



BIOLOGY

BOOKS - JMD BIOLOGY (PUNJABI ENGLISH)

MOLECULAR BASIS OF INHERITANCE

Exercise

1. The genetic material of of $\phi \times 174$ is

A. SSDNA

B. SSRNA

C. DSDNA

D. DSRNA

Answer: A



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2. Under which of the following conditions will there be no change in the reading frame of

following

mRNA?

5' \backslash CAGCGGUGCUAUU 3

A. Deletion of G from 5th positions

B. Insertion of A and G at 4th and 5th positions respectively

C. Deletion of GGU from 7th, 8th and 9th position

D. Insertion of G at 5th position

Answer: C



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3. Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology?

- A. genetic code is redundant
- B. genetic code is nearly universal
- C. genetic code is specific
- D. genetic code is not ambiguous

Answer: B



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4. Match the following genes of the lac operon with their respective products:

(a) (i) gene (i) beta- galactosidase (b) (z) gene
(ii) permease (c) (a) gene (iii) repressor (d) (y)
gene (iv) transacetylase

A. iii(a), i(b), ii(c), iv(d)

B. iii(a), i(b), iv(c), ii(d)

C. iii(a), iv(b), i(c), ii(d)

D. i(a), iii(b), ii(c), iv(d)

Answer: B



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5. Purines found both in DNA and RNA are:

- A. adenine and guanine
- B. guanine and cytosine
- C. cytosine and thymine
- D. adenine and thymine

Answer: A



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6. Expressed sequence tags (ESTs) refers to

- A. polypeptide expression
- B. DNA polymorphism
- C. Novel DNA sequences
- D. genes expressed as RNA

Answer: B



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7. Select the correct of secondary guarding genetic code of glycine

A. GUU, GUC, GUA

B. GAU, GAC, GAA

C. GGU, GGA, GGC

D. GGU, GGA, GCU

Answer: C



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8. m-RNA is formed by

A. translation

B. transcription

C. duplication

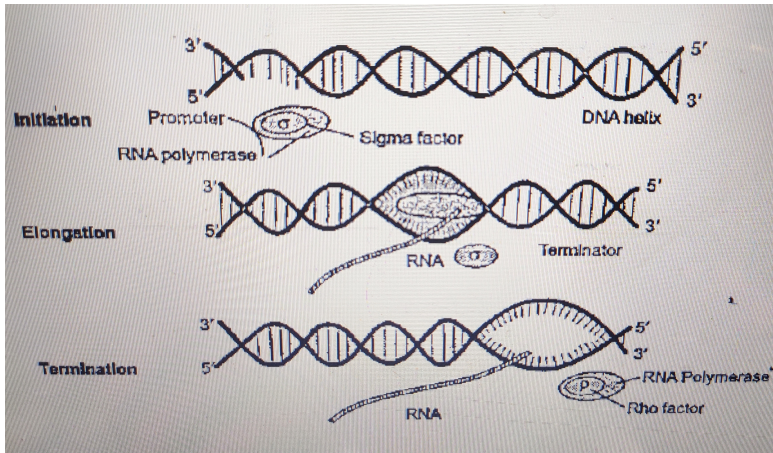
D. capping

Answer: B



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9. Identify (a),(b) and (c)



A. - elongation(a), -termination (b), -
initiation (c)

B. -initiation(a), -termination (b), -
elongation

C. -initiation (a), -elongation (b), -
termination (c)

D. -termination (a), -elongation (b), -
initiation (c)

Answer: B



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10. Find the correct palindromic sequence:

5' ATRGC∇T3'

A. $5' \text{ } \forall \text{CG} \text{ } \top \text{ } A3'$

B. $3' T \forall \text{CG} \text{ } \top \text{ } A5'$

C. $5' T \forall \text{CG} \text{ } \top \text{ } A3'$

D. $3' A \text{ } \top \text{ } GC \forall T3'$

Answer: B



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11. Gene library or DNA library has collection of

A. DNA and RNA

B. any one type of gene of organism

C. cDNA only

D. all possible genes of all organisms

Answer: C



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12. Which of the following switch off lac operon?

A. structural gene

B. regulator gene

C. operator gene

D. promoter gene

Answer: B



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13. The genetic codes of arginine are:

A. CGU, CGC, CGA

B. CAU, CAC, CAA

C. AGU, AGC, AAC

D. GAU, GAC, GAA

Answer: A



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14. Which of the following are all nucleotides?

A. adenosine, cytidilic acid, cytosine

B. adenylic acid, cytidilic acid, guanylic acid

C. cytidine, adenine, adenylic acid

D. uracil, thymidine, thymidylic acid

Answer: B



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15. Who discovered DNA fingerprinting?

