BIOLOGY

BOOKS - TRUEMAN BOOK COMPANY BIOLOGY (HINGLISH)

Genetics

Section A

1. Which Mendel's law of inheritance is universally acceptable and without any exception? State the law

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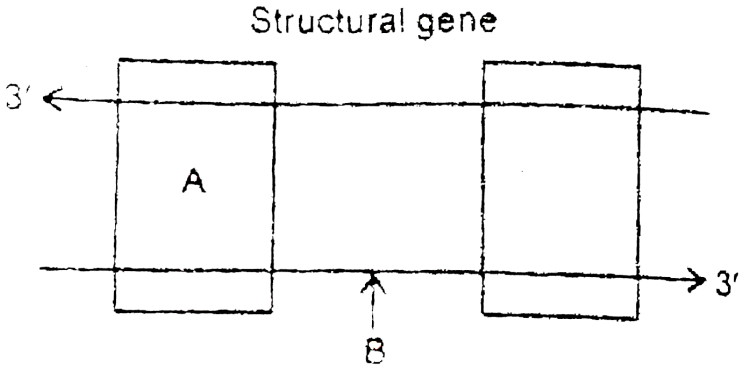
2. Name the parts 'A' and 'B' of the transcription unit given below.



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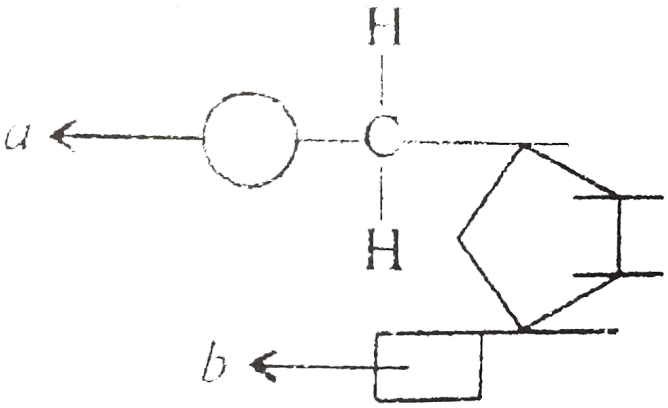
3. Name the components 'a' and 'b' in the nucleotide with a purine, given in the figure:



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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 IA. IB 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 21^{st} chromosome. Mention the cause of this chromosomal abnormality.

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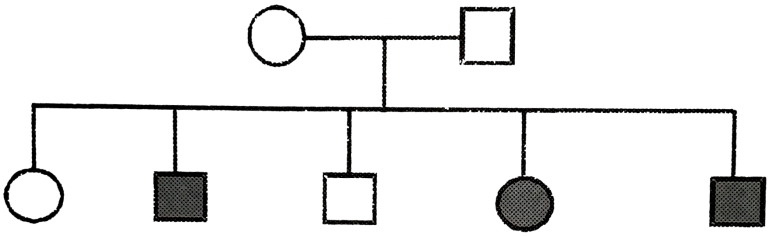
14. A pedigree chart given here, presents a particular generation which shows a trait irrespective of sexes (ie.. present in both male and female). Neither of the parents of the particular generation shows that trait. Draw

your conclusion on the basis of the pedigree.



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15. In order to obtain the F_1-generation Mendel pollinated a pure-breeding tall plant with a pure-breeding dwarf plant. But for getting the F_2-generatin, 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 gane differ feom each other? Explain its significance.

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18. For the experssion of traits genes provide only the potentiality and the enivornment 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 aleles a,b,d respectively. A cross was made between individuals of Aa bb DD genotype with aa bb dd. Find out the type of genotypes of the offspring produced.

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20. Sometimes cattle or even humen 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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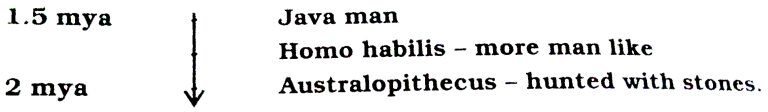
25.



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.

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28. How do we compute the age of a fossils ?

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29. In a certain population, the frequency of three genotypes is as follows:

What is the likely frequency of B and b alleles?

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30. By what Latin name, the first Hominid was known?

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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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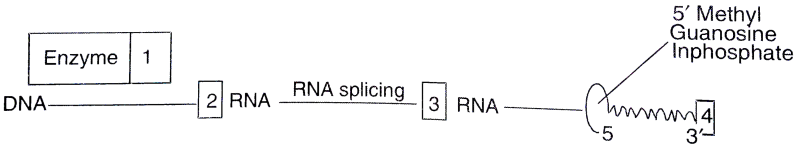
Section B

