



BIOLOGY

BOOKS - TRUEMAN BIOLOGY

Genetics

Section A

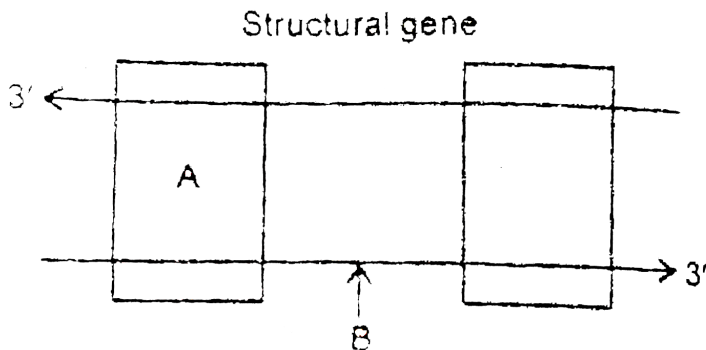
1. Which of Mendel's Law of Inheritance is universally acceptable and without exception?

State the law.



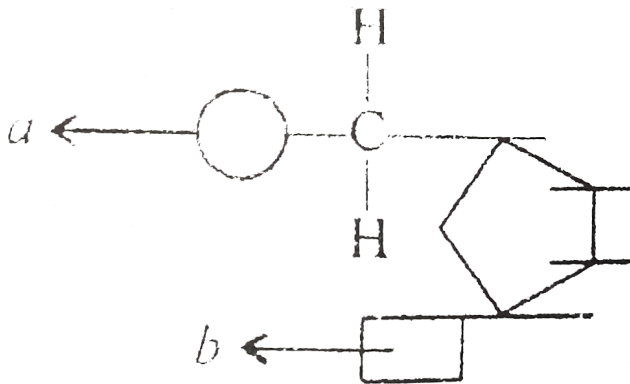
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2. Name the parts 'A' and 'B' of the transcription unit given below.



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3. Name the components 'a' and 'b' in the nucleotide with a purine, given in the figure:



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4. Why hnRNA is required to undergo splicing?

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5. State any one reason to explain why RNA viruses mutate and evolve faster than other viruses



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6. How is the length of DNA usually calculated?



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7. How does HIV differ from bacteriophage?



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8. The gene I that controls the ABO blood grouping in human beings has three alleles I^A , I^B and i

(a) How many different genotypes are likely to be present in human population?

(b) Also, how many phenotypes are possibly present?





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9. Provide one word or one sentence information about 'plasmid' with respect to its (i) chemical nature and (ii) its duplication.



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10. Name the event during cell division that results in the gain or loss of chromosome.



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11. Mention the contribution of genetic maps in human genome project.



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12. Name one autosomal dominant and one autosomal recessive. Mendelian disorder in human.



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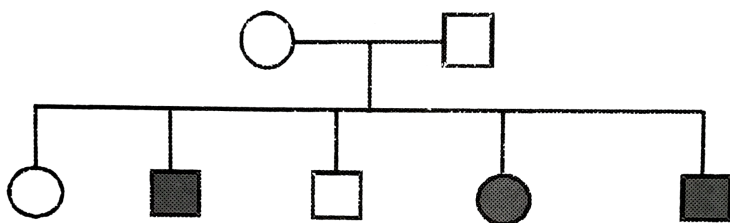
13. A human being suffering from Down's Syndrome shows trisomy of 21st chromosome. Mention the cause of this chromosomal abnormality.



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14. A pedigree chart given here, presents a particular generation which shows a trait irrespective of sexes (ie.. present in both male and female). Neither of the parents of the

particular generation shows that trait. Draw your conclusion on the basis of the pedigree.



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15. In order to obtain the F_1 generation, Mendel pollinated a true-breeding, say, tall plant with a true-breeding dwarf plant. But for getting the F_2 generation, he simply self-pollinated the tall F_1 plants. Why?



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16. "Genes contain the information that is required to express a particular trait. Explain



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17. How are alleles of particular gene differ from each other? Explain its significance.



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18. For the expression of traits genes provide only the potentiality and the environment provides the opportunity. Comment on the veracity of the statement.



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19. A, B, D are three independently assorting genes with their recessive alleles a, b, d respectively. A cross was made between

individuals of Aa bb DD genotype with aa bb dd. Explain the type of genotypes of the offspring produced.



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20. Sometimes cattle or even human beings give birth to their young ones that are having extremely different sets of organs like limba/position of eye(s) etc. Comment .



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21. In a nucleus, the number of RNA nucleoside triphosphates is 10 times more than the number of DNA nucleoside triphosphates, still only DNA nucleotides are added during the DNA replication, and not the RNA nucleotides. Why?



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22. Name the enzyme and state its property that is responsible for continuous and

discontinuous replication of the two strands of a DNA molecule.



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23. Pick out the ancestral line of Cycads from the list given below-Ferns, herbaceous lycopods, seed ferns, and horsetails



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24. Mention the type of evolution that has brought the similarity as seen in potato tuber and sweet potato.



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25.

1.5 mya	↑	Java man
	↓	Homo habilis - more man like
2 mya	↓	Australopithecus - hunted with stones.

Study the ladder of human evolution given above and answer the following questions.

(i) Where did Australopithecus evolve?

(ii) Write the scientific name of Java man?



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26. Coelacanth was caught in 1938 in South Africa. Why is it very significant in the evolutionary history of vertebrates?



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27. Name the common ancestor of the great apes and man. In which period were they surviving?



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28. When did fishes evolve?



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29. Does mutation alter Hardy Weinberg equilibrium?



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30. By what Latin name, the first Hominid was known? Mention the period it was surviving.



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31. Among Ramapithecus, Australopithecines and Homo habilis who probably did not eat meat ?



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32. Write the formula to calculate allele frequency in future generations according to Hardy-Weinberg genetic equilibrium.



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33. Identify the examples of convergent evolution from the following :

(i) Flippers of penguins and dolphins

(ii) Eyes of octopus and mammals

(iii) Vertebrate brains





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34. Identify the examples of homologous structures from the following-

(i) Vertebrate hearts

(ii) Thorns in Bougainvillea and tendrils of Cucurbita.

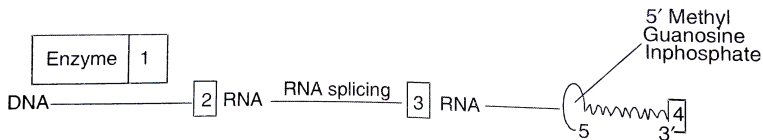
(iii) Food storage-organs in sweet potato and potato.



