BIOLOGY

NEET & AIIMS

MOLECULAR BASIS OF INHERITANCE

Example

1. If a DNA molecule has 2000 bp then calculate the,

(a) Number of sugar and phosphate molcules.

(b) Number of N-glycosidic linkage.

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2. DNA was extracted form Strptococcus bacterium. The propterium. The Proportion of Adenine was found to be 28% then calculate the amount of cytosine

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3. If the sequence of one strand on DNA is written as follows :

5- T G A G C T A G C T A G C T A G C A T C G - 3

Write down the the sequence of complmentry strand in $5 \rightarrow 3$ direction.

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4. Enumerate the number of beaded structures (nucleosmes) present in the nucleus of diploid eukaryotic cell which possess $2.4 \times 10^6 bp$.

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5. Fill in the blanks.

Viruse grown in the presence of radioactive phosphorous contained radioactive_____but not radiocative_____.

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6. Fill in the blanks.

RNA is labile and easily degradable due to the prsence of _____group in sugar.

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7. If hydrid DNA is allowed to replicate for one gernerative in medium containing N^{14} and for second generation in medium containing N^{15} then what is the proportion of light , heavy and hydrid DNA obtained respectively?

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8. Consider the given diagram and answer the question.

(a) What is the polaritiy of template strand which forms contionous complementary strand?

(b) Mention the polarity of template stand which forms Okazaki's fragments.

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9. During DNA synthesis in bacteria which of the following enzyme is not required ?

(1) DNA dependent DNA polymerase.

(2) DNA dependent RNA polymerase.

(3) RNA dependent DNA polymerase.

(4) DNA gyrase .

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10. If the sequence of coding strand in a transcription units is written as follows:

5 - C G T A T C G A T C G G T T C G A -3

Write down the sequence of complementary stand in $3 \rightarrow 5$ direction.

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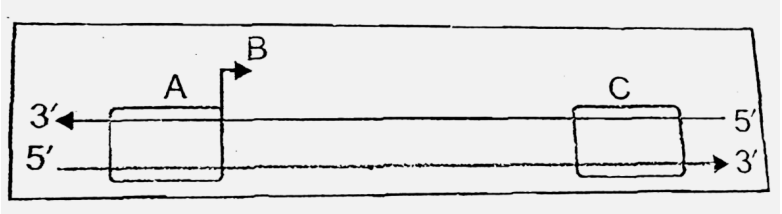
11. Identify the labelled structure is given diagarm:



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12. When the polymerase reaches the terminator region, the nascent RNA and enzyme are released by which polyeptide molcule?

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13. Select incorrectly matche pair:

(1) Catalystic RNA – Soluble RNA

(2) Snurps – SnRNA

(3) Capping – Guanosyl transferase

(4) Ambinguous condon – GUG

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14. Arrange Charged tRNA molecules according to given mRNA sequence.

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15. Which gene of lac operon is always functioning ? Mention its product.

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16. Lac operan exerts negative control when

(1). Repressor binds promoter gene.

(2) Repressor binds operator gene.

(3). Inducer binds repressor.

(4) Repressor binds with structural gene.

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17. State True or False:

VNTR is non-radioactive and probe is radioactive.

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18. State True or False:

Less than 2% of genome contain non-coding sequences.

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19. State True or False:

Sequencing of whole genome with both coding and non-coding regions is ESTs.

20. State True or False:

Transfer of VNTR form gel to nylon paper is boltting technique.

Try Yourself

1. Select true of false statement :

(a) Two nucleotides in a strand are linked throught H -bond to from a dinucleotide

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2. Select true of false statement :

(b) The pitch of the DNA helix is 3.4 nm.

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3. Select true of false statement :

(c) Deoxythymidine is monomet nucleotid of DNA.

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4. Select true of false statement :

(d) DNA is packaged with non-histone basic protein to form nuleoid .

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5. Can you suggest simple name to the process of RNA $\rightarrow$ DNA synthesis ?

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6. What will be the result of failur in cell division after DNA replication ?

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7. what should the nature of genetic code if there would have been 65 amino acids ?

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8. Mention the correct sequence of steps followed after separation of DNA fragments by electrophoresis in DNA fingerprinting.

(a) Hybridization.

(b) Autoradiography .

(c) Blotting.

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Try Yourself Fill In The Balnks

1. DNA in chromosomer replicate semiconservatively was experimently proved in vicia faba by _____using_____.

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2. Deoxyribonucleoside triphosphate acts as _____ and they provide_____ for polymerisation.

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3. What is the site of DNA replicaiton in cell cycle?

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Try Yoursefl Fill In The Balnks

1. The disctinously synthesised fragment are joinied by the enzyme_____ during DNA replication.

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Try Yourself Fill In The Balnks

1. The transcription and transiation can be coupled in _____.

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2. _____do not appear in mature of processed RNA.

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3. The teminator is located at _____ end of non template strand.

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4. The codons is read in mRNA in a contiguous fashion there are no____.

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5. Gene mutation involving insertion or deletion of one ni9trogen base is_____ mutation.

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Try Yourself Select True Of False Statement

1. state true or false: Attachment of smaller unit of ribosome on mRNA bring the initation codon at A site.

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2. Peptidy transferase is RNA enzyme formed by 23Sr rRNA of large subunit of 70s ribosme.

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3. VNTR varies in size from 0.01 to 200kb.

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Exercise

1. Which of the following bond is not associated with a deoxyribonucleotide?

A. Phosphoester bond

B. Glycosidic bonds

C. Phosphodiester bond

D. More than one option is correct.

Answer: C

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2. RNA possess additional_____group at _____position in the sugar than the DNA.

A. $OH, 5$

B. $H, 2$

C. $OH, 2$

D. $H, 5$

Answer: C

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3. Hallmark of the Watson and Crick three dimensional DNA model was based upon the findigs of

A. Wilkins and Franklin

B. Erwin charagaff

C. Hershey and Chase

D. Meselson and Stahl

Answer: B

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4. Which of the following DNA form has maximum number of bases pairs per turn ?

A. A-DNA

B. B-DNA

C. C-DNA

D. Z-DNA

Answer: D

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5. Which of the following is a part of nu-body ?

A. Histone octamer

B. DNA + Core of nucleosome

C. H1 prtoein

D. $1.\ \frac{3}{4}$ turn of DNA + H1 prtoein

Answer: A

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6. Choose the correct steps in the organisation of eukaryotic chromosome

A. Nucleosome $\rightarrow$ Solenoid $\rightarrow$ Supersolenoid .

B. Sotenoid $\rightarrow$ Nucleosome $\rightarrow$ Chromatid

C. DNA $\rightarrow$ Solenoid $\rightarrow$ Nucleosome

D. Chormation $\rightarrow$ Solenoid $\rightarrow$ Nucleosome

Answer: A

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7. Heterochromatin

A. Is transcriptionally acitve

B. Is densely packed

C. Replicated during early S-phase

D. Stains lightly

Answer: B

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8. Non-histone proteins

A. Are of five types

B. Are involved in nucleosome formation

C. Control gene expression

D. Are basic proteins

Answer: C

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9. The number of glycosidic bonds associated with DNA of diploid human cell are

A. 6.6×10^9

B. $2 \times 6.6x10^9$

C. 3.3×10^9

D. $3.3 \times 10^9 - 2$

Answer: B

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10. Which of the following does not confer stability to the helical structure of DNA ?

