

Unit-6 UNRAVELLING GENETIC MYSTERIES

Model Questions

1. Find out the nitrogen base seen only in the deoxyribonucleic acid.
Adenine, Guanine, Uracil, Thymine, Cytosine.

2. Which one is not related to the reason of variations ?
(Mutation, Fertilization, Crossing over, Pollination)

3. Choose the right pairs from the items given below :

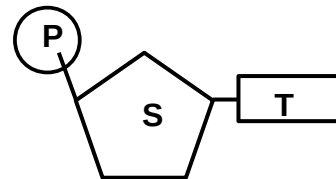
- Francis Crick – Father of Genetics,
- Gregor Mendel – Model of DNA,
- James Watson – Model of DNA.
- Gregor Mendel – Father of Genetics.

4. a). Adenine : Thymine
Guanine : ----- ?

b). 44 somatic chromosomes + XX in female,
44 somatic chromosomes + ---- in male.

5. Select the odd one from the category of RNA which involve in the process of protein synthesis.
mRNA, tRNA, pRNA, rRNA.

6. a). Name the illustration seen here.
b). What are indicated by the P, S and T ?
c). Name the complementary part that pair with this.



7. a). Complete the stages of protein synthesis of genes in the DNA.
mRNA carrying messages, forms from DNA.
mRNA reaches outside the nucleus.

b). Name any other type of RNA that is involved this process.

8. a). Complete the table.

	(R)	(r)
(R)		Rr
(r)		

b). What will be the possible ratio ?

9. **Tt**.
What is the allele of T ?

10. Consider the self pollination of a **TtRr** plant.
a). Show all the possible male gametes of this plant.
b). What will be the ratio among the offsprings ?

11. a). Identify the process shown in this figure.
 b). What will be the effect of this ?
 c). When does this occur ?



12. Mention any 2 inferences, explained by Gregor Johan Mendel from his hybridization experiments.

13. Define the following:

- * Gene.
- * Mutation.
- * Dominant trait.

14. Identify and name the figure.
 What is the importance of this ?



15. Complete the sentences by filling in the blanks.

- a). The different forms of a gene that controls a trait are known as ----- ?
 b). ----- are the organelles, seen in the cytoplasm, for protein synthesis.
 c). The pigment protein, ----- , is responsible for the colour of our skin.

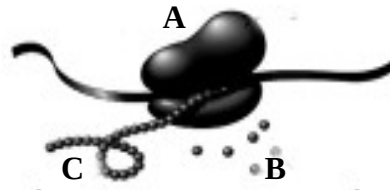
16. Consider the fertilization of 23+X male gamete with a 23+X female gamete.

- a). What will be the possible sex of the child ?
 b). How many chromosomes will be there in the zygote ?
 c). Point out the sex chromosomes usually present in both males and females.

17. What are the causes of mutation ? How mutation of chromosome or gene affect a person ?

18. Observe the illustration:

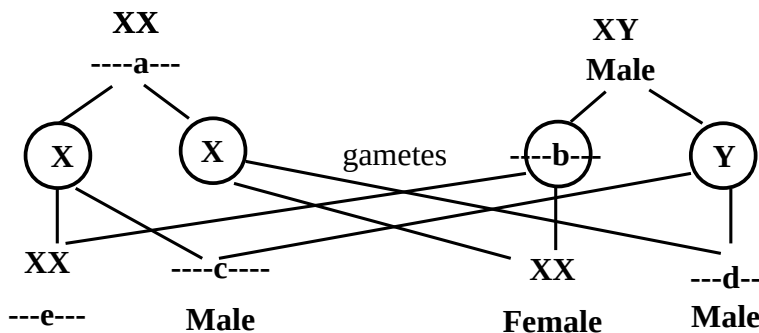
- a). What does the A, B and C indicate here ?
 b). What is the function of A.
 c). Name the type of RNA which transfer B to A.



19. Make a table showing the differences between the 2 types of nucleic acids.

Hints:- Name of nucleic acids, type of sugar and nitrogen bases.

20. Complete the illustration :(you can write the apt words indicating a,b,c,d and e)



Unit-7 **GENETICS OF THE FUTURE****Model Questions**

- Select the correct option, related with Alec Jeffrey.
[Mutation, DNA test, Insulin production, Sex determination]
- Find out the odd one and note down the common feature of others.
DNA profiling, DNA printing, DNA mapping, DNA test.
- Analyse the word relationship and find out the missing word.
Genetic glue : Ligase,
Genetic scissor : ?
- Plasmid is used as a -----
(vector, hormone, genetic glue, genetic scissor)
- Mention how gene technology becomes beneficial to mankind? (Any 2 advantages)
- Given below is a few stages of a process through genetic engineering:
 - From human DNA, cut the gene responsible for the production of insulin.
 - The circular DNA is isolated from a bacterium.
 - Human insulin gene is ligated with the isolated bacterial DNA.
 - Insert this ligated DNA in to another bacterial cell.
 - What is genetic engineering ?
 - Define the genetic scissors and genetic glues with one example each.
- 'Though gene technology is helpful for the sustenance of man, there are possibilities to misuse this technology'. Substantiate this statement with two specific examples.
- DNA finger printing or DNA test is useful to identify persons and to prove crimes.*
 - What is the basic principle behind this technology ?
 - Who developed this ?
- Define the concept 'pharm animals'. How are they useful to the welfare of society ?
- Observe the given logo of an earlier project.
Name the project. What was the aim of this ?
- Choose the items which are examples for traditional mode of biotechnology:
 - * Use of yeast for making bread.
 - * Insulin production by cutting and inserting gene.
 - * Alcohol production using bacteria.
 - * Production of 'pharm animals'.
- How is gene therapy beneficial to mankind ?
- Define the following:
 - Genome
 - Vector
- Suitably pair the items in column A with that of B.



