



Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Evolution	1	3	1	3	25

One mark questions

1. **Define founder's effect?**

Answer: The gene frequency of a newly established population by founder's is different from that of the original parent population. This effect is called founder's effect.

2. **What is adaptive Radiation?**

Answer: The process of evolution starting from a single point and radiating in different directions is called adaptive radiation

The evolution of the Australian marsupials from a single ancestor and placental mammals also exhibit similarities to their corresponding marsupial

3. **What are Homologous organ?**

Answer: Homologous organs are those organs which are similar in basic structure and embryonic development but perform different functions.

Eg:- Bones of forelimbs of whales, bats, birds and human beings.

Two marks questions

4. **Bring out differences between Darwin's theory and Hugo De vries theory**

Answer:

	Darwin's theory of natural selection		Hugo De Vries Theory of mutation	
1	Evolution is a gradual process	1	Evolution is due to large sudden difference, It is genetic process called mutation	(1 mark)
2	Darwinian variations are small and directional	2	Mutations are sudden and directionless	(1 mark)

5. **Define Atavism and give two example**

Answer: It is the sudden reappearance of ancestral characters which has completely disappeared or reduced. (1 mark)

Eg:- In humans, appearance of small tail in babies, ability to move the pinnae and dense body hair. (1 mark)

6. **What are connecting links? Give example**

Answer: Connecting links are organisms which show characters of two different groups indicating how one group has given rise to the other.

Ex:- Euglene-It is a link between plants and animals

Peripatus-It is a connecting link between annelid and arthropoda (1 mark)

Neopalina - It is a connecting link between annelida and mollusca.

Three marks questions

7. **"Darwins finches represent one of the best examples for adaptive radiation" Comment**

Answer: The process of evolution of different species in a given geographical area starting from a point and literally radiating to other areas or habitats is called adaptive radiation.

In Galapagos islands, Darwin observed the diversity of particular group of black birds that are later called Darwin's finches.



There were many varieties of finches in the same island and all varieties evolved on the island itself. From the original seed-eating features, many other forms with altered beaks evolved and this helped the finches to become insectivorous and vegetarian finches. Thus, Darwin's finches represent one of the best examples for adaptive radiation (3 marks)

8. **Write the role of any three factors that affect Hardy-Weinberg equilibrium**

Answer: Gene frequencies in a population remains constant from generation to generation unless there are factors to upset it. (1 mark)

Role of factors, that affect Hardy Weinberg equilibrium. (gene flow, genetic drift, mutation, natural selection.

Gene flow:- It is the movement of genes or alleles from one population to another when there is a migration of member into and out of a population. This change gene frequencies.

Genetic drift:- It is the Random changes in the gene frequency of a small population purely by chance. The change in gene frequency in the new population may be so different that the members become a different species (founder effect). (Any two factor 1 mark)

9. **Explain evidences of Industrialization as an examples for natural selection**

Answer: Theory of natural selection states that due to survival of fittest, the species change readily owing to preservation and transmission of minute variation and gradually give rise to new forms.

Eg:- In collection of moths in 1850 it was observed that there were white winged moth (*Biston bitularia*) than dark winged (*Biston carbonaria*) but after industrialization there were darker winged moth. This is due to the reason that during post industrial period trees trunk become dark due to industrial smoke under this condition, white winged moth do not survive due to predators dark winged moth survived. Before industrialization sets in, thick growth of white coloured lichen covered treens in that background white winged moth survived but dark coloured moth were picked out by predators hence nature selects the species which is suitable to the changed environment. (3 marks)