A. Phosphodiester bond

B. H-bond

C. N-glycosidic linkage

D. More than one option is correct.

Answer: C

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11. Which of the following types of bacteria were used in Griffth's transformation experiment?

A. Dipolcoccus R-III and S - II type

B. Penumcoccus , T_2 phage

C. Streptococcus, R- II and S- III types.

D. Diplococcus, E.coil

Answer: C

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12. The biochemical nature of transforming principal was defined by.

A. Griffith

B. Avery Macleod, McCarty

C. Wastson and Crcik

D. Taylor

Answer: B

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13. In Hershey and Chase experiment,the protein of T_2 pahge was made radioactive by using

A. S^{32}

B. P^{31}

C. S^{35}

D. P^{32}

Answer: C

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14. Choose the correct option w.r.t RNA.

A. Presence of thymine in place of unracil

B. Absence of free 2'OH in sugar

C. Mutates at faster rate

D. Is non-catalytic

Answer: C

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15. Semiconsidervatione DNA replication was proved by Messelson and Stahl, in which DNA was made

A. Radioactive using N^{15}

B. Heavy using N^{14}

C. Heavy using $^{15}NH_4Cl$

D. Radioactive using $^{14}NH_4Cl$

Answer: C

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16. During DNA replication,strand separation by breaking the H-bonds in performed by

A. Topoisomerase

B. Gyrase

C. Helicases

D. More than one option is correct.

Answer: C

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17. RNA primer is removed by

A. DNAP -I

B. DNAP-II

C. DNAP -III

D. Primase

Answer: A

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18. How many types of DNA polymerase are associatd with eukaryotic cell ?

A. Three

B. Four

C. Five

D. Two

Answer: C

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19. Which of the following acts substrate as well as provide energy for DNA polymerisation

A. Ribonucleoside

B. Deoxyribonucleoside

C. Ribonucleotide

D. Deoxyribonucleoside triphosphate

Answer: D

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20. DNA replication is :

A. Semi-conservative, continuous, unidirectional

B. Semi-conservative, discontinuous

C. Semi-conservative, semi-discountinuous

D. Semi-continuous, conservative

Answer: B

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21. Which of the following is a genetic RNA ?

A. mRNA

B. rRNA

C. hm- RNA

D. RNA prsent in plant viruses

Answer: D

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22. The mRNa of prokaryotes is

A. Polycistronic

B. Monocistronic

C. Formed by splicing of hnRNA

D. Carries genetic message to DNA.

Answer: A

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23. Capping in hnRNA is catalysed by

A. Poly A polymerase

B. SnRNA

C. Guanyl transferase

D. Catalytic RNA

Answer: C

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24. Which of the following types of ribosomal RNA is not present in eukaryotic cytoplasm ?

A. 18S

B. 28S

C. 5.8S

D. 16S

Answer: D

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25. Mark the correct option (w.r.t function of RNAP-I)

A. 5.8S rRNA

B. 5S rRNA

C. SnRNA

D. ScRNA

Answer: A

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26. Soluble RNA is

A. tRNA

B. mRNA

C. rRNA

D. hnRNA

Answer: A

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27. Find the incorrect match

A. Central dogam : F.Crick

B. Reverse central dogma : Temin and Baltimore

C. Split genes : Kornberg

D. mRNA : Jacob and Monad

Answer: C

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28. Recongnition sequence for transctiption in prokaryotes is

A. TATATAT

B. TATAAT

C. TATAAAT

D. CAAT

Answer: B

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29. Transcription starts non-specifically in the absence of

A. Sigma factor

B. Rho foctor

C. Core enzyme

D. DNA polymerase

Answer: A

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30. Tailoring of hnRNa is done by

A. Snurps

B. Introns

C. Exons

D. 18 SrRNA

Answer: A

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31. Formylated methioine acts as translation initiation in

A. Eubacteria

B. Eukaryotes

C. Viruses

D. Archabacteria

Answer: A

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32. Which of the following codons is knows as ochre ?

A. UAG

B. UGA

C. UAA

D. UUU

Answer: C

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33. Which of the following is an ambiguous codon?

A. AUG

B. GUG

C. UGA

D. GAG

Answer: B

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34. Which property of genetic code is utilised in wobble hypothesis ?

A. Dengeneracy

B. Non-overlapping

C. Non-ambigous

D. Universal

Answer: A

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35. In the mitochondrial DNA, UGA codes for

A. Chain termination

B. Chain initiation

C. Tryptophan

D. Tyrosine

Answer: C

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36. Activation of amino acids during translation is done by

A. Peptidyl transferase

B. Aminoacyl - tRNA synthetase

C. Methionine

D. Initiation factors

Answer: B

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37. Movement of ribosome on mRNA is called

A. Transcription

B. Translation

C. Translocation

D. Protein synthesis

Answer: C

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38. The elongation factors required for prokaryotes are

A. EF-Tu and EF-Ts

B. eEF_1

C. elF_2

D. eEF_2

Answer: A

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39. Which of the following inhibits binding of amino-acyl tRNA to ribosomes?

A. Necomycin

B. Erthromycin

C. Streptomycin

D. tetracyclin

Answer: D

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40. The mechainsm by which a gene is able to express itself in the phenotype of an organism is called

A. Gene expression

B. RNA synthesis

C. Translocation

D. Formylation

Answer: A

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41. Some genes are constantly expressed in the bacterial cells. These genes are called:

A. Luxury genes

B. Constitutive genes

C. Non-constitutive genes

D. More than one option is correct.

Answer: B

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42. How many structural genes are present is lac-operon of E.coli?

A. 4

B. 3

C. 2

D. 1

Answer: B

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43. In lac-operon, β -galactosidase enzyme is made by

A. lac-y

B. lac-a

C. lac-z

D. lac-i

Answer: C

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44. Inducer molecule in lac-operon of E coil.is chemically a/an.

A. Disaccharide

B. Amino acids

C. Protein

D. RNA

Answer: C

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45. Tryptophan operon is

A. Catabolic system

B. Repressible system

C. Inducible

D. Having three structural genes

Answer: A

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46. Choose the correct option w.r.t the chemical natural of apo-repressor respectively in trp-operon?