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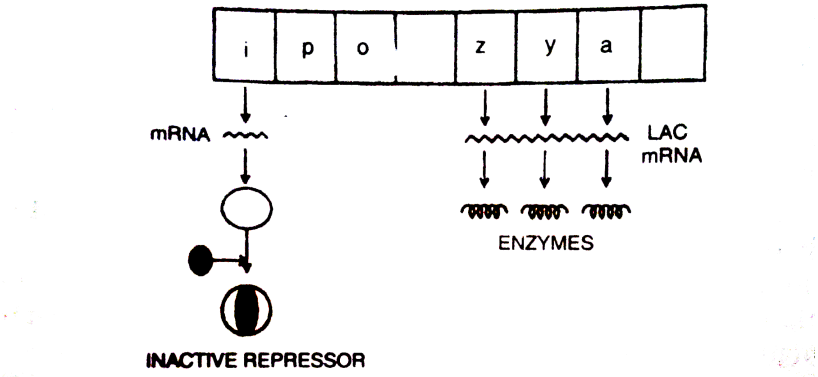
2. Study the figure given below and answer the questions:



(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. Study the given portion of double stranded polynucleotide chain carefully. Identify a,b , c , and the 3' and 5' end of the chain

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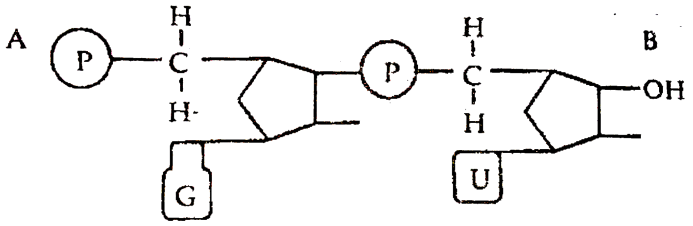
4. Answer the questions based on the dinucleotide shown below :



(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 identcal 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 symotoms and cause. Why is it that the chances of having a child with Down's syndrome incrreases if the age of the mother exceeds forth years ?

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

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11. If a father and son are both defective in red-greenn colour 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 aspertic acid and gultamic 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 strep have transformed the R-strain into virulent strain? Explain your answer.

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14. You are repeating the Hershey-Chase experiment and are provided with two isotopes $.^{32}P$ and $.^{15}N$(in place of $.^{35}S$ in the original experiment). How does yoe expect your results to be differnet?

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15. There is only one possible sequence of amino acids when deduced from a given nucleotides. But multiple nucleotides sequence can be

deduced from a single amino acid sequence. Explain this phenomena.

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16. A low level of expression of lac operon occurs at all the time. Can you explain the logic behind this phenomena.

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17. Would it be appropriate to use DNA probes such as VNTR in DNA fingerprinting of a bacteriophage?

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18. During in vitro synthesis of DNA, a researcher used 2. 3' dideoxy cytidine triphosphate as raw nucleotide in place of 2 deoxy cytidine triphosphate, other conditions remaining as standard. will further polymerisation of DNA continue upto the end or not? Explain.

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19. That background information did Watson and Crick have made available for developing a model of DNA ? What was their contribution ?

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20. What are the functions of

(i) methylated guanine cap?

(ii) poly-A 'tail' in a mature on RNA ?

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21. Do you think that the alternate splicing of exons may enable a structural gene to code for several isoprotains from one and the same gene? If yes, how? If not, why so ?

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22. Comment on the utility of variability in number of tansem 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 infomed 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 exmaple.

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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. Gene flow occurs through generations. Gene flow can occur across language barriers in humans. If we have a technique of measuring specific allele frequencies in different population of the world, can we not predict human migratory patterns in pre-history and history ? Do you agree of disagree ? Provide explanation to your answer.

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33. When we say ' survival of the fittest ' , does it mean that

(a) those which are fit only survive

(b) those that survive are called fit? Comment.

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34. Enumerate three most characteristic criteria for designating a Mendelian population.

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35. Migration may enhance or blurr the effects of selection' comment.

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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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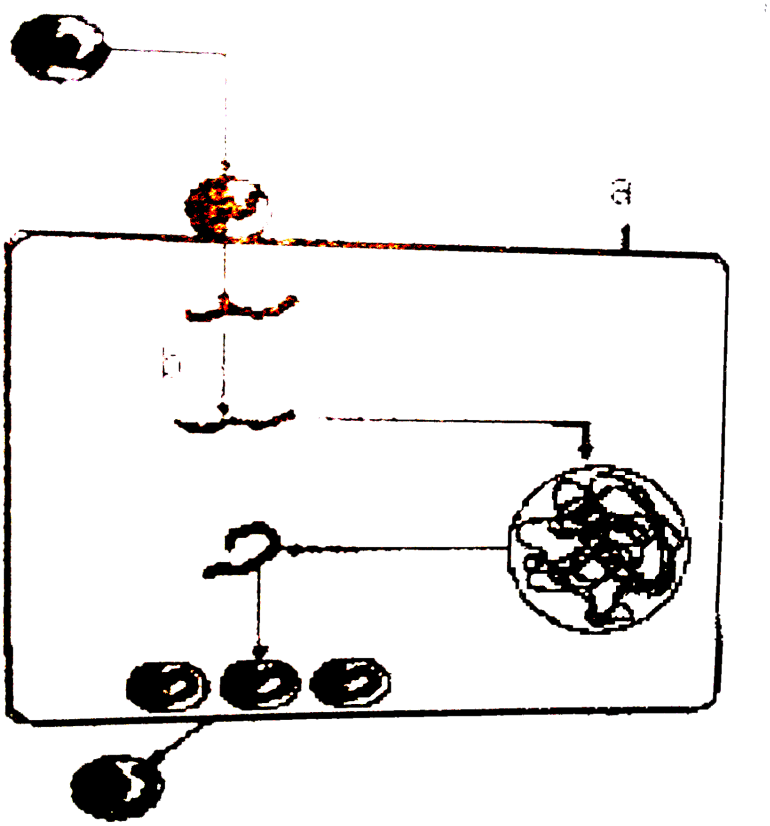
Section C