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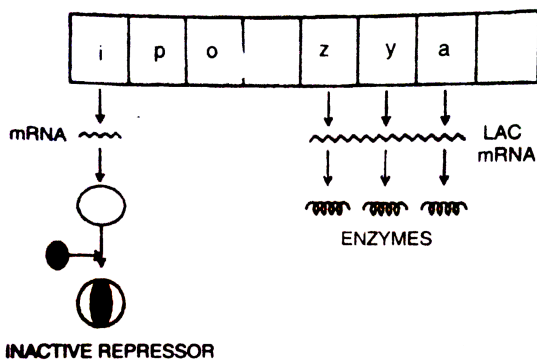
Section B

1. Given below is a sequence of steps of transcription in a eukaryotic cell. Fill up the blanks (1,2,3,4) left in the sequence .



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2. Study the figure given below and answer the questions:



- (i) How does the repressor molecule get inactivated?
- (ii) When does the transcription of lac mRNA stop?
- (iii) Name the enzyme transcribed by the gene Z'.

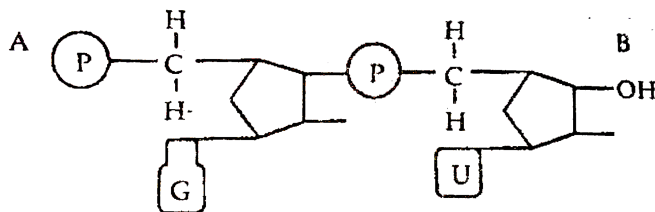


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3. Expand DNA and RNA. Name the sugar moiety present in these structures.

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4. Answer the questions based on the dinucleotide shown below :



(i) Name the type of sugar guanine base is attached to ?

(ii) Name the linkage connecting the two nucleotides

(iii) Identify the 3' end of the dinucleotide.

Given a reason for your answer.



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5. How do histones acquire positive charge?



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6. State the dual role of deoxyribonucleoside triphosphates during DNA replication.



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7. Mention the role of ribosomes in peptide-bond formation. How does ATP facilitate it?



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8. In a Mendelian monohybrid cross the F_2 generation shows identical genotypic and phenotypic ratios. What does it tell us about the nature of alleles involved? Justify your answer.



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9. What is Down's syndrome? Give its symptoms and cause. Why is it that the chances of having a child with Down's

syndrome increases if the age of the mother exceeds forty years ?



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10. What are the characteristic features of a true-breeding line?



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11. If a father and son are both defective in red-green color vision, is it likely that the son

inherited the trait from his father? Comment.



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12. What would happen if histones were to be mutated and made rich in acidic amino acids such as aspartic acid and glutamic acid in place of basic amino acids such as lysine and arginine?



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13. Recall the experiment done by Frederick Griffith. If RNA, instead of DNA was the genetic material, would the heat killed strain of Pneumococcus have transformed the R-strain into virulent strain? Explain your answer.



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14. Describe Chargaff rule.



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15. Differentiate between nucleotide and nucleoside.



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16. Mention the inducers in Lac and tryptophan operon concept.



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17. Expand VNTR. Mention its application.



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18. Define DNA polymerisation. Mention the role of REN and DNA ligase.



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19. Name the accepted model of plasma membrane. Who proposed it?



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20. What are the functions of (i) methylated guanine cap, (ii) poly-A"tail" in a mature mRNA?



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21. Differentiate between Exons and Introns.



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22. Comment on the utility of variability in number of tandem repeats during DNA fingerprinting .



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23. Write the full of VNTR. How is VNTR different from 'Probe' ?



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24. A non-haemophilic couple was informed by their doctor that there is possibility of a haemophilic child being born to them .Draw a checker board and find out the percentage of possibility of such a child among the progeny.



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25. In a particular plant species majority of the plants bear purple flowers. Very few plants bear white flowers. No intermediate colours

are observed. If you are given a plant bearing purple flowers, how would you ascertain that it is a pure breed for that trait? Explain.



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26. A cross between a red flower bearing plant and a white flower bearing plant of *Antirrhinum* produced all plants having pink flowers. Work out a cross to explain how this is possible.



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27. In a typical monohybrid cross the F_2 -population ratio is written as 3:1 for phenotype but expressed as 1:2:1 for genotype. Explain with the help of an example.



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28. Work out a cross to find the genotype of a tall pea plant. Name the type of cross.



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29. (a) Write the specific features of the genetic code AUG

(b) Explain aminoacylation of the tRNA



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30. Arrange the following groups of plants in an ascending evolutionary scale: Cycads: Rhynia-like plants: Chlorophyta ancestors: Dicotyledons, and Seed ferns. (in proper sequence)





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31. While creation and presence of variation is directionless, natural selection is directional as it is in the context of adaptation. Comment.



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32. Define Genetic drift. Mention the types.



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33. Who proposed "survival of the fittest" theory?



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34. In which plant did Mendel perform his experiments? Why did he choose it?



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35. Define migration. Mention the types of migration in fishes.



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36. How do darwin' s finches illustrate adaptive radiation ?



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37. List the two main propositions of Oparin and Haldane.



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38. Write the Oparin and Haldane hypothesis about the origin of life on Earth. How does meteorite analysis favour this hypothesis?



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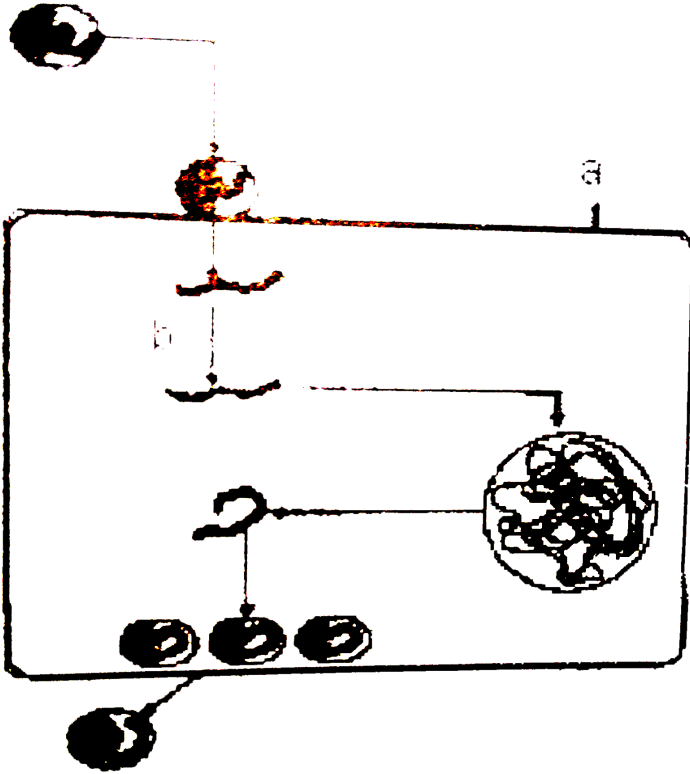
Section C

1. (i) What does this diagrammatic sketch depict?