A. Protein, Amino acid

B. Amino acids, Protein

C. Lipoidal, Sugary

D. Sugary, Lipoidal

Answer: B

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47. Gene battery model was proposed by

A. Jacob and Monad

B. Gamow

C. H.G. Khorana

D. Britten and Davidson

Answer: D

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48. An insect leg may change into antenna due to mutation in

A. c-oncogene

B. v-oncogene

C. Homeotic genes

D. Proto-oncogene

Answer: C

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49. In repressible operon system, co-repressor molecule is

A. Lactose

B. Tryptophan

C. Galactoside

D. Glucose

Answer: B

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50. Select incorrectly matched pair

A. Lac z - Constitutive gene

B. Operatorgene - Smallest gene of lac operon

C. Lac a - Transacaetylase

D. Promotor gene- RNA polymerase

Answer: A

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51. During DNA fingerpriting, separation of DNA fragmemts is done by

A. Autordiography

B. Hybridisation

C. Denaturation

D. Electrophoresis

Answer: D

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52. Sequenciong the whole set of genome that contained all the coding and non-coding sequence and later assigning different region in the sequences with functions are refferred to as

A. Sequence annotation

B. PCR

C. Northern blot

D. Microarray

Answer: A

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53. The last step of DNA fingerprinting is

A. Blotting

B. Autoradiography

C. Hybridisation

D. Isolation of desired DNA

Answer: B

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54. DNA fingerpinting can be used

A. To slove cases of disputed paternity and maternity

B. For criminal identification and forensics

C. For presonal identification

D. More than one option is correct.

Answer: D

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55. Human genome is said to have approximately

A. 3×10^9 bp

B. 3×10^6 bp

C. 6.6×10^6 bp

D. 3.3×10^6 bp

Answer: A

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56. How many total number of genes are found in human genome ?

A. 18000

B. 30000

C. 13000

D. 4000

Answer: B

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57. _____% of the genome codes for protein in human beings.

A. 0.98

B. 0.5

C. 0.24

D. $< 2\%$

Answer: D

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58. In humans, the largest gene is present on

A. Chromosome-1

B. Y-chromosome

C. X-chromosome

D. Chromosome-7

Answer: C

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59. TDF gene is the smallest gene in humans with

A. 231 bp

B. 14 bp

C. 2968 bp

D. 3000 bp

Answer: B

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60. SNPs stand for

A. Single nucleoside polymorphsim

B. Simple nucleotide polymorphism

C. Single nucleotide polymorphism

D. Simple nucleoside polymorphism

Answer: C

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Assignment Section A Objective Type Questions

1. Haploid content of human DNA contains

A. $4.6 \times 10^6 bp$

B. 3.3×10^8 bp

C. 6.6×10^9 bp

D. 3.3×10^9 bp

Answer: D

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2. Which of the following nitrogenous bases are common for both RNA and DNA?

A. C, G, A

B. G, A, U

C. T, A, C

D. U, A, C

Answer: A

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3. Adjacent nucleotides in a polynucleotide chain are joined by

A. N-glycosidic bond

B. Phosphodiester bond

C. O-glycosidic bond

D. Hydrogen bond

Answer: B

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4. Sugars are attached to the pyrimidines by the formation of

A. Hydrogen bond

B. N-glycosidic bond

C. Phosphoester bond

D. O-glycosidic bond

Answer: B

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5. Cytidine is a

A. Nucleoside

B. Nitrogen base

C. Nucleotide

D. Common dinucleotide in DNA and RNA

Answer: A

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6. Which of the following process is related to reverse transcription?

A. DNA dependent DNA synthesis

B. RNA dependent DNA synthesis

C. DNA dependent RNA synthesis

D. RNA dependent polypeptide synthesis

Answer: B

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7. Which of the following structures are present in core particle of nucleosome?

A. Octamer of histone proteins

B. 200 bp of DNA

C. Non-histone proteins

D. Linker DNA

Answer: A

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8. Packaging of DNA helix

A. Involves polyamines in eukaryotes

B. Occurs with the help of NHC proteins only

C. Requires acidic proteins that help in coiling of DNA in prokaryotes

D. Is more complex in eukaryotes than prokaryotes

Answer: D

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9. Length of DNA in E. coli is

A. 2.2 m

B. 1.36 mm

C. 1.36m

D. 3.4 m

Answer: B

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10. Which of the following radioactive isotopes were utilised for labelling protein and DNA in transduction experiment respectively?

A. $^{32}P, ^{35}P$

B. $^{53}S, ^{35}P$

C. $^{35}S, ^{32}P$

D. $^{32}S, ^{35}P$

Answer: C

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11. Dominance of RNA world is proved by

A. Capping

B. Splicing

C. Polyadenylation

D. All of these

Answer: B

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12. Which plant was- used by Taylor to prove semiconservative replication at chromosomal level?

A. Haematoxylan

B. Vicia faba

C. Trillium

D. Ophioglossum

Answer: B

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13. Unwinding of DNA creates tension which is released by enzyme

A. Helicase

B. Topoisomerase

C. Primase

D. Ligase

Answer: B

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14. During polymerisation of deoxyribonucleosides triphosphates in bacteria which of the following enzyme is mainly required?

A. DNA dependent RNA polymerase

B. DNA dependent DNA polymerase

C. RNA dependent DNA polymerase

D. DNA gyrase

Answer: B

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15. DNA polymerases catalyse polymerisation in

A. Ribonucleotides

B. $5 \rightarrow 3$ direction

C. $3 \rightarrow 5$ direction

D. Dexoyribonucleoside

Answer: B

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16. During DNA replication which of the following does not act as substrates?

A. dATP

B. dCTP

C. dUTP

D. dGTP

Answer: C

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17. Out of the two strands of DNA one is carrying genetic information for transcription and it is called

A. Coding strand

B. Non template strand

C. Sense strand

D. Template strand

Answer: D

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18. When a mature mRNA was hybridized to its gene, certain loops were observed. These loops represent

A. Intrans in DNA

B. Introns in rRNA

C. Exons in tRNA

D. Exons in DNA

Answer: A

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19. Poly A tail is present in

A. mRNA of bacteria

B. tRNA of eukaryotes

C. Promoter of bacteria

D. mRNA of eukaryotes

Answer: D

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20. Find out the incorrect match.

A. UUU - Phenylalanine

B. UAG - Sense codon

C. GUG - Valine

D. UGG - Tryptophan

Answer: B

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21. One codon codes for only one amino acid, hence the code is

A. Ambiguous and non-specific

B. Unambiguous and specific

C. Ambiguous and specific

D. Unambiguous and non-specific

Answer: B

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22. What is incorrect for UTR?

A. Present in between the translational unit in mRNA

B. Not recognised by any tRNA

C. Required for efficient translation process

D. Provide stability to mRNA

Answer: A

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23. In bacteria, catalytic RNA is found in

A. 60S subunit of ribosome .

B. 50S subunit of ribosome

C. 30S subunit of ribosome

D. 40S subunit of ribosome

Answer: B

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24. In lac operon,the regulator gene codes for

A. Aporepressor

B. Coreprssor

C. Inactive repressor

D. Active repressor

Answer: D

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25. Mark the incorrect option w.r.t lac operon

A. Is under positive as well as negative control

B. Controls catabolic pathway

C. Shows feed back repression

D. Discovered by Jacob and Monod

Answer: C

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26. In lac operon the lac mRNA

A. Has several initial and termination codons

B. Forms four different enzyme

C. Is not transcribed in the presence of lactose

D. Is involved in an anabolic reaction

Answer: A

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27. How many locations have been identified in human genome where single base differences occurs ?

