1. Heredity and Evolution

Q. State true or false (1 Marks)

1) The principle of mutation were put forth by bugo de vries.

Ans – True

2) Sickle cell anemia is a result of mutation.

Ans – True.

3) Darwin's theory of natural selection explained evolution with respect to useful and useless modification.

Ans – False.

4) According to landmark, the characters which are acquired by the organism during the life time are passed on to the next generation.

Ans – True.

5) The message on a M-RNA about proteins is called anticodons.

Ans – False.

Q. Name the following **(1 Marks)**

6) Three scientist who proved that except viruses all living organisms have DNA as genetic material.

Ans – Oswald Avery, McLean McCarthy & Colin Macleod.

7) The transfer of biological character form one generation to another via genes.

Ans – Heredity.

8) Bond between adjacent amino acid in a protein.

Ans – Peptide bond.

9) The era of invertebrates.

Ans – Paleozoic era.

10) Nearest ancestor of the modern day man.

Ans – Neanderthal man

Q. Complete the analogy **(1 Marks)**

11) MRNA : Transcription : : TRNA :

Ans –Translation.

12) Vracil : _____ : : Thymine : DNA

Ans – RNA.

13) Transcription : RNA : : Protein Synthesis : _____

Ans – Translation.

14) Wisdom Teeh : Vestigial Organs : : Lung fish : _____

Ans – Connecting link.

15) Natural Selection : _____ : : Lamarckism : Ancestry of acquired characters.

Ans – survival of fittest.

Q.Find odd one out. **(1 Marks)**

16) Peripatus , lung dish, Platypus , coccyx

Ans – coccyx.

17) M-RNA , T-RNA , ribosome, RNA polumerase

Ans – RNA polumerase.

18) cro-magnon, Neanderthal, Homo sapiens, lemurs

Ans – lemurs.

19) Coccyx, Intestine, Wisdom, teeth, Appendix

Ans – Intestine.

20) Aves, Reptiles, Amphibians, Pisces

Ans – Aves.

Q.Define The Following

21) Transcription:

Ans – The process of synthesis of MRNA according to the nudeotide sequence present on DNA called transcription.

22) Translation :

Ans – The process of synthesis of protein form MRNA specific for the protein is called translation.

23) Translocation :

Ans – The process of movement of the ribosome from one end of MRNA to other end by the distance of one triplet codon is called translocation.

24) Mutation :

Ans – Sudden and drastic change that occurs in the genetic material is called mutation.

25) Heredity :

Ans – Heredity is the transfer of biological characters form one generation to another via genes.

26) Darwin's Theory of Natural Selection :

Ans – Certain organisms showing modification necessary to sustain selection pressure exerted by nature survive and are fit to live while the rest perish. This is darwin's Theory of natural selection.

27) Evolution :

Ans – Evolution is the gradual change occurring in living organisms over a long duration.

Q.Match the Following -: (2 Marks)

28)

Scientist	**Discovery**
a) Johann Gregor Mendel	Chromosomes of grasshopper .
b) Hugo de vries	DNA is genetic material.
	Pioneer of the modern genetics.
	Mutational theory.

Ans – a) Johann Gregor Mendel :- Pioneer of the modern genetics.

b) Hugo de vries :- Mutational theory.

29)

Scientist	**Discovery**
a) Walter and sutton	- Chromosomes and grasshopeer
b) Mclyn ccarthy	- DNA is genetic Material
	-Pioneer of the modern genetics
	-Mutational Theory

Ans – a) Walter and Sutton :- Chromosomes and grasshopeer

b) Mclyn ccarthy :- DNA is genetic Material.

30)

Evidence and Evolution	**Examples**
a) Palaeontological evidences	- Duckbilled platypus and peripatus
b) connecting links	- Remnants and impressions
	-coccyx and wisdom tooth
	-Human hand and fore limb of cat

Ans – a) Palaeontological evidences :- Remnants and impressions

b) connecting links :- Human hand and fore limb of cat.

31) Give Reason :- Some of the characters of parents are seen in their offspring. (2 Marks)

Ans – Heredity is the passing on of tracits form parents to their offspring , through male and female gametes.

- The offspring cell or organisms aquire the genetic information of their parents.
- Since they are transmitted form the parents to their offspring one can see the parental characters in their offspring.

32) Write a note on evolution (2 Marks)

Ans – Evolution is the gradual change occurring in living organisms over a long duration.

- This is very slow glowing process through which development of organism is achieved.
- All the stages in changes occurred in various components ranging from stars and planet in pace to the blosphere present on the earth should be included in the study of evolution.
- Formation of new spacies due to changes in specific charactes of several generations of living organisms as a response to natural selection is called as evolution.