(ii) Identify 'a' and 'b'

(iii) Name the widely used diagnostic test

when a person gets this disease.



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2. A 3' _____ 5' B

C 5' _____ 3'D

AB and CD represent two strands of a DNA molecule. When this molecule undergoes replication, forming a replication fork between A and C in the above.

(i) Name the template strands for replication.

(ii) Using which strand as the template, will there be continuous synthesis of a complementary DNA strand?

(iii) Complementary to which strand will Okazaki segments get synthesised and

discontinuous synthesis will occur

(iv) What are template strands and Okazaki pieces?

(v) In which direction is a new strand synthesized?



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3. What is the function of reverse transcriptase enzyme?



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4. What are types of sex-linkage?



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5. Define haemophilia. What type of sex linkage does it belong to?



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6. What is 'semi-conservative' DNA replication? Who discovered it and when?





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7. Expand:

PCR

ELISA



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8. Mention the reason for sickle cell anemia.



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9. Who discovered ABO blood group. When was it discovered?



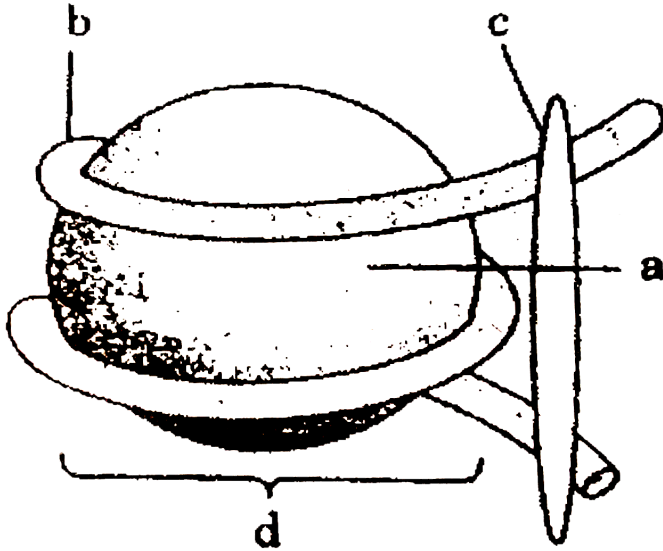
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10. (a) What is this diagram representing?

(b) Name the parts a, b and c.

(c) In the eukaryotes the DNA molecules are organized within the nucleus. How is the DNA molecule organized in a bacterial cell in

absence of a nucleus?



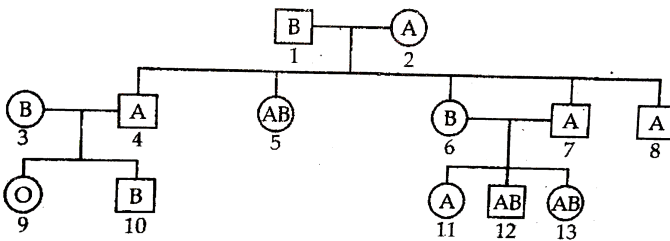
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11. In human genome which one of the chromosomes has the most genes and which one has the fewest?



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12. Study the pedigree chart given, showing the Inheritance pattern of blood groups in a family and answer the following questions



- (a) Give the possible genotypes of the individuals 1 and 2.
- (b) Which antigen or antigens will be present on the plasma membranes of the RBC's of

individuals 5 and 9.

(c) Give the genotypes of the individuals 3 and 4.



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13. Differentiate between phenotype and genotype.



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14. (i) Why are grasshopper and *Drosophila* said to show male heterogamity ? Explain.

(ii) Explain female heterogamity with the help of an example.



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15. Why is tRNA called an adaptor molecule?



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16. (i) List the chromosomal disorders a human may suffer from if karyotype analysis of the individual shows 47 chromosomes instead of normal 46

(ii) Explain the cause that results in the gain of chromosome number.

(iii) Mention the symptoms of any one the disorders an individual can suffer from



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17. How are dominance, codominance and incomplete dominance patterns of inheritance different from each other?



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18. A pea plant with purple flowers was crossed with white flowers producing all 50 plants with only purple flowers. On selfing, these plants produced 482 plants with purple flowers and 162 with white flowers. What genetic

mechanism accounts for these results?

Explain.



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19. (i) Name the enzyme that catalysis the transcription of hnRNA. (ii) Why does the hnRNA need to undergo changes? List the changes hnRNA undergoes and where in the cell such changes take place?



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20. Unambiguous, universal and degenerate are some of the terms used for the genetic code. Explain the salient features of each one of them.



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21. (a) Name the scientist who called t-RNA an adapter molecule.

(b) Draw a clover leaf structure of t-RNA showing the following:

(i) tyrosine attached to its amino acid site

(ii) anticodon for this amino acid in its correct site (codon for tyrosine is UAC)

(c) What does the actual structure of t-RNA look like?



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22. During the studies on genes in *Drosophila* that were sex-linked T.H. Morgan found F₂-population phenotypic ratios deviated from expected 9 : 3 : 3 : 1. Explain the conclusion he arrived at.



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23. Explain the mechanism of sex determination in insects like *Drosophila* and grasshopper.