A. 1.4 milion

B. 14 milion

C. 1.4 bilion

D. 14 bilion

Answer: A

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28. What is incorrect for human chormosome 1?

A. It is one of the largest chromosome

B. Its sequence was completed in May 2007

C. It has maximum number of genes

D. It was the last chromosome to be sequenced

Answer: B

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29. The non-human modeal organisms sequenced Human Genome project were

A. A nematode and fruit fly

B. Wheat and rice

C. Fish and birds

D. Garden pea and fruit fly

Answer: A

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30. Mark the correct one (w.r.t application of DNA fingerprinting)

A. Forensic science

B. Determining the population diversity

C. Determining the genetic diversity

D. More than one options is correct

Answer: D

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31. In the technique of DNA fingerprinting, digestion of DNA is followed by

A. Electrophoresis

B. Hybridisation

C. Denaturation

D. Southern blotting

Answer: A

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32. In eukaryotes, RNA polymerase III catalyses the sythesis of

A. 5s rRNA, tRNA & SnRNA

B. mRNA, HnRNA & SnRNA

C. 28 S rRNA , 18 S rRNA & 5 S rRNA

D. All types of rRNA & tRNA

Answer: A

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33. Read the following statements.

A. Variation at genetic level arises due to mutations.

B. Technique of DNA finger printing was initially developed by Alec Jeffreys .

A. Only (A) is correct

B. Both(A) and (B) are correct

C. Only (B) is Correct

D. Both (A) and (B) are incorrect

Answer: B

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34. In DNA fingerpriting, detection of hydridised DNA

A. Electrophoresis

B. Blotting

C. Autoradiography

D. Centrifugation

Answer: C

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35. Mark the correct match.

A. $\begin{array}{ll} \text{Catalytic RNA} - & \text{16 S rRNA and 23 s} \\ \text{in bacteria} & \text{rRNA - as ribozyme} \end{array}$

B. Val operon - Found in eukaryotes

C.

$$\text{Sanger method} - \text{Detemination of amion acid sequences in proteins only}$$

D. VNTR - Intro

Answer: D

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Assignment Section B Objective Type Questions

1. If the sequence of one strand of DNA is 5' A T G C A T C G 3' find the sequence of complementary strand in $5 \rightarrow 3$ direction.

A. TAC GT AG C

B. C G AT G C A T

C. AT G C A T C G

D. AT C G TA C G

Answer: B

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2. NHC structural proteins are

A. Basic protiens rich in lysine, arginie

B. Regulatory proteins

C. Catalytic proteins rich in tryptophan and arginine

D. Required for packing of chromatin at higher levels

Answer: D

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3. How many types of DNA polymerases are present in bacteria?

A. Five

B. Three

C. Two

D. One

Answer: B

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4. Synthesis of leading and lagging strand require

A. Single primer

B. Single and many primers respectively

C. Many and single primers respectively

D. Many primers

Answer: B

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5. For the strand separation and stabilisation during DNA replication which of the following set of enzymes and proteins are required?

A. SSBP, gyrase , primase

B. Toposiomerase,helicase, ligase

C. Gyrase , ligase, primase

D. Topoisomerase, helicase, SSBP

Answer: D

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6. In eukaryotes, the RNA polymerase that synthesises tRNA is RNA polymerase_____ and is also responsible for formatiom of_____rRNA.

A. II, 5,8, S

B. I,5,S

C. III,5,S

D. II, 18,S

Answer: C

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7. What is correct for bacterial transcription?

A. mRNA requires processing to become active

B. Translation can begin when mRNA is fully transcribed

C. Transcription and translation takes place in the same compartment

D. Rho factor initiates the process

Answer: C

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8. Which of the following is not required during post transcritional processing in eukaryotes?

A. Methyl guanosine triphosphate

B. Ligase

C. ScRNA

D. SnRNA

Answer: C

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9. Which of the following feature is correct for bacteria?

A. Presence of intervening sequence in DNA

B. DNA does not show coiliong

C. Linear ss-DNA representing single chromosome

D. DNA can be chromosomal as well as extra chromosomal

Answer: D

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10. In-vitro template independent RNA synthesis is a feature of

A. RNA polymerase

B. Reverse transcriptase

C. Ochoa enzyme

D. DNA polymerase

Answer: C

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11. In protein synthesis, Which of the following are required for the synthesis of charged tRNA ?

A. Amino acid , GTP initiation codon , ribosome

B. Amino acid, ATP,Mg^(++)`, enzyme , tRNA

C. Amino acid ATP K^+, enzyme , mRNA

D. Aminoacyl tRNA, ribosome , inititaion codon, release factor.

Answer: B

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12. Termination of polypeptide synthesis in bacteria differs from eukaryotes in

A. Having different termination codons

B. Being GTP dependent

C. Involving more than one type of release factors

D. All of these

Answer: C

 Watch Video Solution

13. The accessibility of promoter regions of bacterial DNA in many cases regulated by the interaction of proteins with sequences termed

A. Regulator

B. Structural genes

C. Inhibitor genes

D. Operator

Answer: D

Watch Video Solution

14. When the genomes of two people are cut using the same restriction enzyme, the length and number of fragments obtained are different, this is called

A. PCR

B. RELP

C. EST

D. Northern blotting

Answer: B

 Watch Video Solution

15. Which of the following does not code for any proteins ?

A. Micro-satellites

B. Exons

C. Mini-satellites

D. More than one option is correct

Answer: D

 Watch Video Solution

16. which statement is correct for homeotic genes?

A. Control is exerted through homeodomain proteins

B. Mutation in these genes not results in conversion of one body part into another

C. Such genes have been studied extensively in humans

D. Control oncogenesis process

Answer: A

Watch Video Solution

17. In which step of DNA profiling, nitrocellulose membrane is used ?

A. Denaturation

B. Autoradiography

C. Blotting

D. DNA amplification

Answer: C

Watch Video Solution

18. Repressor of lac-operon

A. Is a tetrameric protein

B. Having a molecular weight of 16,000

C. Has only one side

D. Is made by operator gene

Answer: A

 Watch Video Solution

19. Select the correct one (w.r.t. Wobble hypothesis)

A. Third base of a codon lacks vibrating capacity

B. Third base can establish H-bonds even with the non complementary anticodon

C. Specificity of a anticodon is particulary detemined y first tow codon

D. Major cause of degeneracy is the first two N-bases of codon

Answer: B

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20. A set of genes or cDNA is immobilized on a glass slide and used in transcription studies is called

A. Proteome

B. Microarray

C. DNA chip

D. Genome

Answer: B

Watch Video Solution

21. Which of the following bases is not present in DNA ?

A. β- 1- 9 - N- glycoside bond

B. $3-5$ phosphodiester bond

C. $\beta-1-1-N$ glycosidic bond

D. $\beta-1-2-N$ - glycosidic bond

Answer: D

Watch Video Solution

22. If there are 81 million bases in RNA of human cell then calculate the total number of introns present in cDNA.

A. 27 milions

B. Zero

C. Equal to ribonucleotides

D. Half the number of ribonucelotides

Answer: B

Watch Video Solution

23. Splicing is necessary for preparing a mature transcript and its movement to cytoplasm. It requires.

A. scRNA and proteins

B. snRNA and proteins

C. scRNA and snRNA

D. scRNA only

Answer: B

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Watch Video Solution

24. Majority of unusual bases are found in tRNA, T ψ C loop is

A. First loop from 5-end of tRNA

B. AA-tRNA sythetase binding loop

C. Ribsomal binding loop

D. Nodoc site

Answer: C

Watch Video Solution

25. How many amino acids will be coded by the mRNA sequence - 5 C C C U C A G U C A U A C 3' if a adensine residue is inserted after 12^{th} nucleotide ?