A. Alec Jeffery

B. Jacob Monad

C. Herbert Boyer

D. Stanley Cohen

Answer: A



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16. Correct sequence for alanine code:

A. GCU, GCC, GCA

B. GAU, GAC, GAA

C. AGU, AGC, AGA

D. GUU, GUC, GUA

Answer: A



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17. Which mutation causes change in allele:

A. chemical

B. radiation

C. transposons

D. spontaneous mutation

Answer: C



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18. Which is not possible by mutation?

A. development of new variety

B. regeneration

C. recombination

D. disease resistant plant

Answer: B



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19. Percentage of (G+C) is

A. $G+C/(A+G+T+C) \times 100$

B. $100/A+T \times G+C$

C. $G+C/A+T+G+C$

D. $(G+C) \times (A+T)/100$

Answer: A



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20. The genetic code of proline is

A. CCC,CCG,CCU

B. CCU,UCA,CUG

C. GUU,GUC,GUG

D. GGU,GUC,GGA

Answer: A



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21. The coding strand of DNA is:
 $5' \text{ T C A T A G G } 3'$ What is the
sequence of mRNA?

A. $3' \text{ T A G T T A T C } 5'$

B. $5' \text{ U U C A U U A G G } 3'$

C. $3' \text{ U U C A U U A G G } 5'$

D. $5' \text{ T A G T T A T C } 3'$

Answer: B



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22. DNA polymerase links nucleotide by forming which type of bond?

A. phosphodiester bond

B. hydrogen bond

C. glycosidic bond

D. ester bond

Answer: A



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23. Select the wrong statement:

A. the human genome contains 3164.7
millions nucleotide bases

B. less than 10% of the genome codes for
protein

C. repeated sequences make up very large
protein of the human genome

D. chromosome has most genes (2968) and
Y has the fewest (231)

Answer: B



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24. Choose the correct statement.

A. transcription and translation occur in same compartment for prokaryotes

B. monocistronic RNA express more than one structural gene under single promoter

C. introns and exons both code for protein synthesis

D. in prokaryotes splicing and tailing occurs after translation

Answer: A



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25. Arrange the following on the basis of increasing size:

- A. nucleotide, chromosome, gene, genome
- B. genome, chromosome, nucleotide, gene
- C. nucleotides, genome, gene, chromosome
- D. nucleotides, gene, chromosome, genome

Answer: D



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26. Fill in the Blanks

Another name of Thymine is _____.



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27. Fill in the Blanks

The pitch of DNA helix is _____ nm



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28. Fill in the Blanks

_____ charged DNA is wrapped
around _____ charged histone octamer.



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29. Fill in the Blanks

_____ is said to be transcriptionally active chromatin



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30. Fill in the Blanks

DNA chemical is _____ reactive and structurally _____ stable.



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31. Fill in the Blanks

In Eukaryotes replication of DNA takes place at _____ of cell cycle.

A. (i) G1

B. (ii) S or Synthesis phase

C. (iii) G2

D. (iv) M or Mitosis Phase

Answer:



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32. Fill in the Blanks

The _____ and _____ flank the structural gene in a transcription unit.



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33. Fill in the Blanks

the RNA polymerase II transcribe precursor of _____



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34. Fill in the Blanks

The codon is read in mRNA in a _____ fashion



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35. Fill in the Blanks

_____ are present before start codon and after stop codon.



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36. True and False Type Questions

VNTR belongs to a class of mini satellite DNA.



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37. True and False Type Questions

Less than 2% of the human genome codes for proteins.



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38. True and False Type Questions

AUG code performs double function in a cell.



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39. True and False Type Questions

RNA polymerase binds to operator to initiate transcription .



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40. True and False Type Questions

RNA is more stable than DNA.



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41. True and False Type Questions

Cistrone is segment of DNA coding for a polypeptide.



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42. True and False Type Questions

The exons are interrupted by introns in prokaryotes.



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43. True and False Type Questions

Stop codons are meant for synthesis of methionine.



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44. True and False Type Questions

i gene refers to inducer of operon.



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45. True and False Type Questions

Largest known human gene is dystrophin.



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46. A double stranded DNA molecule has 20% of cytosine. Using Chargaff's law calculate the percentage of adenine in this DNA molecule.



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47. Differentiate between mRNA and tRNA.



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48. What is a template strand and coding strand ?



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49. Explain (in one or two lines) the function of following: (i) promoter, (ii) tRNA, (iii) Exons



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50. List the requirements for transcriptions.



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51. What is cistron?



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52. What is anticodon?



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53. Explain in brief about the procedure of DNA fingerprinting.



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54. Write four essential requirements of Genetic material.



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55. List the characteristics of DNA.



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56. Explain briefly the genetic code.