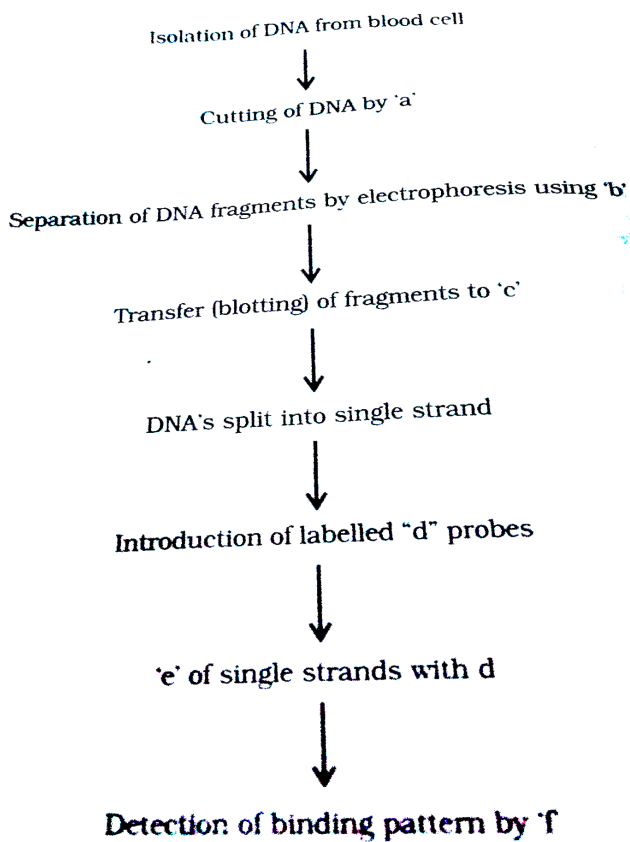
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24. Who determines the sex of an unborn child? Mention whether temperature has a role in sex determination.



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25. The following is the flow chart highlighting the steps in DNA finger printing technique. Identify a, b, c, d, e and f.





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26. Study the given pedigree chart showing the pattern of blood group inheritance in a family

(a) Given the genotype of the following:

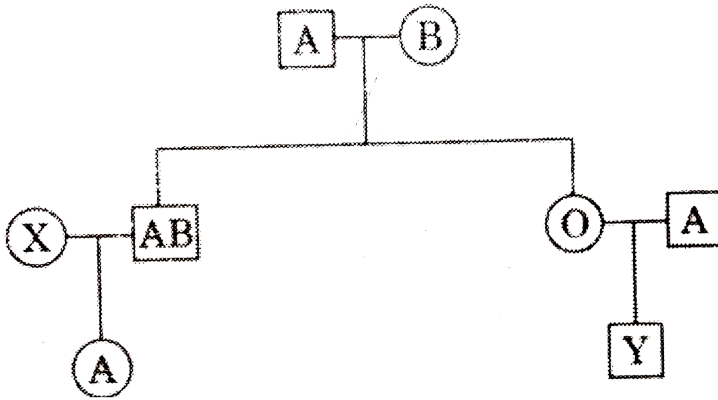
(i) Parents

(ii) The individual 'X' in second generation

(b) State the possible blood groups of the individual 'Y' in third generation

(c) How does the inheritance of this blood

group explain codominance?



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27. a) Construct a complete transcription unit with promoter and terminator on the basis of hypothetical template strand given below



(b) Write the RNA strand transcribed from the above transcription unit along with its polarity



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28. What is the genetic basis for proof that codon is a triplet?



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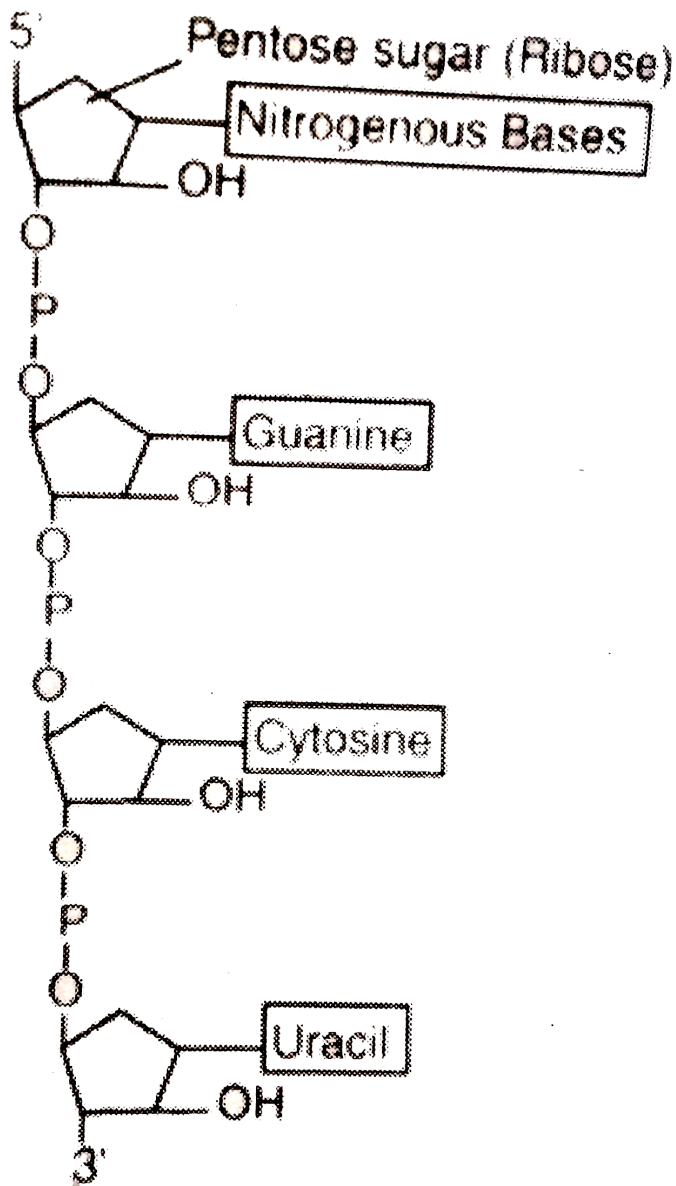
29. What is satellite DNA in a genome ? Explain their role in DNA fingerprinting .



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30. Describe the structure of an RNA polynucleotide chain having four different

types of nucleotides.



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31. Explain the pattern of inheritance of haemophilia in humans. Why is the possibility of a human female becoming a haemophilic is extremely rare? Explain.



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32. In a maternity clinic, for some reasons the authorities are not able to hand over the two new-borns to their respective real parents.

Name and describe the technique that you would suggest to sort out the matter.



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33. a) Explain DNA polymorphism as the basis of genetic mapping of human genome.

b) State the role of VNTR in DNA fingerprinting.



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34. Explain codominance taking an example of human blood groups in the population.



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35. Define natural selection. Mention its types.



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36. "A population has been exhibiting genetic equilibrium". Answer the following with regard

to the above statement.

(i) Explain the above statement.

(ii) Name the underlying principle.

(iii) List any two factors which would upset the genetic equilibrium of the population.