A. Five amino acids

B. Six amino acids

C. Two amino acids

D. Three amino acids

Answer: C

Watch Video Solution

26. Identification and binding of RNA polymerase to the promoter sequence is a function of

A. Rho factor

B. Sigma factor

C. Beta fator

D. Omega factor

Answer: B

Watch Video Solution

27. Repetitive sequence are stretches of DNA with repeated bases many times of in a genome but.

(a) These sequence are of no transcriptional function.

(b) These are associated with euchromatin region .

(c) These helps to identify a person on the basis of its DNA specificity.

A. All are correct

B. Only (b) is incorrect

C. Both (a) & (b) are correct

D. Both (b) & (c) are incorrect

Answer: B

Watch Video Solution

28. The microsatellites have simple sequence of repeated

A. 11-60 bp

B. 1-6 bp

C. 10 bp

D. 50 bp

Answer: B

Watch Video Solution

29. The DNA strand showing replication using Okazaki fragments also shows.

A. Continuous growth in $5 \rightarrow 3$ direction

B. Discontinuous growth on $5 \rightarrow 3$ parental strand

C. Discontinuous growth on $3 \rightarrow 5$ parental strand

D. Involvement of one primer only

Answer: B

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30. Prokaryotic transcription mechanism requires involvement of only one polymerase type and.

(a) It occurs in cytoplasm only .

(b) It is often coupled with translation

(c) It does not require splicing but capping is essential

A. All are correct

B. Both (b) & (c) are correct

C. Both (a) & (c) are correct

D. Only (c) is incorrect

Answer: D

Watch Video Solution

31. Pribnow box is consensus of _____ bases forming a binding site for E.coil RNA polymerase.

A. TATAAT

B. AGGAGG

C. CAAT

D. GC

Answer: A

Watch Video Solution

32. In tryptophan operon

A. Non-proteinaceous apporepresser is synthesised by R-gene

B. Normally chorismic acid is not converted into tryptophan

C. Repression is mostly connceted with a catabolic pathway

D. Enzymes produced by structural genes normally present in the cell

Answer: D

Watch Video Solution

33. In tailing, adenylate residues are added at 3 end

A. With the help of gyanyl transferase

B. In a template independent manner

C. With the help of methyl transferase

D. Of hn- RNA of E.coil

Answer: B

34. For every single amino acid incorporated in peptide chain ___ ATP and _____GTP molecules are used.

A. 1,4

B. 1,6

C. 1,2

D. 1,3

Answer: C

Watch Video Solution

35. In t-RNA

A. CCA - OH is present at 5-end

B. $T\Psi C$ loop for attaching the amino acids

C. DHU loop for binding with AA-activating enzyme

D. There are three recognition sites

Answer: C

Watch Video Solution

36. The one aspect which is not a salient feature of genetic code, is its being

A. Specific

B. Degenerate

C. Ambiguous

D. Universal

Answer: A

Watch Video Solution

Assignment Section C Previous Years Questions

1. If there are 999 bases in RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of

the RNA becomes 998 bases, how many codons will be altered

A. 1

B. 11

C. 33

D. 333

Answer: C

Watch Video Solution

2. The final proof for DNA as as the genetic material came from the experiments of

A. Griffith

B. Hershey and Chase

C. Avery, Mcleod and McCarty

D. Hargobind Khorana

Answer: B

 Watch Video Solution

3. The association of histone H1 with a nucleosome indicates

A. Transcription is occurring

B. DNA replication is occurring

C. The DNA is condensed into a chromation fibre

D. The DNA double helix is exposed

Answer: C

 Watch Video Solution

4. Spliceosomes are not found in cell of

A. Plants

B. Fungi

C. Animals

D. Bacteria

Answer: D

Watch Video Solution

5. DNA replication in bacteria occurs

A. During S-phase

B. Within nucleolus

C. Prior to fission

D. Just before transcirption

Answer: C

Watch Video Solution

6. Which of the following RNAs should be most abundant in animal cell

A. r-RNA

B. t-RNA

C. m-RNA

D. mi-RNA

Answer: A

Watch Video Solution

7. During DNA replication, Okazaki fragments are used to elongate :

A. The leading strand towards replication fork

B. The lagging strand towards replication fork

C. The leading strand away form replication fork

D. The lagging strand aways from the replication fork

Answer: D

Watch Video Solution

8. Taylor conducted the experiments to provide semiconcervative mode of chromosome replication on

A. vinca rosea

B. Vicia faba

C. Drosophila melanogaster

D. E.coil

Answer: B

 Watch Video Solution

9. The equivalent of a structural gene is

A. Muton

B. Cistron

C. Operon

D. Recon

Answer: B

Watch Video Solution

10. Which of the following r-RNAs acts as structural RNA as well as ribozme in bacteria ?

A. 5 S rRNA

B. 18 S rRNA

C. 23 S rRNA

D. 5.8 S rRNA

Answer: C

Watch Video Solution

11. DNA -dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the

A. Template strand

B. Coding Strand

C. Alpha strand

D. Antistrand

Answer: A

Watch Video Solution

12. Which of the following is required as inducer(s) for the expression of Lac operon

A. Lactose and Galactose

B. Glucose

C. Galactose

D. Lactose

Answer: D

Watch Video Solution

13. Which of the following is not required for any of the techniques of DNA fingerprinting available at present

A. DNA -DNA hybridization

B. Polymerase chian reaction

C. Zinc finger analysis

D. Restriction enzymes

Answer: C

Watch Video Solution

14. Which one of the following is the starter codon ?

A. UAG

B. AUG

C. UGA

D. UAA

Answer: B

Watch Video Solution

15. Identify the correct order of organisation of genetic material form largest to smallest

A. Chromosome, genome, nucleotide, gene

B. Chromosome, gene , genome, nucleotide

C. Genome , chormosome, nucleotide, gene

D. Genome, chromosome, gene , nucleotide

Answer: D

Watch Video Solution

16. अनुषंगी (सैटेलाइट)DNA महत्वपूर्ण होता है , क्योंकि वह -

A. Code for enzyme needed for DNA replication

B. Codes for proteins needed in cell cycle

C. Shows high degree of polymorphism in population and also the same degree of polymorphism in a individual , which is heritable from parents to children.