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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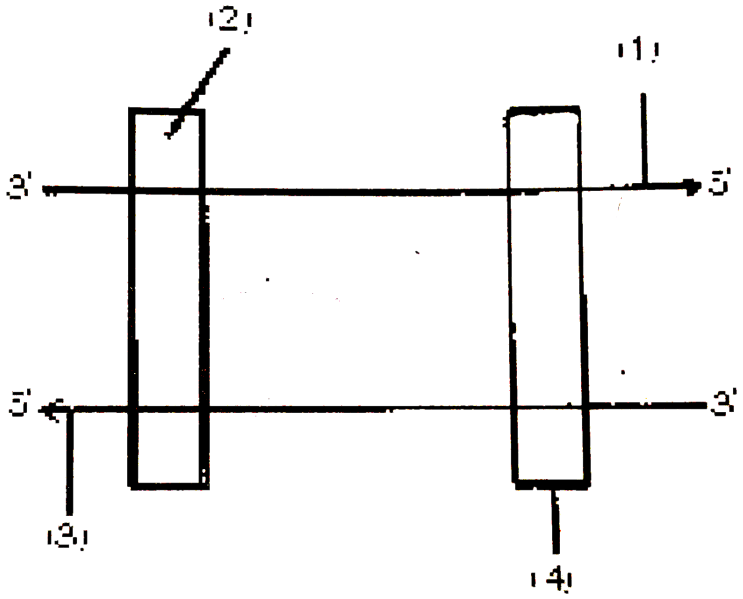
3. In the following diagram the two DNA strands represented are ready for transcription

(i) Label the parts marked 1 to 4

(ii) Which one of the two strands of DNA has nucleotide sequence similar

to the mRNA that will be transcribed and why ?



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4. What are types of sex-linkage?

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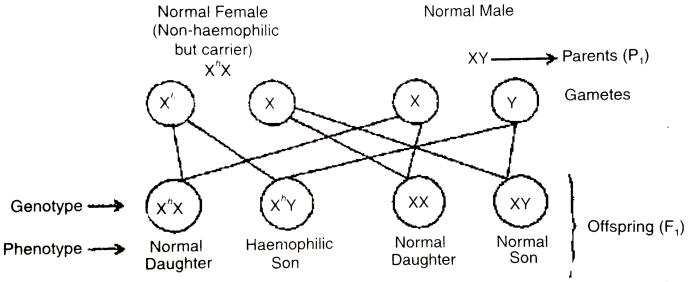
5. A non-haemophilic couple was informed by their doctor that there is possibility of a haemophilic child be born to them. Explain the basis on

which the doctor conveyed this information. Give the genotypes and the phenotypes of all the possible children who could be born to them.



When the female human is non-haemophilic but carrier and male is non-haemophilic; they may have a haemophilic child.

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6. What is 'semi- conservative' DNA replication ? How was it experimentally proved and by whom ?

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7. A homozygous tall pea plant with green seeds is crossed with a dwarf pea plant with yellow seeds.

(i) What would be the phenotypeand genotype of f_1 ?

(ii) Work out the phenotypic ratio of F_2 generation with the help of a punnet square.

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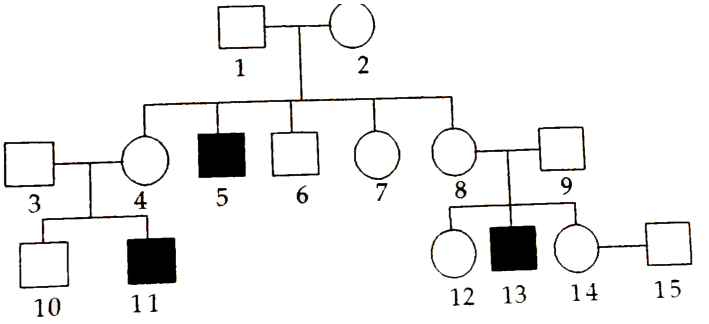
8. Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of Haemophilia in one family. Study the pattern of inheritance and answer the questions given.



(a) Give all the possible genotypes of the members 4, 5 and 6 in the pedigree chart.

(b) A blood test shows that the individual 14 is a carrier of gaemophilia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophilic male ? Show with the help of Punnett square.

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9. Inheritance pattern of ABO blood groups in humans shows dominance. codominance and multiple allelism. Explain each concept with help of blood group genotypes.