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37. In the 1950s, there were hardly any mosquitoes Delhi. The use of the pesticide DDT on standing water killed their larve. It is believed that now there are mosquitoes

because they evolved DDT resistance through the interaction of mutation and Natural Selection. Pointwise. state in a sequence how that could have happened.



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38. Discovery of Lobefins is considered very significant by evolutionary biologists. Explain.



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39. Study the figure and answer the following



(a) Write your observations on the variations seen in the Darwin's finches shown above .

(b) Where did Darwin explain the existence of different varieties of finches?



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40. (a) Rearrange the following in an ascending order of evolutionary tree: Reptiles.

salamander, lobe fins and frogs (b) Name two reproductive characters that probably make reptiles more successful than amphibians.



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41. (a) What is adaptive radiation.

(b) Explain with the help of suitable example where adaptive radiation has occurred to represent convergent evolution.



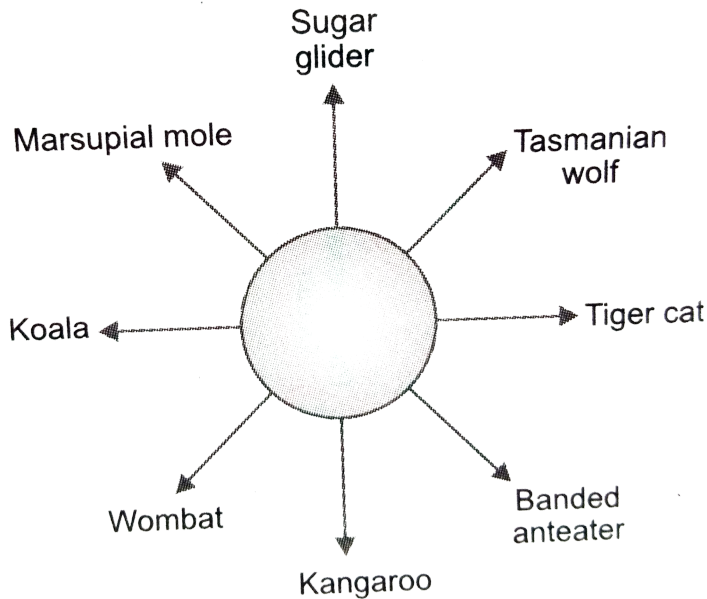
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42. Study the figures below and answer the following :

(a) Mention the specific geographical region where these organisms are found.

(b) Name and explain the phenomenon that has resulted in the evolution of such diverse

species in the region.



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43. Branching descent and natural selection are the two key concepts of Darwinian Theory of Evolution. Explain each concept.



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44. With the help of one suitable examples explain the effect of anthropogenic actions on organic evolution.



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45. Explain the increases in the numbers of melanic(dark winged) moths in the urban

areas of post-industrialisation period in England.



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Section D

1. Give reason for -

(i) Both strands of DNA are not copied during transcription.

(ii) Transcription and translation in bacteria can be coupled.



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2. Name the type of mutation that causes sickle cell anemia.



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3. One chromosome contains one molecule of DNA. In eukaryotes the length of the DNA molecule is enormously large. Explain how such a long molecule fits into the tiny chromosomes seen at Metaphase.



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4. With the advent of DNA technology tool is available to identify a criminal or to the real parents. (a) Name this technique. (b) Write the missing steps in the procedure given below.

Three of these steps are mentioned in the flow chart. (i) Extraction of DNA from the cells (ii)

.....(iii) DNA is cut into fragments by restriction

enzyme (iv) (v)..... (vi).(vii)

Autoradiography



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5. Name the scientists responsible for determining the biochemical nature of "transforming principle" in Griffith's experiments.



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6. Define transcription. Where does transcription in eukaryotes takes place?



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7. Define:

Evolution

Gene pool



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8. Two blood samples A and B picked up from the crime scene were handed over to the forensic department for genetic finger printing. Describe how the technique of genetic finger printing is carried out.



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9. Name the scientist who proved DNA as a hereditary material.



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10. With the help of one example each provide genetic explanation for the following observations: brgt (i) F_1 -generation resembles both the parents.

F_1 -generation does not resemble either of the parents



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11. Name any two chromosomal disorders.



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12. Name any two mendelian disorder.



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13. Define Fossil. Mention its types.



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14. (a) State the central dogma in molecular biology. Who proposed it? Is it universally applicable? Explain.

(b) List any four properties of a molecule to be able to act as a genetic material



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15. (a) Write what DNA replication refers to.

(b) List any three enzymes involved in the process along with their functions.



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16. Explain inheritance of flower colour in *Mirabilis jalapa*. Mention the mechanism involved.



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17. A child suffering from Thalassemia is born to a normal couple. But the mother is being blamed by the family for delivering a sick baby.

a) What is Thalassemia ?

b) Mention the type of inheritance.



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18. Explain the mechanism of sex-determination in humans.

b) Differentiate between male heterogamety

and female heterogamety with the help of an example of each.



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19. Explain Mendel's law of independent assortment by taking a suitable example.



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20. Name the species evolved post Industrialization in England.



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21. Who discovered mutation? Mention any two types.



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22. Fitness is the end result of the ability to adapt and get selected by Nature. Explain with suitable example.



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23. The rate of appearance of new forms is linked to the life span of an organism. Explain with the help of a suitable example.



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24. Define isolation. Mention its types.



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25. To which phylum does Trilobite belongs to?

Name the period they evolved.



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Assertion And Reason

1. [A]: The two members of a gene pair segregate from each other into the gametes.

[R]: During gametogenesis, the segregation of

one gene pair is independent of other gene pair.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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2. [A]: Domestication is a type of plant breeding.

[R]: Selection is the basis for the improvement of crops through plant breeding.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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3. [A]: Erythroblastosis foetalis is a disease related with Rh factor and may cause death of foetus in the mother.

[R]: It causes massive destruction of foetal RBCs that leads to anaemia and tissue damage of foetus.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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4. [A]: Genetic disorder, sickle cell anaemia is common in new born babies.

[R]: It is caused by heterozygosity for allele Hb^A , producing a single amino acid substitution in the α -chain of the Haemoglobin determined by allele Hb^A

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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5. [A]: PKU is a autosomal recessive hereditary metabolic disease caused by the body's failure to oxidise an amino acid (Phenylalanine) to tyrosine because of a defecitve enzyme.

[R]: It resulted the presence of phenylpyruvic acid in the urine.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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6. [A]: Each gamete has only one allele for each trait.

