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REVISION PAPER, SET- III

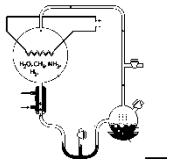
UNIT- VII

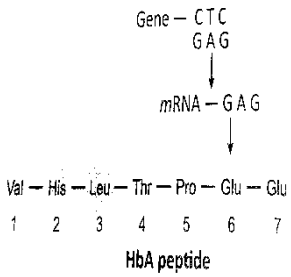
(Chapters: Principles of inheritance and variation, Molecular basis of inheritance, Evolution)

Subject: Biology **Class: XII**

TIME: 1:00 Hr **Max. Marks: 20**

Note: Question no. one to four is of 01 mark each, question no five and six is of 02 marks each, question number three is of 03 marks, question no five is a case study based and is of 04 marks and question number six is of 5 marks.

SN	Question	Marks
1	Select the statements which make DNA a good genetic material: i- It can replicate ii- It has a double-stranded structure which makes it less stable iii- It does not have a 2'OH group which makes it more stable iv- It shows slow mutation a- i, ii , iii and iv are correct b- i, ii, iii are correct c- i, iii and iv are correct d- Only ii is correct	1
2	S.L. Miller worked on evolution in laboratory conditions. According to him the primitive earth conditions includes- a- high temperature, reducing atmosphere b- high temperature, non-reducing atmosphere c- low temperature reducing atmosphere d- high temperature, oxygen rich atmosphere 	1
3	Evolutionary convergence is the development of a a- Dissimilar set of functions in an unrelated group b- Dissimilar set of functions in the closely related group c- Similar set of functions in a group of different ancestry d- Common set of structures in closely related groups	1
4	Assertion: The high rate of mutation found in Corona Virus can be attributed to 'RNA. reason: the RNA being unstable, mutate at a faster rate. a- Both assertion and reason are correct and the reason is the correct explanation of assertion. b- Both assertion and reason are correct and the reason is not a correct explanation of assertion. c- Assertion is true but the reason is false d- Assertion is false but the reason is true	1
5	a- Which method is used by Messelson and Stahl to distinguish between heavy and light isotopes of nitrogen? b- Why does Griffith use heat killed pneumonia causing bacteria in his experiment?	2
6	Demonstrate by using punnet square, the status of F2 offspring, if a tall heterozygous F1 offspring of a pea plant undergoes test cross.	2
7	Hardy- Weinberg principle explains the allelic frequency of a population. a- Write the mathematical expression of the Hardy- Weinberg principle. b- Mention any four factors that affect Hardy- Weinberg equilibrium.	3

8	Some diseases are caused by mutations that are inherited from the parents and are present in an individual at birth, like sickle cell disease. Sickle cell anemia is caused by a change in the gene that tells the body to make the iron-rich compound in red blood cells called hemoglobin. Hemoglobin enables red blood cells to carry oxygen from the lungs throughout the body.  i- Assertion: Mutation can cause a change in protein structure Reason: Gene mutations alter the DNA sequences of a gene. a- Both assertion and reason are true, and the reason is the correct explanation of the assertion. b- Both assertion and reason are true, but the reason is not the correct explanation of the assertion. c- Assertion is true but the reason is false. d- Both assertion and reason are false ii- Sickle cell anemia is- a- X- linked b- autosomal dominant c- autosomal recessive d- Y- linked iii- If both parents have sickle cell trait, then there is _____of the child having sickle cell anemia. a- 25 % risk b- 50 % risk c- 75% risk d- 100 % iv- In given diagram GUG codes for - a- Glutamate b- Glutamine c- Glycine d- Glucosamine	4
9	i- In a typical nucleus, some regions of chromatin are stained light and others dark. Explain why is it so and what is its significance. ii- Mention the role of the codons AUG and UGA during protein synthesis. iii- Name the component of a nucleotide responsible for giving 5'— 3' polarity to a polynucleotide.	5