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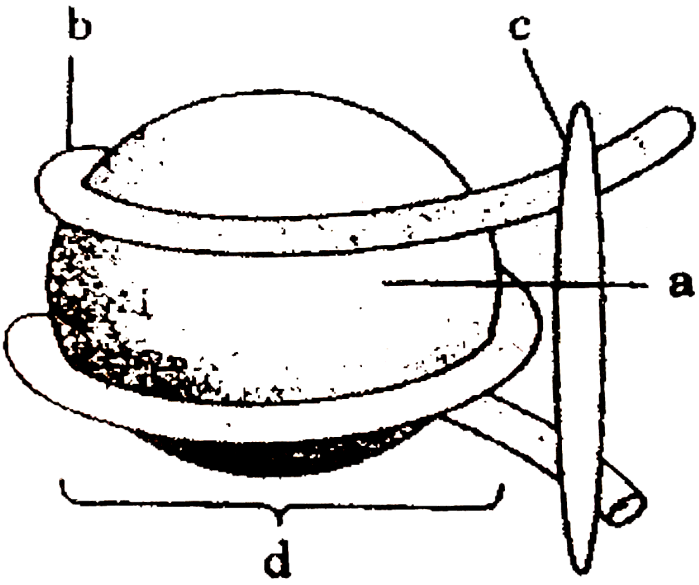
10. (a) What is this diagram representing?

(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. (a) In human genome which one of the chromosomes has the most genes and which one has the fewest?

(b) Scientists have identified about 1.4 million single nucleotide polymorphs in human genome. How is the information of their existence going to help the scientists?

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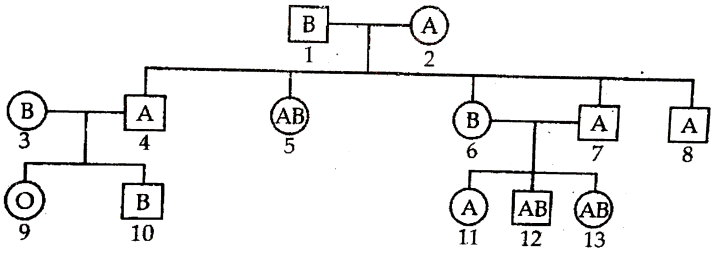
12. Study the pedigree chart given, showing the Inheritance pattern of blood groups in a family and answer the following questions



(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. Why are F_2 phenotypic and genotypic ratios same in a cross between red- flowered snapdragon and white-flowered snapdragon plants. Explain with the help of a cross.

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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 adapter 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 Drosopila that were sex-linked T.H. Morgan found F2-populabon phenotypic ratios deviated from expected 9 : 3 : 3 : 1. Explain the conclusion he arrived at.

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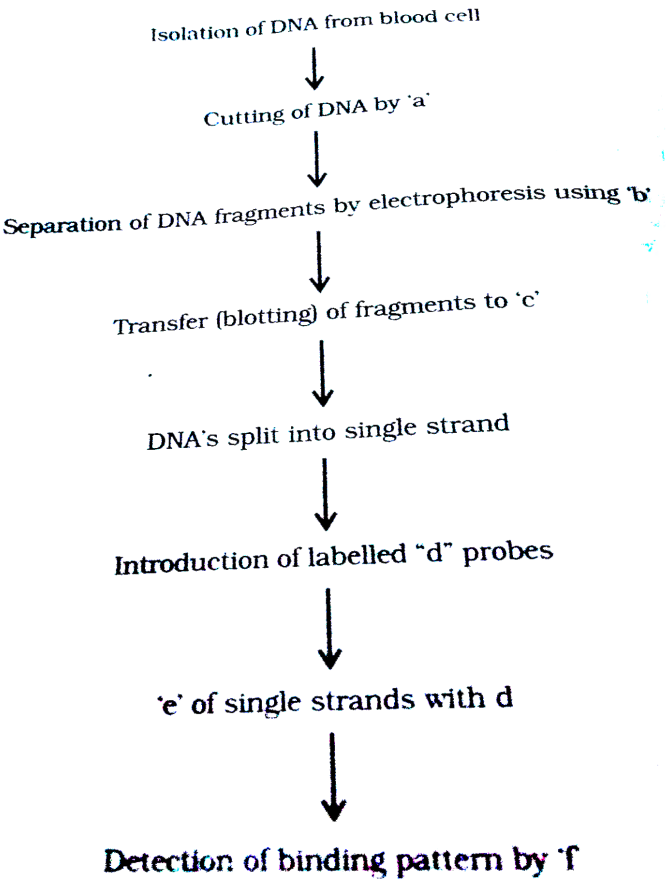
25. The following is the flow chart highlighting the steps in DNA finger printing technique. Identify a, b, c, d, e and f.