[R]: It is true of single trait crosses only.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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7. [A]: When doing genetics problems, first decide the appropriate key and then determine the genotype and gametes for both parents.

[R]: It is necessary to keep in mind that although an individual has two alleles for each trait, each gamete has only one allele for each trait

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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8. [A]: Chromosomes are divided into heterochromatin and euchromatin part.

[R]: Heterochromatin are those regions of chromosome that remain condensed during interphase and early prophase, and rest of the non-condensed form of chromosome is called euchromatin

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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9. [A]: Metacentric chromosomes are V-shaped

[R]: In these chromosomes, the centromere occurs in the centre forming two equal arms.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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10. Assertion : Plasmids are double-stranded extra chromosomal DNA.

Reason : Plasmids are possessed by eukaryotic cells.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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11. [A]: Exchange of genetic material occurs during meiosis.

[R]: There is chiasma formation in meiosis.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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12. Assertion:XXX females are called super females

Reason : They often give birth to triplets and quadruplets

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: C



Watch Video Solution

13. [A]: A gene affecting the expression of another nonallelic gene is called epistatic gene.

[R]: Epistatic gene hides the expression of an allele at a different locus

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

14. [A]: The sex linked genes are passed on to the grandson through the daughter.

[R]: The Y chromosome of the grandson is received from the maternal grandfather

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

15. Assertion : Mutations are necessary for the survival of the species.

Reason : Lack of mutation gives a temporary

advantage to a species in an uncyhanged environment.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

16. [A]: It is not possible to take photograph and count chromosomes when they are highly coiled and condensed.

[R]: Each species has a variable number of chromosomes.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

17. [A]: Neurospora is an ideal genetic material for research.

[R]: Because of its suitability in the studies of genetics contained within it.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



Watch Video Solution

18. [A]: Heterosis is superiority of F_1 hybrid over its two genetically dissimilar parents.

[R]: Heterosis can be measured in terms of size, yield and growth rate

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

19. [A]: Mendelian recombinations are due to crossing over.

[R]: Crossing over brings about exchange of genes through chiasma formation.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

20. [A]: Genes confined to differential region of homologous chromosomes are called holandric genes.

[R]: Genes confined to homologous region of Y chromosomes only are called Holandric genes.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

21. [A]: Chromosomes appear longer during telophase.

[R]: The term chromosome was coined by Waldeyer.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

22. [A]: Copy choice theory for crossing over was proposed by Belling.

[R]: According to this theory, paired chromosomes in Meiosis I, duplicate their genes before the development of fibres that join them in tandem.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

23. [A]: Kornberg and Ochoa got Nobel Prize in the field of genetics.

[R]: Because they proposed mutation Theory

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

24. Consider the following statements :

Assertion (A) : Amber codon is a termination codon .

Reason (R) : If in a m-RNA, a termination codon is present, the protein synthesis stops abruptly whether the protein synthesis is complete or not.

Now select you answer from code given below

:

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

25. [A]: DNA replicates after mitosis.

[R]: In mitosis, the chromosomal number does not stay constant

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

26. [A]: DNA code is copied in the synthesis of tRNA.

[R]: tRNA moves out of the nucleus and after attaching on ribosomes form the template

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

27. Assertion : DNA is associated with proteins.

Reason : DNA binds around histone proteins

that form a pool and the entire structure is called a nucleosome.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

28. [A]: Translocation involves transfer of genetic material between homologous chromosome.

[R]: Translocation involves duplication of genetic material causing chromosomal aberration during gametes formation.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

29. Assertion : Left-handed DNA is known as B-DNA.

Reason : Right - handed DNA is known as Z-DNA .

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

30. [A]: Meselson and Stahl tested the Watson and Crick Theory of DNA replication.

[R]: They confirmed the mechanism of DNA replication by using the isotopic and Centrifugation technique

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

31. Assertion (A) : Adenine cannot pair with cytosine.

Reason [®] : Because there would be two hydrogen atoms in one of the bonding and none at the other.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

32. [A]: DNA is associated with proteins.

[R]: DNA winds around histone proteins that form a pool and the entire structure is called a nucleosome.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

33. Assertion. The genetic code is degenerate.

Reason. Most amino acids are coded by more than one codon.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

34. Assertion A non-overlapping code means that a base in mRNA is not used for different codons

Reason In translating mRNA molecules, the

codons do not overlap but are read sequentially

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

35. [A]: Recombinant DNA contains DNA from two or more sources.

[R]: Plasmids are small extra rings of DNA in bacteria that carry genes not present in the bacterial chromosome

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

36. [A]: Genetic engineering is the use of technology to alter the genome of a cell for the benefit of we people.

[R]: Here foreign gene is inserted into the cell to get desirable product

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

37. [A]: The Lac operon is an example of inducible system.

[R]: When Lactose, the inducer is present in the medium, it binds to the repressor making it ineffective.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

38. [A]: Vectors carry only the foreign DNA/gene into the host cell.

[R]: Plasmids can carry recombinant DNA but viruses can not.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

39. [A]: The series of enzyme controlled reactions determine traits in an organism.

[R]: Since the structure of specific proteins (enzymes) is controlled by the genes and follows determination of traits

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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40. [A]: Raphanobrassica is an excellent example of allotetraploidy.

[R]: It involves intergeneric cross between radish genus- *Raphanus* and cabbage genus- *Brassica*, each of which has a diploid chromosome number of 18.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

41. [A]: Plasmids are double stranded extra chromosomal DNA.

[R]: Plasmids are found in Prokaryotic cells.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

42. [A]: Adenine can not pair with cytosine.

[R]: Because there would be two H-atoms near one of the bonding positions and none at the other.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

43. [A]: The base ratio $(A+T)/(G+C)$ is constant in a particular organism.

[R]: The ratio is, however, different in the different DNA molecules

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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44. [A]: *Drosophila* is commonly used in the study of genetics. [R]: Because it is very small and its life cycle is short.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

45. [A]: When RH positive male marries RH negative woman the situation can be serious.

[R]: Genes linked to homologous part of X and Y chromosome behaves as autosomal genes.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

46. [A]: Hershey and Chase experiment showed that protein is the genetic material of T_2 bacteriophage.

[R]: According to Hershey and Chase, RNA is the genetic material in T_2 bacteriophage.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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47. [A]: The DNA fingerprinting relies on recombinant DNA technology and can prove the identification of a suspect.

