

X – HALF YEARLY SCIENCE ANSWER KEY - 2016
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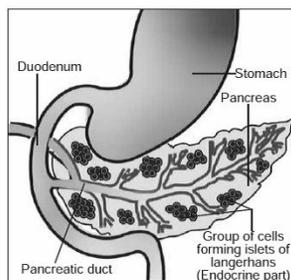
SECTION – I

- | | |
|----------------------------------|-----------------------|
| 1. DNA ligase | 9. Scattering |
| 2. BCG | 10. 7 |
| 3. Nephrons | 11. Mg |
| 4. Androecium and Gynoecium | 12. Carbon |
| 5. $98.4^{\circ} - 98.6^{\circ}$ | 13. Liquid hydrogen |
| 6. Ethanol | 14. Roentgen |
| 7. Corbett National Park | 15. Mechanical energy |
| 8. Methane | |

SECTION – II

- 16) 1. Monoclonal antibodies are the antibodies produced from cloned cells by hybridoma technology.
 2. Monoclonal antibodies are used in treatment of cancer.
- 17) The unmatched pair is: Interferon - Antiprotein of Bacteria
Reason: Interferon is an Antiviral protein.
- 18) 1) True 2) False. Jean Baptiste Lamarck postulated the use and disuse theory.
- 19) Enzyme Linked Immuno Sorbent Assay (ELISA): Diagnosis test
 Western Blot : confirmatory test.

20)



Any two parts 2 marks.

21)

a) Autochory	Balsam
b) Anemochory	Tridax
c) Hydrochory	Lotus
d) Zoochory	Xanthium

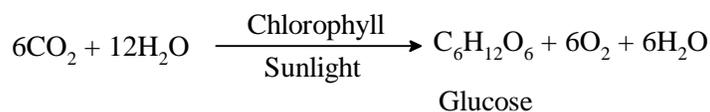
22)

Excretory organ	Disposed as	Excretory products
Kidneys	Urine	Nitrogenous waste products, urea, uric acid
Lungs	Expired air	Carbon dioxide and water vapour
Skin	Sweat	Excess water and salt

23) **Ans:** ii) Kidneys maintain the chemical composition of blood.

24) i) cardiac muscles ii) systole iii) diastole iv) 72

25)



26) A = Geotropism B = Phototropism

27) Ans:

Autotrophs	Chlorophyll	Hibiscus
Parasites	Mycorrhiza	Monotropa
Saprophytes	Haustoria	Cuscutta

28) Both A and R are true and R explains A.

29) i) Petroleum ii) Scabies

30) Renewable: Solar energy, Wind, Hydrogen. Non Renewable: Coal, Petroleum, Natural gas.

31) Natural gas is made up of chiefly methane (> 90%) with traces of ethane and propane.

32) i) Solution in **beaker B** shows Brownian movement.

ii) Solution in **beaker A** particle size greater than 2000 Å.

33) Weight percent = $\frac{\text{weight of the solute}}{\text{Wt. of solute} + \text{Wt. of solvent}} \times 100$

$$= \frac{10}{10+40} \times 100 = \frac{10}{50} \times 100 = 20\%$$

34)

i) Chlorine	Diatomic
ii) Neon	Monoatomic
iii) Phosphorous	Polyatomic
iv) Ozone	Triatomic

35) i) Vinegar ii) Blood, Baking soda and Household ammonia

36)

$$\begin{aligned} \text{pH} &= -\log_{10} [\text{H}^+] \\ &= -\log_{10} (0.001) \\ &= -\log_{10} (10^{-3}) \\ &= -(-3) \log_{10} 10 \end{aligned}$$

$$\text{pH} = 3$$

37) Aluminium alloys are light, have high tensile strength, stronger than aluminium and are corrosion resistant. So, they are used to design the body of the aircraft.

38) i) **Silver – Tin amalgam** is used in dental filling.

ii) **Bronze** is used for making statues, coins, bells and gongs.

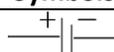
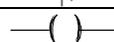
39) In diamond each carbon atom is bonded to four other carbon atoms forming a rigid three dimensional structure, accounting for its hardness and rigidity.

40) 1) Newton's third law of motion 2) The law of conservation of momentum

41) As a matter of convention, an anticlockwise moment is taken as **positive** and a clockwise moment is taken as **negative**.