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

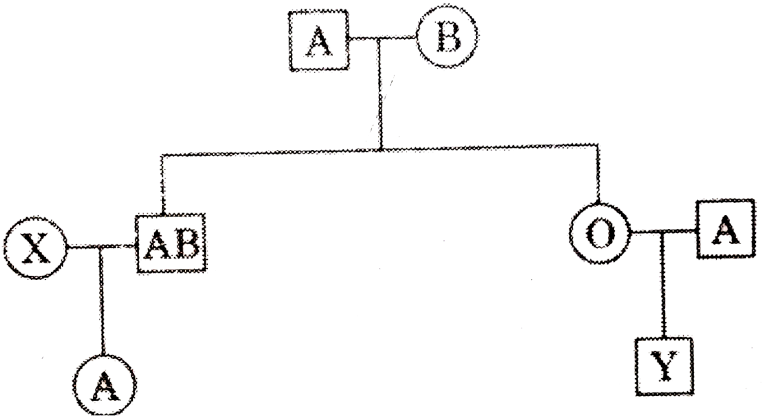
(a) Given the genotype of the following:

(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 are Satellite DNA in a genome? Explain their role in DNA fingerprinting.

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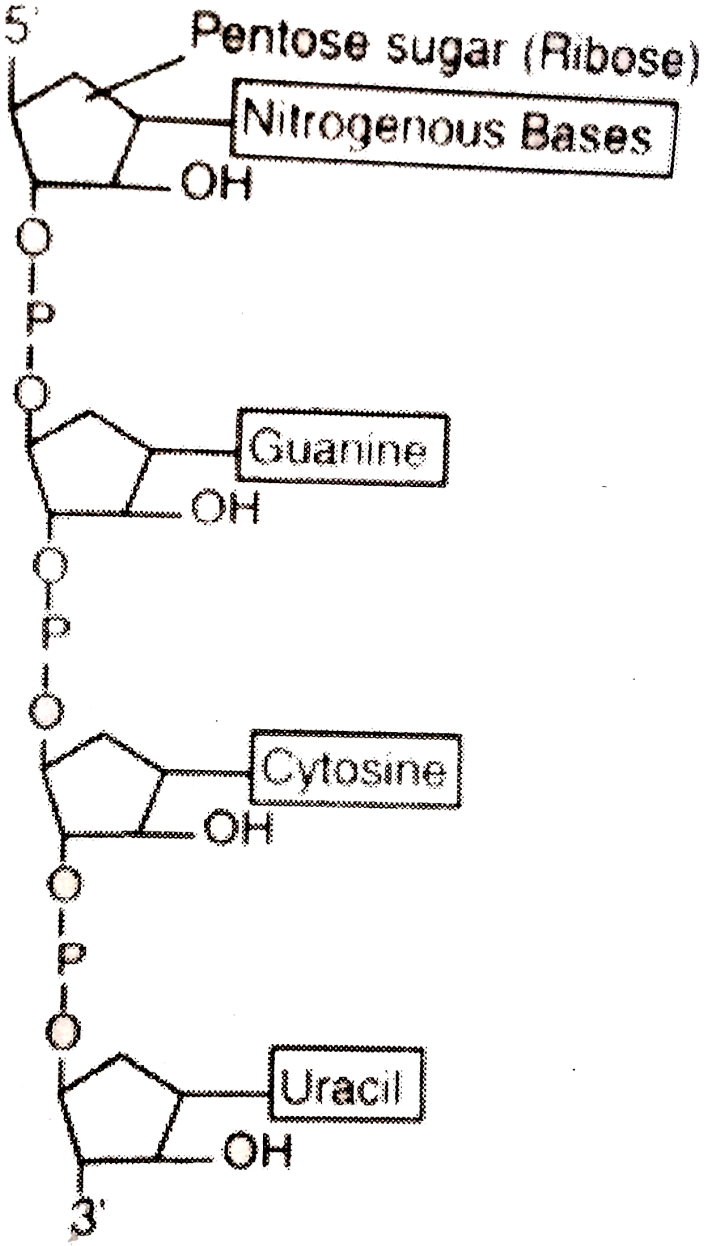
30. Describe the structure of an RNA polynucleotide chain having four different types of nucleotides.



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31. Why are human females rarely haemophilic? Explain. How do haemophilic patients suffer?

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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. (a) State Hardy Weinberg principle. Name any two factors which affect it.

(b) Draw a graph to show that natural selection leads to directional change.

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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.

(iv) Take up any one such factor and explain how the gene pool will change due to that factor

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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)How did Darwin explain the existance of different varietie of finches on Galapagos Islands ?

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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 mare 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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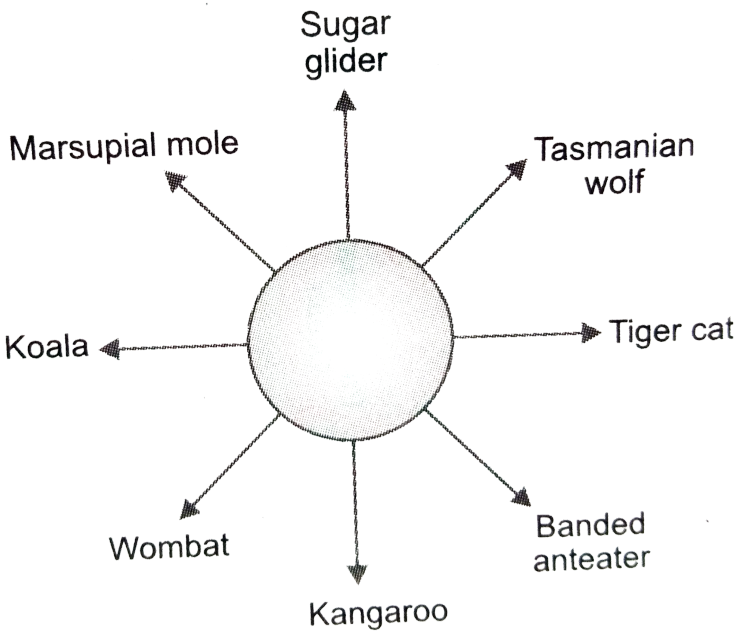
42. Study the figures below and answer the following :

(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.