D. Does not codes for proteins and is same in all membres of the population .

Answer: C

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17. Gene regulation governing lactose operon of E. coli that involves the lac I gene product is

A. Feedback inhibition beacause excess of β - galactosidase can switch off transcription .

B. Positive and inducible because it can be indced by lactose.

C. Negative and inducible because repressor protein prevents transcription.

D. Negative and respessible because repressor protein prevents transcription

Answer: C

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18. Which one the following is wrongly matched ?

A. Transcription -Writing information form m-RNA to make protein

B. Translation -Using information in m - RNA to make protein

C. Repressor protein- Binds to operator to stop enzyme synthesis

D. Operon- Structural genes operator and promoter

Answer: D

Watch Video Solution

19. Transformation was discovered by

A. Meseison and Stahl

B. Hershey and Chase

C. Griffith

D. Watson and Crick

Answer: C

 Watch Video Solution

20. Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y gene?

A. Lactose Permease

B. Transacetylase

C. Lactose permease and transacetylase

D. β - galactosidase

Answer: D

Watch Video Solution

21. Removed of RNA polymerase III form nucleoplasm will affect the synthesis of .

A. mRNA

B. rRNA

C. tRNA

D. hnRNA

Answer: C

 Watch Video Solution

22. Removal of introns and joining of exons in a defined order during transcription is called :

A. Slicing

B. Splicing

C. Looping

D. Inducing

Answer: B

Watch Video Solution

23. Which one of the following is not a part of a transcription unit in DNA?

A. A promoter

B. The structural

C. The inducer

D. A terminator

Answer: C

Watch Video Solution

24. If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence ?

A. AACTG

B. ATCGUC

C. TTAGU

D. UAGAC

Answer: D

Watch Video Solution

25. Read following statements (1-4).

1. In transcriptoin, adenine pairs with uracil.

2. Regulation of lac operon by repressor is referred to as positive regulation.

3. The human genome has approximately 50,000 genes.

4. Haemophilia is a sex - linked recessive disease.

How many of the above statements are right ?

A. Tow

B. Three

C. Four

D. One

Answer: A

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26. PCR and restriction Fragements length Polymorphism are the methods for

A. DNA sequencing

B. Genetic fingerprinting

C. Study of enzymes

D. Genetic transformation

Answer: B

Watch Video Solution

27. What is it that forms the basis of DNA Fingerprinting

A. Satellite DNA occuring as high repeated short DNA segments

B. The relative proportions of purines and pyrimidines in DNA

C. The relative difference in the DNA occurrnece in blood, skin and saliva

D. The relatvie amount of DNA in the ridges and grooves of the fingerprints

Answer: B

Watch Video Solution

28. Which one of the following also acts as a catalyst in a bacterial cell ?

A. 23 s rRNA

B. 5 S rRNA

C. sn RNA

D. hn RNA

Answer: B

Watch Video Solution

29. What are those structures that appear as 'beads-on-string' in the chromosomes when viewed under electron micro- scope?

A. Base pairs

B. Genes

C. Nucleotides

D. Nucleosomes

Answer: D

30. Human genome project

A. Bioinformatics

B. Biosystematics

C. Biotechnology

D. Biomonitoring

Answer: C

Watch Video Solution

31. The unequivocal proof of DNA as the genetic material came from the studies on a

A. Viroid

B. Bacterial virus

C. Bacterium

D. Fungus

Answer: A

Watch Video Solution

32. Which one of the following does not follow the central dogma of molecular biology

A. HIV

B. Pea

C. Mucor

D. Chlamydomonas

Answer: B

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33. Select the two correct statements out of the four (1-4) given below about lac operon.

1. Glucose or galactose may bind with the repressor and inactivate it

2. In the absence of lactose the repressor binds with the operator region

3. The z-gene codes for permease

4. This was elucidated Francois Jacob and Jacque Monod

The correct statements are :

A. (a) and (b)

B. (b) and (c)

C. (a) and (c)

D. (b) and (d)

Answer: D

Watch Video Solution

34. The one aspect which is not a salient feature of genetic code, is its being :

A. Specific

B. Degenerate

C. Ambiguous

D. Universal

Answer: A

Watch Video Solution

35. In eukaryotic cell transcription, RNA splicing and RNA capping take place inside the

OR

Messenger RNA is produced in

A. Ribosomes

B. Nucleus

C. Dictyosomes

D. ER

Answer: B

Watch Video Solution

36. The lac operon consists of

A. Four regulatory genes only

B. One regulatory gene and three structural genes

C. Two regulatroy genes and two structural genes

D. There regulatory genes and three structural genes.

Answer: D

 Watch Video Solution

37. The 3-5 phosphodiester linkages inside a polynucleotide chain serve to join.

A. One DNA strand with the another nucleoside

B. One nucleoside with another nucleoside

C. One nucleotide with another nucleotide

D. One nitrogenous base with pentose sugare

Answer: C

 Watch Video Solution

38. Satellite DNA is useful tool in

A. Genetic engineering

B. Organ transplatation

C. Sex determination

D. Forensic science

Answer: B

 Watch Video Solution

39. Removal of introns and joining the exons in a defines order in a transcription unit is called

A. Tailing

B. Transformation

C. Capping

D. Splicing

Answer: A

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40. Semiconservative replication of DNA was first demonstrated in

A. Escherichia coli

B. Streptococcus pneumonie

C. Salmonella penumoniae

D. Drosophila melanogaster

Answer: A

Watch Video Solution

41. What is not true for genetic code

A. It is nearly universal

B. It is degerate

C. It is unambiguous

D. A condon in mRNA is read in a noncontigus fashin

Answer: D

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42. Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" :-

A. Hershey and Chase

B. Morgan and Sturtevant

C. Beadle and Tatum

D. Nirenberg and Mathaei

Answer: B

Watch Video Solution

43. Which one of the following pairs of nitrogenous bases of nucleic acids, is wrongly matched with the category mentioned against it

A. Adenine, Uracil- Purines

B. Thymine , Uracil-Pyrimides

C. Uracil,Cytosine - Pyrimides

D. Guanine , Adenine - Purines

Answer: A

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44. In the DNA molecules.

A. There are two strands which run antiparallel one in $5 \rightarrow 3$ direction and other in $3 \rightarrow 5$

B. The total amount of purine nucleotides and pyrimidine nucleotides is not always equal

C. There are two strands which run parallel in the $5 \rightarrow 3$ direction

D. The proportion of adenine in relation to thymine varies with the organism

Answer: C

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45. Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acid ?