33) Write a note on Speciation . (2 Marks)

Ans – Formation of new species of plants and animals is the effect of evolution species is the group of organisms that can produce fertile individuals through natural reproduction.

- Each species grows in specific geographical conditions.
- Their food, habitat, reproductive ability and period is different. However, genetic variation is responsible formation of new species from earlier one.
- Besides, geographical and reproductive changes are also responsible. Similarly, geographical or reproductive isolation also leads to speciation.

34)Explain Darwin's Theory of natural selection
(3 Marks)

Ans – Charles Darwin had collected innumerable spearmen's of plants and animals and depending upon the observations of those spearmen's; he published the theory of natural selection which

preaches the survival of fittest . For this purpose Darwin says that all the organisms reproduce prolifically.

- All the organisms compete with each other in a life threatening manner.
- In this competition, only those organisms sustain which show the modification essential for winning the competition.

35) Write note on Connecting link. (3 Marks)

Ans – Some plants and animals show some morphological characters by which they can be related to two different groups, hence they are called as connecting links.

- Examples- In periapts, Characters like segmented body, Thin cuticle and paranoia like organs are present. This indicates that paranoia like organs are present. This indicates that periapts is connecting ink between Annelida and arthropod.
- Similarly, duck billed platypus lay eggs like reptiles but shows relationship with manual due to the presence of mammary glands and hairs.

36) Enlist the uses of the science of heredity. (2 Marks)

Ans – The uses of the science of heredity are as follows.

i) Diagnosis of disease.

ii) Treatment of prevention of heredity disorder

iii) Production of hybnd varieties of animal and plants.

iv) Industrial processes in which microbes are used.

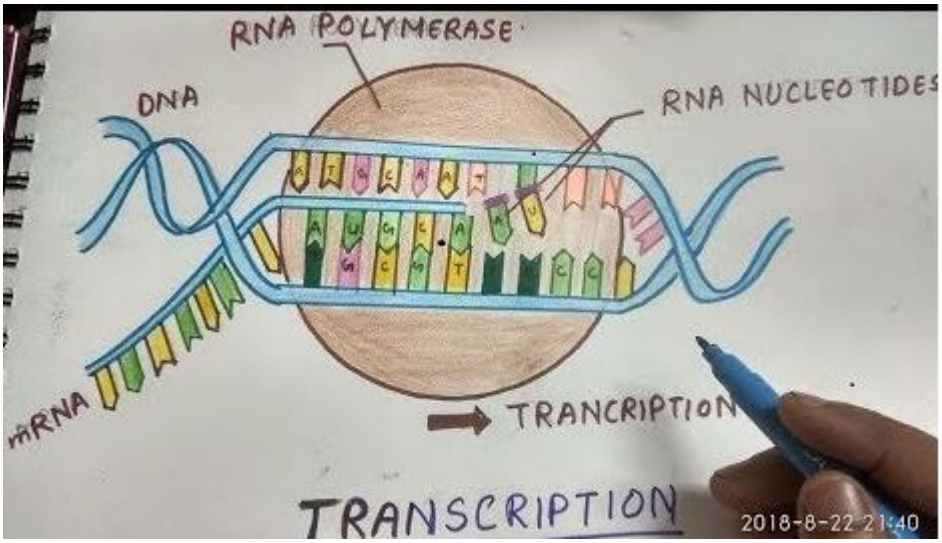
37) Define Heredity . Explain the mechanism of hereditary change. (3 Marks)

Ans – Heredity is the transfer of biological characters form one generation to another via genes.

- The mechanism of hereditary changes :-
  i) Mutation :- Sudden change in the parental DNA can cause mutations. This results into changes in the hereditary characters.
  ii) At the time of meiosis, the crossing over takes places. This creates new recombination of the genetic information. Therefore, the naploid gametes produced carry changed hereditary characters.

38) Draw neat labeled diagram of Transcription. (3 Marks each)

Ans –



39) Translation and Translocation

Ans – Master key notes(13).

40) Mutation

Ans – Master key notes(13).