(c)Explain giving reasons the existance of placental wolf and Tasmanian

wolf sharing the same habitat.



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43. Branching descent and natural selection are the two key concepts of Darwinian Theory of Evolution. Explain each concept with the help of a suitable example.

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44. With the help of any two 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. (a) Give reason for -

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

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

(b) Differentiate between the process of transcription in prokaryotes and eukaryotes

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2. Study the following carefully and explain why mutation (A) did not cause any sickle cell anemia in spite of change in the molecular structure of the gene which codes for Haemoglobin, when as a similar mutation (B) did. (The question is based on properties of the genetic code. c= codon, a = amino acid, Hb = Haemoglobin)

Codons for Hb:$C_1 - C_2 - C_3 - C_4 - C_5$ -G AA -GAA-C_8...

Amino acids in Hb : $a_1 - a_2 - a_3 - a_4 - a_5$- Glutamic acid- Glutamic acid -a_8..... (Normal Haemoglobin)

Mutation (A) :

$C_1 - C_2 - C_3 - C_4 - C_5 - GAG - \mathrm{GAA} - C_8 \ldots\ldots a_1 - a_2 - a_3 - a_4 - a$

-Glutamic acid -Glutamic acid -a_8.... (Normal Haemoglobin)

Mutation (B) :

$C_1 - C_2 - C_3 - C_4 - C_5 - GAG - \mathrm{GAA} - C_8 \ldots\ldots a_1 - a_2 - a_3 - a_4 - a$

-Valine-Glutamic acid -a_8.... (Sickle cell Haemoglobin)

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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. (a) Explain Griffith's series of experiments where he witnessed transformation in bacteria he worked with.

(b) Name the scientists responsible for determining the biochemical

nature of "transforming principle" in Griffith's experiments. What did they prove?

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6. Draw a labelled schematic structure of a transcription unit. Explain the function of each component of the unit in the process of transcription unit. Explain the function of each component of the unit in the process of transcription .

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7. A snapdragon plant homezygous for red flower when crossed with a white flowered plant of the same species produced pink flowers in F_1 generation.

(a) What is the phenotypic expression called ?

(b) Work out the cross to show the F_2 generation when F_1 was self-pollinated. Give the phenotypic and genotypic ratios of f_2 generation.

(c) How do you compare the f_2 phenotypic and genotypic ratios with those of Mendelian monohybrid f_2 ?

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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. How did Hershey and Chase proved that DNA is the hereditary material? Explain their experiment with suitable diagram.

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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. (i)How does a chromosomal disorder differ from a Mendelian disorder?

(ii) Name any two chromosomal disorders.

(iii) List the characteristics of the disorders mentioned above that help in their diagnosis.

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12. Explain the causes, inheritance pattern and symptoms of any two Mendelian genetic disorders.

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13. (a) Why is haemophilia generally observed in human males? Explain the conditions under which a human female can be haemophilic.

(b) A pregnant human female was advised to undergo MTP. It was diagnosed by her doctor that the foetus she is carrying has developed from a zygote formed by an XX-egg fertilized by Y-carrying sperm. Why was she advised to undergo MTP?

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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) State the properties of DNA replication model.

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

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16. Inheritance patterns of flower colour in garden pea plant and snap dragon differ. Why is the difference observed? Explain the difference with the help of crosses in their inheritance patterns.

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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) How would you counsel the family not to blame the mother for delivering a child suffering from this disease ? Explain...

(c) List the values your counselling can propagate in the families.

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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.

Watch Video Solution

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

(b) How did Morgan show the deviation in inheritance pattern in Drosophila with respect to this law?

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20. Stanley Miller performed an experiment by recreating in the lab the probable conditions of the atmosphere of the primitive earth.

(i) What was the purpose of the experiment?

(ii) In what form was the energy supplied for the chemical reaction to

occur?

(iii) Give a diagrammatic representation of Miller's experiment

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21. Explain the salient features of Hugo de Vries theory of mutation. How is Darwin's theory of natural selection different from it? Explain.