42) i) ammeter ii) non-conventional source of energy

43)

S.No	Components	Symbols
1	An electric cell	
2	Plug key or switch (open)	
3	A resistor	
4	Voltmeter	

44) Given, $R_1 = 5 \Omega$, $R_2 = 10 \Omega$, $R_3 = 30 \Omega$. These resistances are connected parallel

$$\begin{aligned} \text{Therefore, } \frac{1}{R_p} &= \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \\ \frac{1}{R_p} &= \frac{1}{5} + \frac{1}{10} + \frac{1}{30} \quad , \quad \frac{1}{R_p} = \frac{10}{30} \quad \therefore R_p = 3 \Omega \end{aligned}$$

Dendrites

1. Dendrites or Dendrons are short fibres which branch repeatedly and protrude out of the cell body.
2. Dendrites transmit electrical impulses towards the cyton.

Axon

1. One of the fibres arising from the cell body is very long with a branched distal end and it is called Axon.
2. The distal branch of the axon terminates in bulb-like structures called synaptic knob filled with chemicals called neurotransmitters.
3. The cytoplasm of the axon is known as axoplasm.
4. The axon which is covered by a myelin sheath is formed of many layers of Schwann cells. The outermost layer of Schwann cells is called Neurilemma.
5. The gaps left by the myelin sheath are called Nodes of Ranvier. Neurilemma is discontinuous at Nodes of Ranvier.
6. The myelin sheath ensures rapid transmission of electric impulses.

PART – II

50) i) **Pollination:** The transfer of pollen grains from the anther to stigma of a flower is called pollination.

ii) Pollination is of two types. They are: 1. Self pollination 2. Cross pollination

iii) Cross pollination is the best type.

Reasons:

i) The seeds produced as a result of cross pollination, develop and germinate properly and grow into better plants, i.e. cross pollination leads to the production of new varieties.

ii) More viable seeds are produced.

51) No. this situation is not good for our health.

Reasons:

1. Smoke is made up of a complex mixture of gases and fine particles. These fine particles can get into our eyes and respiratory system, where they can cause health problems such as burning eyes, runny nose, and bronchitis.
2. Fine particles also can aggravate chronic heart and lung diseases.
3. Smoke from vehicles containing SO_2 and NO_2 causes acid rain which spoils crops
4. Smoke and greenhouse gases are being released by industries into the air which causes increase in global warming.
5. Hydrocarbons are formed by incomplete combustion of fuel used in automobiles. Hydrocarbons cause cancer.

PART – III

52) i) 1) Atom is considered to be a divisible particle.

2) Atoms of the same element may not be similar in all respects. eg: Isotopes (${}_{17}\text{Cl}^{35}$, ${}_{17}\text{Cl}^{37}$)

3) Atoms of different elements may be similar in some respects eg. Isobars (${}_{18}\text{Ar}^{40}$, ${}_{20}\text{Ca}^{40}$)

4) Atom is the smallest particle which takes part in chemical reactions.

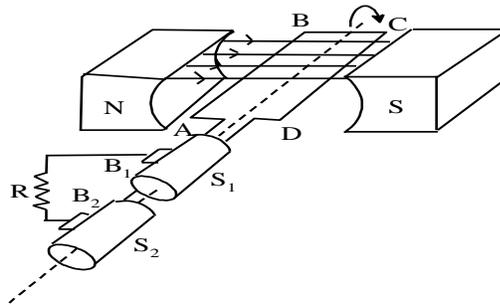
ii)

Atom	Molecule
An atom is the smallest particle of an element	A molecule is the smallest particle of an element or a compound
An atom is a non bonded entity	A molecule is a bonded entity
An atom may or may not exist freely	A molecule can exist freely

- 53) i) Molasses ii) Ammonium sulphate or Ammonium phosphate iii) Invertase
iv) Rectified spirit v) Absolute alcohol

PART – IV

- 54) 1) The discovery of wide-spread presence of water molecules in lunar soil.
2) Chandrayaan's Moon Mineralogy Mapper has confirmed that moon was once completely molten.
3) The Terrain Mapping Camera acquired images of peaks and Craters. The moon consists mostly of Craters.
4) The X-ray signatures of aluminum, magnesium and silicon were picked up by the CIXS X-ray camera
5) Chandrayaan-1 has discovered large caves on the lunar surface that can act as human shelter on the moon.
- 55) i)



- ii) S₁, S₂ Slip rings
B₁, B₂ Carbon brushes
N S Magnetic field
ABCD Armature
- iii) A.C. Generator
- iv) Electromagnetic induction (Fleming's Right hand rule)