

Hints to Answers_X Biology_First Term Exam Aug 2026

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1. c) X- Phosphate: Plays a role in linking nucleotides to each other. (4x1= 4)
2. c) P-Y, Q-Z, R-X
3. b) Law of Dominance.
4. d) Statement and reason are incorrect. (unclear question)
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5. Sample X. In it A-T quantity is same and G-C also are same quantity.. (7x2= 14)
6. a) Multiple Allelism.
b) According to Mendel, a gene controlling a trait has two alleles.
7. a) Y. Because grey matter is inside and white matter is outside.
b) White matter. Increases the speed of transmission of impulses.
- 8 A. a) Crossing over. b) At the chiasma, chromatids break and exchange segments to each other.
B. a) Mutation. b) Genes through the gametes.
9. a) Superbugs. (Multi-drug-resistant strains)
b) Because of mutation (genetic variation) occurred in bacteria, they could resist against antibiotics.
- 10A. a) 44 (22 pairs). b) Female: 44+XX, Male: 44+XY
B. a) SRY gene helps in the development of testes in the embryo.
b) Unlike the mother, the sperm from the father containing X chromosome results in a girl, and sperm containing Y chromosome results in a boy.
11. a) tRNA b) Carries amino acids to ribosomes according to the message in the mRNA.
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12. a) Variations. (6x3= 18)
b) In a changed environment, only those with variations beneficial to nature survive.
c) If there were no variations in some of them, they would not have survived climate change and all organisms would have become extinct.
- 13 A. a) (i)- TP , (ii)- tp
b) Tall, Purple flower. TtPp.
c) TTPp, TtpP, TtPP, ttPp (any 2)
B. a) (i)- tt (ii)- T
b) T , t
c) Tall, Tt
14. a) X- Cercopithecoidea, Y- Hominoidea.
b) Having tail, small sized brain.
c) Studies in Molecular Biology (comparative study of DNA or protein molecules) reveals that apes are more closer to human beings than the monkeys.
15. a) Will affect the translation stage.
b) Transcription/ mRNA is formed from DNA and comes out of the nucleus.
c) The process of combining amino acids to form protein will not occur and vital functions (metabolic activities) will be disrupted.
- 16 A. a) Chimpanzee, Gorilla, Rat.
b) Through Molecular Biological studies (by comparing the same type of protein molecules), we can understand the evolutionary relationship between organisms. We can also know when they diverged from a common ancestor (MRCA).
B. a) Shows similarity in bones.
b) Due to similarity in internal structure, we can assume they all had a common ancestor (MRCA).
17. a) Nucleosome.
b) Formed when DNA winds around a histone octamer made of eight histone proteins joined together.
c) Chromosomes are formed by coiling many nucleosomes and then again coiling the chains of coiled nucleosomes.
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- 18 A. a) X- Thalamus. Relay center for messages going to and fro the cerebrum. (1x4= 4)
b) i- Cerebellum. ii- Cerebrum.
[Should be drawn and labeled correctly]
B. a) [Neuron drawn with myelin sheath]
b) X - Dendron - Cell body - Axon - Axonite - Y