A. UUA, UCA - Leucine

B. GUU, GCU- Alanine

C. UAG, UGA- Stop

D. AUG, ACG - Start / Methionine

Answer: A

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46. One gene - one enzyme relationship was established for the first time on

A. Diploccus pneumoniae

B. Neurospora crassa

C. Salmonella typhimurin

D. Escherichina coil

Answer: C

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47. A sequential expression of a set of human genes occurs when a steroid molecule binds to the

A. Ribosome

B. Transfer RNA

C. Messenger RNA

D. DNA sequence

Answer: D

Watch Video Solution

48. The Okazaki fragments in DNA chain growth :

A. Polymerize in the $5-\text{to}-3$ direction explain

B. Result in transcription

C. Polymerize in the $3-\text{to}-5$ direction and forms replication fork

D. Proove semi - conservation nauture of DNA replication

Answer: C

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49. Molecular basis of organ differentiation depends on the modulation in transcription by

A. Anticodon

B. RNA polymearase

C. Ribosome

D. Transcription factor

Answer: B

Watch Video Solution

50. Telemere repetitive DNA sequences control the function of eukarote chromosomes because they

A. Prevent chromosome loss

B. Act as replicons

C. Are RNA transcription initiator

D. Help chromosome pairing

Answer: C

Watch Video Solution

51. During transcription holoenzyme RNA polymerase binds to a DNA sequence and the DNA assumes a saddle like structure at that point. What is that sequence called ?

A. TATA

B. TTAA

C. AATT

D. CACC

Answer: A

Watch Video Solution

52. The two polynucleotide chains in DNA are

A. Semiconservative

B. Parallel

C. Discontinuous

D. Antiparallel

Answer: D

Watch Video Solution

53. The length of DNA molecile greatly exceeds the dimensions of the nucleus in eukaryotic cell. How is this DNA accommodated

A. Through elimination of reptitive DNA

B. Deletion of non-essential genes.

C. Super-coiling in nucleosmes.

D. DNAse digestion

Answer: C

Watch Video Solution

54. One turn of the helix in a B- from DNA is approximately

A. 20 nm

B. 0.34 nm

C. 3.4 nm

D. 2 nm

Answer: B

Watch Video Solution

55. Antiparallel strands of a DNA molecule means that :

A. One strand turns anti-clockwise

B. The phosphate group of two DNA stands, at their ends, share the same position

C. The phosphate groups at the starts of tow DNA strands are in opposite position (pole)

D. One strand turns clcokwise

Answer: A

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56. Amino acid sequence, in protein synthesis is decided by the sequence of

A. t-RNA

B. m-RNA

C. c-DNA

D. r-RNA

Answer: B

Watch Video Solution

57. One-gene-one enzyme hypothesis was proposed by :-

A. R.Franklin

B. Hershey and Chase

C. A.Garrod

D. Beadle and Tatum

Answer: A

Watch Video Solution

58. During transcription holoenzyme RNA polymerase binds to a DNA sequence and the DNA assumes a saddle like structure at that point. What is that sequence called ?

A. CAAT box

B. GGTT box

C. AAAT box

D. TATA box

Answer: A

Watch Video Solution

59. E. colicells with a mutated z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because

A. In the presence of glucose, E.coil cells do not utilize lactose

B. They cannot transport lactose from the medium into the cell

C. The lac operon is constitutively active in these cells

D. They cannot synthesize functional a-galactosidase

Answer: B

Watch Video Solution

60. Nucleotide are building blocks of nucleic acids.Each nucleotide is a composite molecule formed by

A. $(\text{Base-sugar -phosphate})_n$

B. Base-sugar-OH

C. Base-sugar-phosphate

D. Sugar-phosphate

Answer: B

Watch Video Solution

61. Which one of the following makes use of RNA as a template to synthesize DNA ?

A. Reverse transcriptase

B. DNA dependant RNA polymerse

C. DNA polymerase

D. RNA polymerase

Answer: C

62. Uridine, present only in RNA is

A. Pyrimidine

B. Nucleoside

C. Nucleotide

D. Purine

Answer: D

Watch Video Solution

63. Which of the following is not a property of the genetic code ?

A. Universal

B. Non-overlapping

C. Ambiguous

D. Degeneary

Answer: B

Watch Video Solution

64. One of the most frequently used techniques in DNA fingerprinting is

A. AFLP

B. VNTR

C. SSCP

D. SCAR

Answer: A

Watch Video Solution

65. In ans inducible operon, the genes are

A. Always expressed

B. Usually not expressed unless a single turns them on

C. Usually expressed unless a single turns them off

D. Never expressed

Answer: D

 Watch Video Solution

66. A single strand of nucleic acid tagged with a radioactive molecule is called:

A. Plasimd

B. Probe

C. Vector

D. Selectable market

Answer: D

Watch Video Solution

67. The reaction, Amino acid $+$ ATP $\rightarrow$ Aminoacyl -MAP $+$ P-P depicts :

A. Amino acid assimilaiton

B. Amino acid tarnsformation

C. Amino acid activation

D. Amino acid translocation

Answer: C

Watch Video Solution

68. The transcription of any gene is the indication of its :

A. Induction

B. Activity

C. Stimulaiton

D. Hyprsensitivity

Answer: D

Watch Video Solution

69. mRNA direct the building of proteins through a sequience of

A. Introns

B. Codons

C. Exons

D. Anticodons

Answer: B

Watch Video Solution

70. Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme.Their experiments demonstrated that

A. Cell need specific enzymes in order to function

B. Genes are made of DNA

C. Genes carry information for making proteins

D. Enzymes are required to repair damaged DNA information .

Answer: D

Watch Video Solution

71. Which of the following nucleotide sequences contains 4 pyrimidine bases?

A. GATCAATGC

B. GCUAGACAA

C. UAGCGGUAA

D. Both (2) & (3)

Answer: B

72. The 1992 Noble Prize for medicine was awarded to Edmond H. Fischer and Edwin J. Kerbs for their work concerning .

A. Reversible protein phosphorylation as a biological regulation mechanism

B. Isolation of the gene for a human disease

C. Human genome project

D. Durg designing involving inhibition of DNA synthesis of the pathogen.

Answer: D

Watch Video Solution

73. Initiation codon in eukaryotes

A. GAU

B. AGU

C. AUG

D. UAG

Answer: C

74. Lac operon in E.coil, is induced by

A. 'I'' gene

B. Promoter gene

C. β - galactosides

D. Lactose

Answer: A

Watch Video Solution

75. There are special proteins that help to open up DNA double helix in front of the replication fork. These proteins are :

A. DNA ligase

B. DNA topoisomerase

C. DNA gyrase

D. DNA polymerase

Answer: D

Watch Video Solution

76. In protein synthesis the polymerization of amino acids involves three steps. Which of the following is not involved in protein synthesis

A. Termination

B. Initiation

C. Elogastion

D. Transcription

Answer: A

Watch Video Solution

77. Anticodon is an unpaired triplet of bases in an exposed position of

A. t-RNA

B. m-RNA

C. r-RNA

D. Both (2) & (3)

Answer: D

Watch Video Solution

78. An environmental agent that triggers transcription from an operon is a/an:

A. Depressor

B. Controlling elements

C. Regulator

D. Inducer

Answer: C

Watch Video Solution

79. In slpit genes, the coding sequences are called

A. Exons

B. Cistrons

C. Introns

D. Operons

Answer: B

Watch Video Solution

80. The lac operon is an example of :

A. Repressible operon

B. Overlapping genes

C. Arbainose operon

D. Inducible operon

Answer: C

 Watch Video Solution

81. If the DNA condons are ATG ATG ATG and a cytosine base is inserted at the beginning , which of the following will result

A. CAT GAT GATG

B. A non-sence mutation

C. C ATG ATG ATG

D. CA TGA TGA TG

Answer: C

Watch Video Solution

82. The wild type E. coli cells are growing in normal medium with glucose. They are transferred to a medium containing only lactose as sugar. Which of the following changes take place ?