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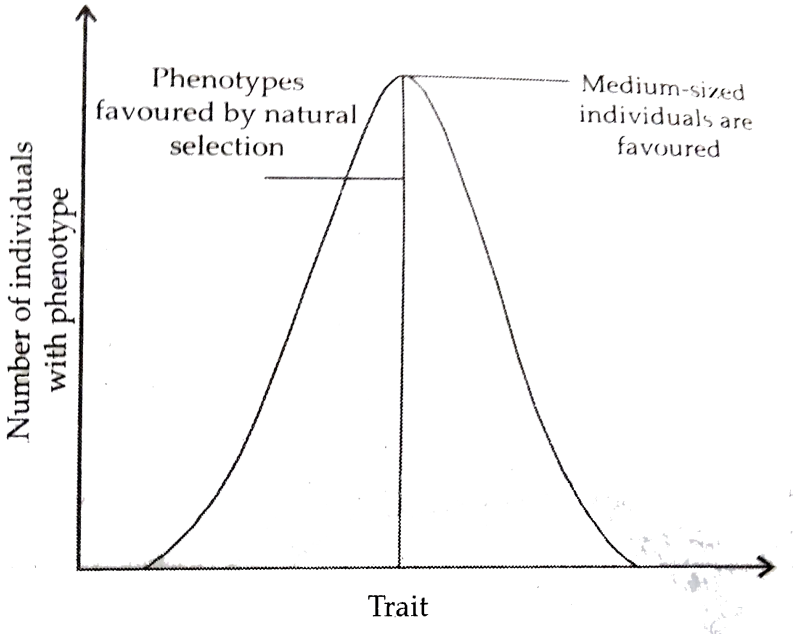
23. The rate of appearance of new forms is linked to the life span of an organism. Explain with the help of a suitable example.

View Text Solution

24. (a) Write the Hardy-Weinberg principle.

(b) Explain the three different ways in which natural selection can affect the frequency of a heritable trait in a population shown in the graph given below.



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25. How does the process of natural selection affect Hardy-Weinberg equilibrium? Explain List the other four factors that disturb the

equilibrium.

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Assertion And Reason

1. [A]: The two members of a gene pair segre- gate 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

View Text Solution

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

[R]: Selection is the basis for the improve- ment of crops through prant 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

View Text Solution

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

[R]: It causes massive destruction of foetal R8Cs that leads to anaemia and tissue dam- age 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

Watch Video Solution

4. [A]: Genetic disorder, sickle cell anaemia is common in new born babies· [R]: It is caused by heterozygosity for allble Hbc, producing a single ammo acid substitu tion in the a-chain of the Haemoglobin deter- mined 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

View Text Solution

5. [A]: PKU is a autosomal recessive hereditary metabolic disease caused by the body's fail- ure 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

Watch Video Solution

6. [A]: Each gemete 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

View Text Solution

7. [A]: When doing genetics problems, firs de- cide the appropriate key and then determine the genotype and gametes for both parents.

[R]: It is necessary to keep in mind that al- though 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

View Text Solution

8. [A]: Chromosomes are divided into hetero- chromatin 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

View Text Solution

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

View Text Solution

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

Watch Video Solution

11. [A]: Exchange of genetic material occurs dur- ing 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

View Text Solution

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 an- other 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

View Text 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

View Text Solution

15. Assertion : Muatations are necessary for the survial to 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

View Text 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

View Text 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

View Text 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

View Text 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 celled 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

View Text Solution

21. [A]: Chromosomes appear longer during te-lophase.

[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

View Text Solution

22. [A]: Copy choice theory for crossing over was propos'ed by Belling.

[R]: Accprding to this theory, paired chromo- somes 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

View Text 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

View Text 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

View Text 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

View Text 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 chromo- some.

[R]: Translocation involves duplication of ge- netic material causing chromosomal aberra- tion 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

View Text 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

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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 Centrifu- gation 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

View Text Solution

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

Reason ® : Because there wold 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. 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

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

View Text Solution

36. [A]: Genetic engineering is the use of tech- nology 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

View Text Solution

37. [A]: The Lac operon is an example of induc- ible 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

View Text Solution

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

[R]: Since the structure of specific proteins (enzymes) is controlled by the genes and fol- lows 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

View Text Solution

40. [A]: Raphanobrassica is an excellent ex- ample of allotertraploidy.

[R]: It involves intergeneric cross between radish genus- Raphanus and cabbage ge- nus- Brassica, each of which has a diplid 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

View Text 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. Assertion (A) : Adenine cannot pair with cytosine.

Reason ® : Because there wold 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: 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 dif- ferent 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

View Text Solution

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

View Text Solution

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

[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

View Text Solution

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

[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

View Text Solution

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

[R]: It is based on the pattern, length, and· number of DNA repeats and ate 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

View Text Solution

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

[R]: Chromatin is classified as euchromatin or heterochromatin on the basis of stain-ing properties. Euchromatin is thqught to be ac- tively 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

View Text Solution

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

View Text Solution

50. [A]: Lampbrush chromosomes arf3 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 re- gions 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

View Text Solution

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

Reason(R) : In some plants supernumerary chromosomes result in decrased 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

View Text Solution

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

[R]: In these chromosomes the centromere occurs in the centre and 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

View Text Solution

54. [A]: Chromosomes are divided into hetero- chromatin 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 chromo- some 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

View Text Solution

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

View Text Solution

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

Reaosn : 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 tech- nology 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 engi- neering 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

View Text Solution

58. [A]: Polymerase chain reaction (PCR) fol- lowed by DNA probe is used during DNA fin- ger printing.

