water is a saturated solution.

	Dispersed phase	Dispersion medium
a. Cheese	liquid	solid
b. Soda water	gas	liquid

ELEMENT	ATOMIC MASS	MOLECULAR MASS	ATOMICITY
Chlorine	35.5	71	$\frac{71}{35.5} = 2$
Ozone	$\frac{48}{3} = 16$	48	3
Sulphur	32	$32 \times 8 = 256$	8

35. • Iron is more reactive than copper.

$$\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$$
 • In this displacement reaction, iron displaces copper from CuSO_4 solution.
 • Hence, blue colour of the copper sulphate solution changes into green colour and the iron nail acquires a brownish colour.
36. (a) Vinegar is acidic in nature.
 (b) Blood, Baking soda, Household ammonia are basic in nature.
37. froth floatation
38. Ag-Sn amalgam
39. In diamond, each carbon atom is bonded with four other carbon atoms covalently and forms a rigid structure of tetrahedral shape(three dimensional). This makes diamond very hard.
40. Positive, Negative

41. $m = 1 \text{ kg}$

$h = 20 \text{ m}$

Velocity with which the object hits the ground

$$v_1 = \sqrt{2gh}$$

$$= \sqrt{2 \times 10 \times 20} = \sqrt{400}$$

$$= 20 \text{ ms}^{-1}$$

$v^2 = u^2 + 2as$

$v^2 = 0^2 + 2gh$

$v = \sqrt{2gh}$

Velocity with which the object rebounds

$v_2 = -20 \text{ ms}^{-1}$

Change in momentum = Final momentum - Initial momentum

$$= mv_2 - mv_1$$

$$= [(1 \times (-20)) - (1 \times 20)]$$

$$= -20 - 20$$

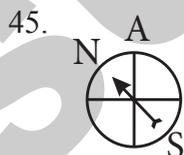
$$= -40 \text{ kg ms}^{-1}$$

 \therefore Magnitude of change in momentum is 40 kg ms^{-1} .42. **Solar energy.** It is non-conventional source of energy, where as the other 3 (Thermal energy, Hydroelectric power, Biomass) are conventional sources of energy.

43. + ve electrode	Lead acid accumulator	Lead dioxide
- ve electrode	Lechlanche cell	Zinc

44. **Ocean thermal energy :**

- Ocean thermal energy conversion uses the temperature difference between cooler deep and warmer shallow or surface water.
- In geographical areas with warm surface water and cold deep water, the temperature difference can be leveraged to drive a steam cycle that turns a turbine and produce power.
- Warm surface sea water passes through a heat exchanges, vaporising a low boiling point working fluid to drive a turbine, generator producing electricity.



46. Myopia (Near - sightedness)

Correction : concave lens of suitable focal length.

47. (a) Myopia (iii) Concave lens
 (b) Hypermetropia (i) Convex lens
 (c) Presbyopia (iv) Bi-focal lens
 (d) Hubble space telescope (ii) Hyperbolic mirrors

Section - II

PART - I

48. a) Immunisation schedule for the baby in the first six months.

Age	Vaccine	Dosage
New born baby	BCG	1 st dose
15 days	Oral polio	1 st dose
6 th week	DPT & Polio	1 st dose
10 th week	DPT & Polio	2 nd dose
14 th week	DPT & Polio	3 rd dose

- b) Tuberculosis, Polio, Diphtheria, Pertussis, Tetanus
49. meninges
 skull
 Vertebral column
 Duramater
 Arachnoid membrane
 piamater

PART - II

50. **Types of Pollination :**

- (i) Self Pollination
 (ii) Cross pollination

Cross pollination is **more advantageous**.

Reason :

- (i) The seeds produced as a result of cross pollination develop, geminate properly and grow into better plants. i.e.: Cross pollination leads to the production of new varieties.
 (ii) More viable seeds are produced.