[R]: It is based on the pattern, length, and number of DNA repeats and is unique for each individual's genetic blueprint-DNA

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

48. [A]: Chromatid is one of a pair of replicated chromosomes found during the prophase and metaphase stages of mitosis and meiosis.

[R]: Chromatin is classified as euchromatin or heterochromatin on the basis of staining properties. Euchromatin is thought to be actively involved in transcription and, therefore, protein synthesis, while heterochromatin is inactive.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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49. [A]: For a recipient to receive blood from a donor, the recipient's plasma must not have an antibody that causes the donor's cell to agglutinate.

[R]: The possibility of blood clumping does not

depend on anti-A or anti-B antibody and blood type

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

50. [A]: Lampbrush chromosomes are found in the oocytes of certain animals during the prophase of meiosis. Such chromosomes consist of two central strands along which fine loops extend laterally.

[R]: The loops are thought to be active regions of RNA synthesis

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

51. Assertion (a) : Superumerary chromosomes do not usually have any effect on the phenotype and Hence ,are genetically

unnecessery.

Reason(R) : In some plants supernumerary chromosomes result in decreased vigour.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B





Watch Video Solution

52. [A]: The chromosomes of plants are larger than animals.

[R]: The chromosomes of monocots are larger than dicots

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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53. [A]: Metacentric chromosomes are V-shaped

[R]: In these chromosomes, the centromere occurs in the centre forming two equal arms.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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54. [A]: Chromosomes are divided into heterochromatin and euchromatin part.

[R]: Heterochromatin are those regions of chromosome that remain condensed during interphase and early prophase, and rest of the non-condensed form of chromosome is called euchromatin

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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55. [A]: Triplet code is a degenerate one.

[R]: Explanation for degeneracy is provided by

Wobble hypothesis

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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56. Assertion : Identical twins are produced during two births , resulting from the division of a single fertilized egg .

Reason : They are of the different sex and otherwise genetically identical.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

57. [A]: Genetic engineering is the use of technology to alter the genome of living cell for medical or industrial use.

[R]: Biotechnology gave rise to an industry that provides products made by genetic engineering of bacteria.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



Watch Video Solution

58. [A]: Polymerase chain reaction (PCR) followed by DNA probe is used during DNA finger printing.

[R]: A DNA finger print is inherited and, therefore, resembles that of parent

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

59. [A]: The preparation of recombinant DNA requires restriction enzymes.

[R]: Because these are not used to cleave plasmid DNA

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: C



Watch Video Solution

60. [A]: Plasmids are small accessory rings of DNA found in some bacteria that carry genes.

[R]: Plasmids that are used as a vector have been removed from bacteria and have had a foreign gene inserted into them

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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61. [A]: Proteins are polymers of amino acids.

[R]: Nucleic acids are polymers of units known as nucleotides

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

62. [A]: Prokaryotic cells do not contain repressor protein

[R]: They do not function as genetic valves by

combining with specific genes to turn on their activity.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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63. [A]: If a population is of dominant genotype AA, then the frequency of dominant alleles in the gene pool will be relatively higher.

[R]: The percentage of gametes bearing recessive (aa) allele will be correspondingly low

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

64. [A]: In paracentric inversions the centromere is outside the inverted segment.

[R]: In pericentric inversion, the inverted segment includes the centromere

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

65. [A]: Polyploidy increases the tolerance of plants towards extreme climates.

[R]: Autopolyploids produce seed less fruits.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

66. [A]: Haemophilia is a genetically linked disease.

[R]: The carrier gene is present on X chromosome of female

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

67. [A]: Cytoplasmic male sterility is observed in maize.

[R]: The cytoplasmic male sterility in maize is

due to interaction of cytoplasmic factors and male sterile gene

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

68. Assertion: DNA synthesis occurs in G_1 and G_2 periods of cell cycle.

Reason: During G_1 and G_2 phase the DNA contents become double.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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69. [A]: Sickle-cell anaemia is a genetically determined disorder affecting many new born babies.

[R]: It is caused by heterozygosity for allele Hb^c , producing a single amino acid substitu-

tion in the α -chain of the normal haemoglobin molecule determined by allele Hb^A .

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

70. [A]: The deleted region of long arm of chromosome 7 contains the elastin gene.

[R]: Deletion of long arm of chromosome 7 results in Cri du Chat syndrome

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



Watch Video Solution

71. [A]: Cenromere is the primary constriction on the metaphase chromosome.

[R]: It hE:lpsh to separate sister chromatids

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

72. [A]: Dolly, a sheep is an example of cloning.

[R]: Cloning in another sense is sexual reproduction.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: B



Watch Video Solution

73. Assertion (A) : Replication and transcription occur in the nucleus but translation occurs in the cytoplasm.

Reason (R) : m-RNA is transferred from the nucleus into the cytoplasm where ribosomes and amino acids are available for protein synthesis.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

74. [A]: Cycads were prevalent during Jurassic period.

[R]: Jurassic period is considered as Age of cycads

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

75. [A]: Evolution is descent with modification.

[R]: Evolution is derivation of new species of plants and animals from those existed in past.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



Watch Video Solution

76. [A]: Isolation is a mechanism which prevents interbreeding among other wise potential mates.

[R]: It is the key factor without which all other factors of evolution will merge into jumble of no significance

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

77. [A]: Mesozoic era is known as the 'Age of Reptiles'.

[R]: It was the era of origin, differentiation and final extinction of dinosaurs which thrived in sea, in air and on land.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

78. [A]: Radioactive carbon ^{14}C method is quite accurate for relatively recent fossils, not older than 40,000 years.

[R]: It was discovered by Libby.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



Watch Video Solution

79. [A]: According to Hardy-Weinburg law both gene frequencies and genotype frequencies will remain constant from generation to generation in an infinitely large interbreeding population.

[R]: Alleles segregating in a population tend to establish an equilibrium with reference to each other, thus maintain both frequencies constant.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

80. [A]: 'Ontogeny recapitulates phylogeny' was the concept put forward by Haeckel.

[R]: The embryonic stages show the course of

evolution which an adult has gone through during development

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

81. [A]: Vestigial organs are those parts of the body which are greatly reduced and are useless.

[R]: These are the remnants of once fully developed organs which are gradually lost as these were no longer necessary

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



Watch Video Solution

82. [A]: Homology is the similarity between organs of same animal based on common ancestry.

[R]: Analogy is seen in every organ system from fish to man

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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83. [A]: Ear muscles of external ear in man are well developed.