[R]: A DNA finger print is inherited and, there- fore, 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

View Text Solution

59. [A]: The preparation of recombinant DNA re- quires 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

View Text 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

View Text Solution

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

View Text Solution

62. [A): Prokaryotic cells do not contain repres- sor 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

View Text Solution

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 bearin~ re- cessive (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

View Text Solution

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

[R]: In pericentric inversion, the inverted seg- ment 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

View Text 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

View Text Solution

66. [A]: Haemophillia is a genetically linked dis- ease.

[R]: The carrier gene is present on X chromo- some 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

View Text Solution

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

[R]: The cytoplasmic male sterility ir, 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

View Text 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

Watch Video Solution

69. [A]: Sickle-cell anaemia is a genetically de- termined 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 a-chain of the normal haemoglo- bin 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

View Text Solution

70. [A]: The deleted region of long arm of chro- mosome 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

View Text Solution

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

[R]: It hE:lps 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

View Text Solution

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

[R]: Cloning in another sense is sexual re- production.

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

View Text 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

View Text 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

View Text 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

View Text 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

View Text Solution

78. [A]: Radioactive carbon $\hat{}(14)C$ 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

View Text 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

View Text 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

View Text Solution

81. [A]: Vestigeal organs are those parts of the body which are greatly reduced and are use- less.

[R]: These are the ruminants of once fully de- veloped 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

View Text Solution

82. [A]: Homology is the similarity between or- gans of same animal based on common ancestory.

[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

View Text Solution

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

View Text Solution

84. [A]: Convergent evolution leads to pro_duct1on of analogous similarities among different groups of organisms.

[R]: Animals of the same grou~ or closely r~- lated 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

View Text Solution

85. [A]: Heritable changes are also called muta- tions.

[R]: Mutations are sudden change in chromo- somal 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

View Text Solution

86. [A]: In some organisms the end stages of the ancestral development pattern are dropped, as ·in case of neoteny.

[R]: In some animals, some middle stages are dropped in the descendents

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

View Text Solution

87. [A]: Homologous organs have similar struc- ture 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

View Text Solution

88. [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

View Text Solution

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

[R]: Prosimians (Tarsiers, lemurs) which di- verged first, are most distantly related to hu- mans and most closely related to original pri- mates.

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

View Text Solution

90. [A]: Macro evolution produces groups of par- allel 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

View Text Solution

91. [A] : Organisms that bear large number of common amino acid sequence may be con- sidered to be more closely related than to those with greatly different amino acid se- quence.

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

View Text Solution

92. [A]: Homologous organs are similar in basic structure and embryonic origin, but serve dif- ferent functions.

[R]: Similarity in basic structure points to common ancestry whereas diversity in func- tion reflects adaptation to different modes of life.

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

View Text Solution

93. Assertion:Analogous organs serve the same function and look alike, but have different structure and embroyonic 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

Watch Video Solution

94. 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

Watch Video Solution

95. 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

Watch Video Solution

96. [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

View Text Solution

97. [A]: The first life orginated was chemo-het- erotrophic.

[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

View Text Solution

98. [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

View Text Solution

99. [A]: Cabbage, cauliflower, Kohlrabi, Broccoli and Brussels have descended from a com- mon ancestor Colewort (Brassies oleracea).

[R]: These varieties were produced through selective breeding (artificial selection) of do- mesticated 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

View Text Solution

100. [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

View Text Solution

101. [A]: According to the theory of Lamarck use and disue caused the increase and de- crease in size of organs and environment caused the changes which can be trans- ferred 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

View Text Solution

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

[R]: It was quite intelligent to use and con- struct 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

View Text Solution

103. [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

View Text Solution

104. [A]: Darwin held that small favourable varia- tions 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

View Text Solution

105. 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

Watch Video Solution

106. [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

View Text Solution

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

[R]: Reproductive isolation does not let evolu- tion 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

View Text Solution

108. [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 adapta- tion 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

View Text Solution

109. [A]: Artitical selection is done only in animal breeding.

[R]: Artifical 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

View Text Solution

110. [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

View Text Solution

111. [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

View Text Solution

112. [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

View Text Solution

113. [A]: The establishment of reproductive isola- tion is an event of biological significance.

[R]: Because in absence of reproductive iso- lation they can merge back into single popu- lation

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

View Text Solution

114. [A]: Random mutations together with genetic drifts and selection pressure establish ge- netic 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 sub-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

View Text Solution

115. [A]: Varied groups of plants and animals ei- ther related or unrelated provide an example of divergent evolution.

[R]: The changes occur in a cumulative direc- tion and result in the origin of new popula- tions 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

View Text Solution

116. [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

View Text Solution

117. [A]: The earliest living organisms were truc-turally 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

View Text Solution

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

[R]: Evolutior, is a discontinuous 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: D

View Text Solution

119. 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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120. 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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121. 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

Watch Video Solution

122. 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

Watch Video Solution

123. 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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