A	B
Interferons	Non functioning genes
Endorphin	Treatment of viral diseases
Junk genes	For relief from pain

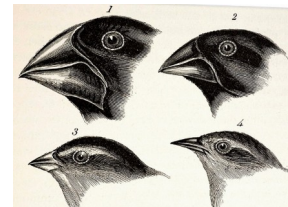
Unit- 8 THE PATHS TRAVERSED BY LIFE

Model Questions

- Oparin : Haldane ;
Stanley Miller : ----- .
- Select the odd one from the given items. Justify your selection.
 - Monkey, Gibbon, Orang-utan, Man.
 - Struggle for existence , Over production, Acquired character, Natural selection.
- Choose the old fossil of the genus, '*Homo*'.
Homo habilis, Homo sapiens, Homo erectus, Homo neanderthalensis.
- From the following, find out the incorrect statement and correct it.
 - Oparin and Haldane proposed the panspermia theory of origin of life.
 - The population theory of Malthus was influenced Charles Darwin.
 - Gorilla is the closest hominoid to man.
 - Homologous organs are similar in structure but different in performing functions.
- What, according to Oparin and Haldane, might be the sources of energy for the evolution of substances in the primitive earth ?
- Complete the table, and include the following items suitably:
-Developed brain, -Small brain, - long tailed, -freely movable hands

A. Cercopithecoidea	B ----- ?-----
*	*
*	*

- Give two examples each for the following:
 - Proponents of evolutionary theories.
 - The scientists, who proposed the theory of chemical evolution.
- Ancestor finch, Large ground finch,
Small ground finch, Insectivorous finch.
 - Who observed and studied the peculiarities of these finches in Galapagos Islands ?
 - Which peculiarity of the finches attracted him ? And what was the reason ?
- Suitably pair the items in column A with that of B.



A	B
Lamarck	Mutation
Charles Darwin	Acquired characters
Hugo deVries	Favourable variations.

- Find out the reason:
 - Struggle for existence when over production occur.
 - Chimpanzee is considered as the closest organism to man.

11. Resistance develops in bacteria against antibiotics

Regular use of pesticides can not kill mosquitoes

Explain the above situations in the light of the theory of natural selection.

12. What evidences do the study of fossils (palaeontology) reveals on organic evolution ?
13. Origin of earth – Formation of oceans – Formation of organic molecules – First primitive cell
- Name the scientists who had proposed the above concept ? Name their theory ?
 - Name the scientists who tried to prove the above idea through recreating the conditions of the primitive earth.
14. Observe the table and find out the missing members of the human race.

Modern man, Developed brain	a
First human who had the ability to stand erect	b
Slender body, Fossils were discovered from Africa	Australopithecus
The most primitive member of the human race.	c

15.
 - Struggle for existence. - Origin of new species. - Natural selection.
 - Over production. - Favourable variants survive.

- Arrange these in right order. Name the theory of evolution indicated here.
- Who explained this theory ?

16. Find out any two examples for each category shown below.

A. Gases presented in the primitive atmosphere

* _____
* _____

B. Simple organic molecules

* _____
* _____

C. Complex organic molecules

* _____
* _____

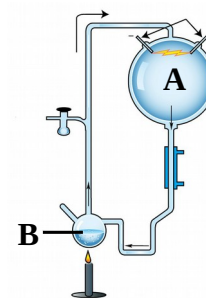
D. Most complex molecules

* _____
* _____

17. Giraffes with short necks → food scarcity → stretched necks to tall trees → emergence of giraffes with long necks.
- Who proposed this type of idea ?
 - Was this argument approved by the scientific world ? Why ?

18. Observe the figure given here:

- Name the scientists who had designed and conducted this experimental setup.
- What was the aim of their experiment ?
- What the **A** and **B** of the figure indicate ?



19. Due to continuous application of a particular pesticide, resistance develops in the pests against the pesticide. By which theory of evolution one can explain this ?

- 20.a). Rearrange the following animals according to the order of evolutionary series.

Gibbon, Man, Gorilla, Chimpanzee, Monkey, Orang-utan

- Name any two peculiar feature of Monkey that are not seen in other group of animals.

21. Description of Darwin's theory given by Riza is given below. Which is the wrong statement?

- Competition between organisms for the limited resources is known as struggle for existence
- Only organisms with favourable variations survive.
- The acquired characters of an organism may transmitted to next generations.
- organisms with unfavourable variations get eliminated.

22. Do you agree with the statement that man is evolved from monkeys ? What is your opinion ?

23. Explain Neo Darwinism.