41) State the Difference of DNA and RNA (4 Marks)

i. Ans – DNA (deoxyribonucleic dcid) are 2 strands coiled around each other and deranged as a double helix.
ii. Each strand in the DNA molecule is made up of many small molecules known as nucleotides .
iii. There are 4 types of nitrogenous bases adenine, and guanine are called purines and thymine and cytosine are called pyrimidine's.
iv. In the nucleotide structure a nitrogenous and phosphoric acid are joined together to a sugar molecule.
v. Nucleotides are arranged like a chain and comparable to ladder each range of ladder is a pair of nitrogenous loses joined by hydrogen bonds.
vi. Adenine always pairs with thymine and cytosine with guanine.
RNA :- There are 3 types of RNA

i. Ribosomal RNA (r-RNA) is a component of the ribosomes that are involved in protein synthesis.

ii. Messenger RNA(m-RNA)- the molecule that carries the information of protein synthesis from DNA is M-RNA .

iii. Transfer RNA(T-RNA)- The RNA molecule which according to the message on MRNA carries amino acids upto the ribosome is a transfer RNA.

42) Explain the meaning of genetic disorders and give names of some disorders. (3 Marks)

Ans – Diseases or disorders occurring due to abriorm alities in chromosomes and mutation in genes are called genetic disorders.

i. Chromosomal or genetic abnormalities can be due to increase or decrease in the number of chromosomes due to addition or deletion.
ii. Mutation in genes can also be due to addition of or deletion of one or few nucleotides
iii. Some genetic disorders are :
    a) Down's syndrome
    b) Turner's syndrome
    c) Klienfelter's syndrome
    d) Sickle cell anaemia
    e) Albinism

43) Distinguish between Transcription and Translation :
(3 Marks)

Ans –

Transcription	Translation
1) In the process of transcription, the sequence of nucleotides present on the DNA molecule is copied and carried to the cytoplasm by m-RNA	1) In the process of translation, the specific amino acids are picked up according to the codons brought by m-RNA
2) The process of transcription takes place in nucleus	2) The process of translation takes place in ribosomes located in cytoplasm.
3) During transcription, RNA is produced from DNA	3)During translation, proteins are produced with the help of RNA.
4) Only m-RNA takes part in	4) m-RNA T-RNA and r-RNA take

transcription	part in translation

44) Write evolutionary theory of modern man. (5 Marks)

Ans – Approximately seven crore years ago, monkey like animals are said to be evolved from some ancestors who were more or less similar to the modern lemurs.

ii. Tail of these monkey like animals of Africa is said to have disappeared about 4 corer years ago.

iii. Evolution of some of the 2 corer years old species of apes seems to have occurred in different ways. They had to use their hands more for eating food and other work.

iv. First human like animal recorded was 'Ram apithecus' ape from east Africa.

v. This ape grew up in size and became more intelligent and evolved about 40 lakh years ago.

vi. skilled humans appeared to be the member of genus homo.

vii. About 15 lakh years ago, human walking with erect posture evolved and existed in china and Indonesia of Asidn continent.

viii. Evolution of upright man continued in the direction of developing its brain for the period of about 1 lakh years.

iv. Brain of 50 thousand year old man had been sufficiently evolved to the extent that it could be considered as member of the class-wise man (homo sapiens).

x. Neanderthal man can be considered as the example of wise-man.

xi. The cro-magnon man evolved about 50 thousand years ago and afterwards, this evolution had been faster than the earlier.

45) Explain with suitable examples, importance of dnatomical evidences in evolution? (2 Marks)

Ans – i. Human hand, cat foreleg, horse foreleg, poltagium of bat, flippers of whale and bird wings are the similar organs in different organism that have similar bone structure but different function.

ii. Use of each of these structures is different in respective animals.

iii. However, There is similarity in structure of bones and bony joints in organs of each of those animals. This similarity indicates that those animals may have common ancestors.

46)Difference between Ancient man(Egyptopithecus) and Modern Man(Cro- magnon). (3Marks)

Ans –

Ancient man(Egyptopithecus)	Modern Man(Cro- magnon).
1) They showed quardrupedalism(walking on four feet)	1) They showed bipedalism(walking on two feet)
2) They had under developed limbar bones and thus no erect posture.	2) They had developed lumbar bones and thus showed erect posture.
3) They were adapted to live only in thick vegetation.	3) They were adapted to live on land lacking thick vegetation.
4) The size of brin was smaller and thus reduced intellect.	4) Brain size was large due to brain enlargement and thus increased intellect.

47) What are the main causes of genetic disorders?

Ans – i. It is considered as the genetic problem occurred mainly due to the abnormalities in the genome.

ii. some genetic disorders are passed down form parents to off spring through heredity.

iii. Some others may be caused due to changes in the genetic material because of mutation

iv. Such genetic disorders will only be passed down to offspring if the mutation happens in the sex chromosomes.

v. The mutatuions may occur due to severe cigarette smoking or radiation exposure.