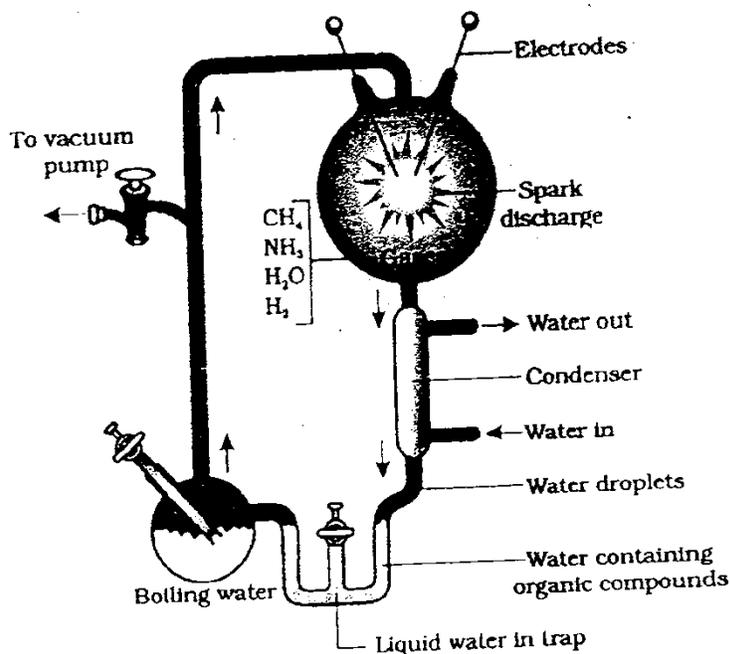
Five marks questions

10. **Explain stanley miller's experiment with a neat labelled diagram**

Answer: Stanly miller in 1953 demonstrated chemical evolution of life by creating primordial conditions in his apparatus.

A mixture of methane (CH_4), ammonia (NH_3) hydrogen (H_2) and water vapour was pumped into the apparatus. The mixture was treated with electrical discharge produced with the help of spark discharging chamber, mean while water was boiled to produce water vapour in the water boiler. The gas mixture with water vapour is made to circulate constantly through spark discharging chamber, condenser and water biler, for about a week. The reaction sample was drawn through sample outlet and it was analysed for its chemical composition.

He noted the formation of simple amino acids like glycine, alanine and aspartic acids, concluding that primordial condition of the earth lead to the formation of organic compounds, which in turn form the raw materials for the formation of life on earth, thus supports chemical evolution. (2.5 marks)



Stanly Miller's apparatus

(2.5 marks)

11. Write a note on Java man

(0.5 mark)

Answer: **Java man:-**

1. Homo erectus fossils of Java were called Java man.
2. Its fossils were invented by Dubois (1891) and these were named pithecanthropus erectus.
3. It was connecting link between ape and man the cranial capacity was 940cc.
4. It used his own made crude stone tools. The chin was absent, bony eyebrow ridge was present.
5. It was more ape like than man like, hence it is also called as Java ape man.
6. However, he might have made use of fire
7. The original specie of pithecanthropus erectus has been named as Homo erectus erectus by mayer (1950)
8. It lived in the middle Pleistocene epoch about 5,00,000 years ago.
9. It was about five feet in height and walked erect.
10. Its face was prognathous and the jaws were massive with huge teeth.

12. Explain the different stages of human evolution mentioning their names, times period, brain capacity and salient features. (1 mark each)

Answer:

Name	Time period	Brain capacity	Features
Dryopithecus	15 mya		More ape like, hairy and walked like gorilla and chimpanzees
Ramapithecus	15 mya		More man like hairy and walked like gorilla and chimpanzes
Australopithecines	2 mya	500cc	Lived in East African grass lands, hunted with stone weapons and ate fruit.



Homo habilis		650-800cc	First human like being they did not eat meat.
Homo erectus	1.5 mya	900cc	Had a large brain capacity, probably ate meat.
Neanderthal man	100,000 - 40,000 mya	1400cc	They lived in East and central Asia. They used hide of other animals to protect their body and buried their dead.
Homo sapiens	75,000 - 10,000 mya		Modern man arose in Africa and moved across continents and developed in to distinct races