51. Harmful effects of burning coal :

- (i) It causes dust nuisance.
- (ii) The CO₂ in the air increases.
- (iii) It contaminates land and water ways.
- (iv) Sulphur particles present in the coal will cause acid rain.
- (v) Release of CO₂, a green house gas, which causes climate change and global warming.
- (vi) Interference with ground water and water table levels.
- (vii) Generation of waste products which contain mercury, uranium, thorium, arsenic and other heavy metals, which are harmful to human health and environment.

PART - III

52. (i) No. of moles in 2 g of nitrogen atom = $\frac{\text{given mass}}{\text{atomic mass}}$
= $\frac{2}{14} = 0.142$ mole.
- (ii) No. of moles in 23 g of sodium atom = $\frac{\text{given mass}}{\text{atomic mass}}$
= $\frac{23}{23} = 1$ mole.
- (iii) No. of moles in 40 g of calcium = $\frac{40}{40} = 1$ mole.
- (iv) No. of moles in 1.4 g of lithium = $\frac{\text{given mass}}{\text{atomic mass}}$
= $\frac{1.4}{7} = 0.2$ mole.
- (iii) No. of moles in 32 g of sulphur = $\frac{32}{32} = 1$ mole.

53.

No.	Alkane	Alkene	Alkyne
1.	C ₂ H ₆ ethane	C ₂ H ₄ ethene	C ₂ H ₂ ethyne
2.	C ₃ H ₈ Propane	C ₃ H ₆ Propene	C ₃ H ₄ propyne
3.	C ₄ H ₁₀ Butane	C ₄ H ₈ Butene	C ₄ H ₆ Butyne

PART - IV

54. (a) Space station is an artificial structure designed for humans to live and work in outer space for a period of time.

It provides platform for greater number and length of scientific studies than it is available on other space vehicles. These are used both for military and civilian purposes. It allows for greater flexibility in operation. It removes the need for a single immensely powerful launch vehicle. These stations are also designed at the outset to have their supplies provided by logistical support, and to sustain a longer life time at the cost of regular support launches.

These stations have **various drawbacks** that limit the long-term habitability of the astronauts.

They are -

- (i) **very low recycling rates,**
- (ii) **relatively high radiation levels and**
- (iii) **lack of gravity.**

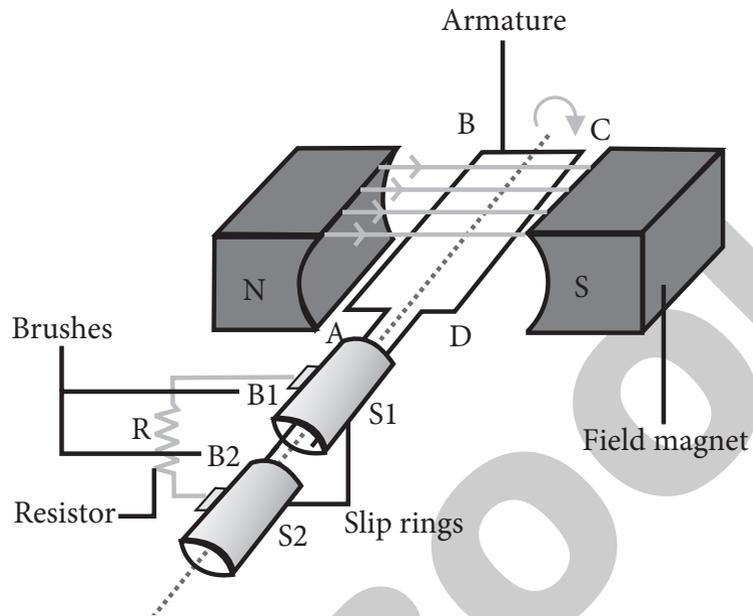
These problems **cause discomfort and long-term health problems.**

- (b) **Newton's law of gravitation :**

Every object in the universe attracts every other object with a force which is directly proportional to the product of their masses and inversely proportional to the square of the distance between them.

$$F = \frac{G m_1 m_2}{d^2}$$

55. (i) and (iii)



(ii) A.C. Generator

(iv) Electromagnetic induction (Flemming's right hand rule).