[R]: These muscles do not move external ear freely to detect sound

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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84. [A]: Convergent evolution leads to production of analogous similarities among different groups of organisms.

[R]: Animals of the same group or closely related groups exhibit great divergences in their morphology

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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85. [A]: Heritable changes are also called mutations.

[R]: Mutations are sudden change in chromosomal DNA.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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86. [A]: Homologous organs have similar structure but different functions.

[R]: It is believed that homologous structures were created for different purposes and their present function is secondarily achieved out of necessity

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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87. [A]: In large groups of animals and plants, there are identical enzymes and hormones available.

[R]: This suggests organic evolution

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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88. [A]: During evolution of Primates, various groups diverged in a particular sequence from the main line of descent.

[R]: Prosimians (Tarsiers, lemurs) which diverged first, are most distantly related to humans and most closely related to original primates.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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89. [A]: Macro evolution produces groups of parallel special adaptations among convergent but related species.

[R]: Adaptive radiation/macroevolution don't produce evolutionary lines that converge in special adaptation with other related groups differing in general adaptation

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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90. [A] : Organisms that bear large number of common amino acid sequence may be considered to be more closely related than to

those with greatly different amino acid sequence.

[R]: The proteins are chemical finger prints of evolutionary history because they bear amino acid sequences that have changed as a result of genetic change

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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91. [A]: Homologous organs have similar structure but different functions.

[R]: It is believed that homologous structures were created for different purposes and their present function is secondarily achieved out of necessity

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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92. Assertion: Analogous organs serve the same function and look alike, but have different structure and embryonic origin.

Reason: Analogous organs have no specific significance

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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93. Assertion:Frog's tadpole has fish-like form,
tail and gills

Reason: Tadpole stage is the recapitulation of
the fish-like ancestor of frog in the latter's life
history

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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94. Assertion: Jurassic period is considered as the age of reptiles.

Reason: Reptiles dominated in all habitats during Jurassic period

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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95. [A]: Some babies have a small tail.

[R]: This is just a freak of nature and has no explanation

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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96. [A]: The first life originated was chemo-heterotrophic.

[R]: The first life originated in sea water.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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97. [A]: Evolution is a theory.

[R]: As it is based on causes and evidences.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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98. [A]: Cabbage, cauliflower, Kohlrabi, Broccoli and Brussels have descended from a common ancestor Colewort (*Brassica oleracea*).

[R]: These varieties were produced through selective breeding (artificial selection) of domesticated wild species

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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99. [A]: Evolution is not occurring at present.

[R]: Evolution is a very lengthy process

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: D



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100. [A]: According to the theory of Lamarck use and disuse caused the increase and decrease in size of organs and environment caused the changes which can be transferred to next generation.

[R]: Modern synthetic theory is also known as Neo-Lamarckism.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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101. [A]: Fossils of Peking man were discovered from caves near Peking in 1920 by Davidson Black.

[R]: It was quite intelligent to use and construct flint tools and is supposed to perform ceremonies

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C





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102. [A]: Man's most characteristic feature in which it differs from all its primate relatives is his large brain and high intelligence.

[R]: A lumbar curve is absent in man which is present in apes

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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103. [A]: Darwin held that small favourable variations formed the raw material for evolution.

[R]: Darwin did not go into the factors which produce variations

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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104. Assertion : A single mutation may produce a new species .

Reason : Mutation may cause major variation in genetic material and these are inheritable .

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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105. [A]: Isolation prevents inbreeding among the otherwise potential mates.

[R]: It preserves variations which can lead to speciation.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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106. [A]: Interspecific mating often produces a more vigorous but sterile F_1 hybrids.

[R]: Reproductive isolation does not let evolution to occur.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: C



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107. [A]: Basis of adaptation is the preexisting gene mutation.

[R]: In changed environment, a hidden gene mutation may express and result in survival of the organisms and finally lead to adaptation to new conditions.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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108. [A]: Artificial selection is done only in animal breeding.

[R]: Artificial selection is done in animal breeding only.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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109. [A]: Presence of tail in children is a vestigial character.

[R]: This is due to the phenomenon called atavism

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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110. [A]: Mimics are always or more often defenceless.

[R]: Mimics are always less in number than the model individuals

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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111. [A]: The process of speciation occurs only in allopatric populations.

[R]: The sympatric species can arise either due to changes in the chromosome number or due to introgressive hybridization and poly- ploidy.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: B



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112. [A]: The establishment of reproductive isolation is an event of biological significance.

[R]: Because in absence of reproductive isolation they can merge back into single population

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: A



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113. [A]: Random mutations together with genetic drifts and selection pressure establish genetic difference and morphological and physiological variations in formerly identical populations.

[R]: These differences generally accumulate and thus lead to the establishment of clines, geographical races and finally distinct subspecies.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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114. [A]: Varied groups of plants and animals either related or unrelated provide an example of divergent evolution.

[R]: The changes occur in a cumulative direction and result in the origin of new populations from the old ones

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A





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115. [A]: The natural hybrids of the species are either totally absent or are very rare.

[R]: Because members of separate species do not interbreed usually

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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116. [A]: The earliest living organisms were structurally simple.

[R]: The earliest living organisms were more complex than present one.

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: C



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117. [A]: There is no phenomenon like organic evolution.

[R]: Evolution, is a discontinuous process

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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118. Assertion : Human ancestors never used their tails and so the tails expressing gene has disappeared in them.

Reason : Lamarck's theory of evolution is popularly called theory of continuity of germ plasm.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: D



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119. Assertion : Comparative biochemistry provides a strong evidence in favour of common ancestry of living beings.

Reason : Genetic code is universal.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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120. Assertion : Darwin's finches show a variety of beaks suited for eating large seeds, flying insects and cactus seeds.

Reason : Ancestral seed-eating stock of Darwin's finches radiated out from South American mainland to different geographical areas of the Galapagos Island, where they found competitor-free new habitats.

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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121. Assertion: Human and great apes have a common ancestry.

Reason: Man and chimpanzee have similar banding pattern of chromosomes number 3 and 6

A. If both A and R are true and R is the correct explanation of A

B. If both A and R are true but R is not the correct explanation of A

C. If A is true and R is false

D. If both A and R are false

Answer: A



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122. Assertion: Man has descended from monkeys.

Reason: Monkeys resemble humans more than apes do

- A. If both A and R are true and R is the correct explanation of A
- B. If both A and R are true but R is not the correct explanation of A
- C. If A is true and R is false
- D. If both A and R are false

Answer: D



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