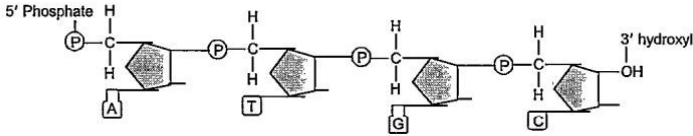
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57. What is central dogma of flow of information?



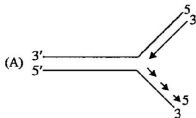
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58. What is shown in the following figure? Also mention the chemical components.

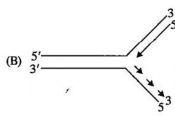


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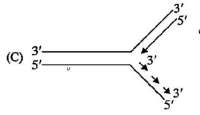
59. Which of the following correctly represents the manner of replication of DNA? Name the enzyme in DNA replication.



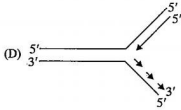
A.



B.



C.



D.

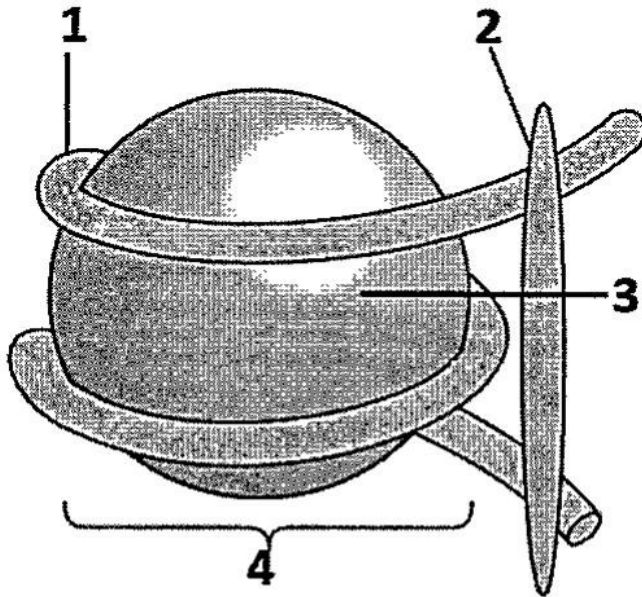
Answer: C



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60. Consider the parts labelled in 1,2,3 and 4 respectively in the following diagram of Nucleosome and find out the correct

sequences:



A. 1-DNA,2-H2 histone, 3-Histone octamer, 4-
core of histone molecules

B. 1-DNA,2-H3 histone, 3-Histone octamer, 4-
core of histone molecules

C. 1-DNA,2-H4 histone, 3-Histone octamer, 4-
core of histone molecules

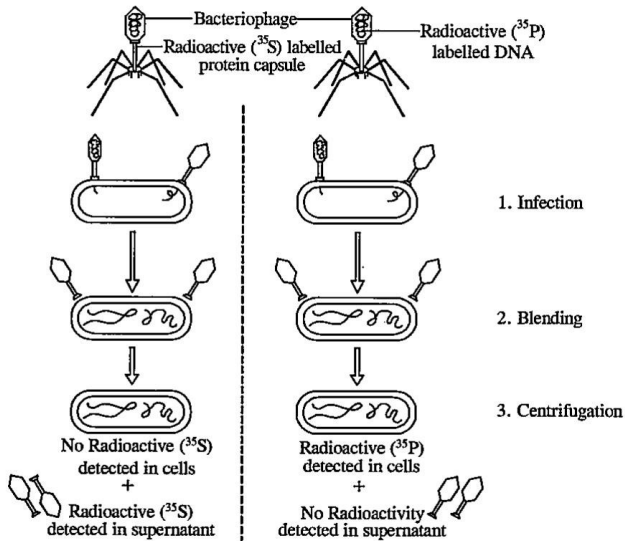
D. 1-DNA,2-H1 histone, 3-Histone octamer, 4-
core of histone molecules

Answer: D



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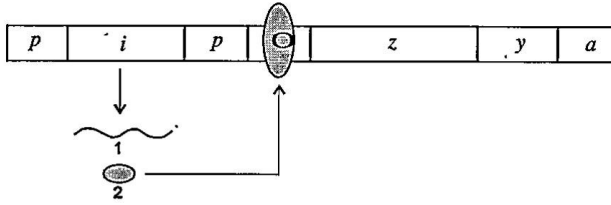
61. What is shown in the following figure?



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62. Consider the parts labelled in 1 and 2 respectively in the following diagram of lac

Operon and find out the correct sequences:



- A. 1-Repressor, 2-Repressor mRNA
- B. 1-Repressor mRNA, 2-Repressor
- C. 1-Repressor tRNA, 2-Repressor
- D. 1-Repressor rRNA, 2-Repressor

Answer: B



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