A. The lac operons is induced

B. E.coil cells stop dividing

C. The lac operon is repressed

D. All operons are induced

Answer: A

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83. If the sequences of bases in DNA is ATTCGATG, then the sequence of bases in its transcript will be

A. GUAGCUUA

B. AUUCGAUG

C. CAUCGAAU

D. UAAGCUAC

Answer: C

Watch Video Solution

84. Which of the following serves as an stop codon ?

A. UAG

B. AGA

C. AUG

D. GCG

Answer: D

Watch Video Solution

85. The codons causing chain termination (stop codons) are

A. AGT,TAG ,UGA

B. UGA,UGA,UAA

C. TAG,TAA,TGA

D. GAT,AAT,Agt

Answer: C

Watch Video Solution

86. DNA synthesis can be specifically measured by estimating the incorporation of radio labelled

A. Thymidine

B. Deoxyribose sugar

C. Uracil

D. Adenine

Answer: B

Watch Video Solution

87. Which of the following step of translation does not consume a high energy phosphate bond

A. Peptidyl transefease reaction

B. Aminoacyl t-RNA binding to A-site

C. Translocation

D. Amino acid activation

Answer: C

Watch Video Solution

88. DNA elemaets, which can switch their position , are called

A. transposons

B. Cistrons

C. Exons

D. Intros

Answer: A

Watch Video Solution

89. Sequence of which of the following is used to know the phylogeny ?

A. m-RNA

B. r-RNA

C. t-RNA

D. DNA

Answer: A

Watch Video Solution

90. Genes that are involved in turning on or off the transcription of set of structural genes are called Or Functioning of structural genes is controlled by

A. Redundant genes

B. Regulatroy genes

C. Polymorphic genes

D. Operator genes

Answer: A

Watch Video Solution

91. In operon concept, regulator gene functions as:

A. Inhibitor

B. Repressor

C. Regulator

D. All of these

Answer: B

Watch Video Solution

92. In DNA, when AGCT occurs, their association as per wihich of the following pair ?

A. AT-GC

B. AG-CT

C. AC-GT

D. All of these

Answer: B

 Watch Video Solution

93. In Drosophila, during organ differentiation, one organ can be replaced by another like wings by legs. Genes responsible for it are :

A. Double dominant gene

B. Homeotic gene

C. Complimentary gene

D. Plastid gene

Answer: B

 Watch Video Solution

94. Method of DNA replication in which two strands of DNA separates and synthesize new strands :-

A. Dispersive

B. Conservation

C. Semi conservative

D. Non conservative.

Answer: A

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95. In negative operon

A. Co-repressor binds with repressor

B. Co-repressor does not bind with repressor

C. Co-repressor binds with inducer

D. cAMP have negative effect on lac operon

Answer: B

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96. Gene and cistron words are sometimes used synonymously because

A. One ciston contains many genes

B. One gene contains many cistrons

C. One gene contains one cistron

D. One gene contains no cistron.

Answer: A

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97. m-RNA is synthesised on DNA template in which direction : -

A. $5 \rightarrow 3$

B. $3 \rightarrow 5$

C. Both (1) & (2)

D. Any of these

Answer: D

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98. At the time of organogensis, genes regulate the process at different levels and at different time due to :

A. Promoter

B. Regulator

C. Intron

D. Exon

Answer: D

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99. A mutant strain of T_4 – Bacteriophage, R-II, fails to lyse the E-Coli but when two strains $R - II^X$ and $R - II^Y$ are mixed then they lyse the E.Coli. What may be the possible reason : -

A. Bacteriophoage transforms in wild

B. It is not mutated

C. Both strains have similar cistrons

D. Both strains have different cistrons

Answer: C

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100. In E.coli during lactose metabolism, repressor binds to :

A. Regulator gene

B. Operator gene

C. Strcutural gene

D. Promoter gene

Answer: B

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101. In DNA percentage of thymine is 20, then what is the percentage of guanine ?

A. 0.2

B. 0.4

C. 0.3

D. 0.6

Answer: A

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102. Out of 64 codons , 61 codons code for 20 types of amino acid. It is called

A. Degeneracy of genetic code

B. Overlapping of genes

C. Wobbing of codons

D. Universality of codons

Answer: D

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103. Jacob and Monad studied lactose metabolism in E. coli and Proposed operon concept , which is appplicable for

A. All prokaryotes

B. All prokaryotes and some eukaryotes

C. All prokaryotes and all eukaryotes

D. All prokaryotes and some protozonas

Answer: C

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104. Exon part of m- RNA code for

A. Protein

B. Lipid

C. Carbohydrate

D. Phospholipid

Answer: A

105. Which form of RNA has a structure resembling clover leaf ?

A. rRNA

B. hn-RNA

C. mRNA

D. tRNA

Answer: C

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106. Which of the following reunites the exon segments after RNA splicing ?

A. RNA polymerase

B. RNA primase

C. RNA ligase

D. RNA proteoses

Answer: A

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107. During translation initiation in prokaryotes, a GTP molecule is needed in :

A. Formation of formyl-met- RNA

B. Binding of 30 S subunit of ribosome with mRNA

C. Association of 30 S mRNA with formuyl-met-tRNA

D. Association of 50 S subunit of ribosome with initiation complex

Answer: A

108. In the genetic code dictionary, how many codons are used to code for all the 20 essential amino acids ?

A. 20

B. 64

C. 61

D. 60

Answer: A

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109. The telomeres of eukaryotic chromosomes consist of short sequences of

A. Thymine rich repeats

B. Cytosine rich repeats

C. Adenine rich repeats

D. Guanine rich repeats

Answer: D

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110. What does "lac" refer to in what we call the lac operon ?

A. Lactose

B. Lactase

C. Lac insect

D. The number 1,00,000

Answer: D

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111. Degeneration of a genetic code is attributed to the :

A. First member of a codon

B. Second member of codon

C. Entire codon

D. Third member of a codon

Answer: B

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112. During transcription, DNA site at which RNA polymerase binds is called

A. Promoter

B. Regulator

C. Receptor

D. Enhance

Answer: D

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113. What would happen if in a gene encoding a polypeptide of 50 amino acids, 25^{th} codon (UAU) is mutated to UA A?

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114. Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon ?

A. UCG-start

B. UUU-stop

C. UGU-leucine

D. UAC -tyrosine

Answer: A

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115. DNA fingerprinting refers to

A. Molecular analysis of profiles of DNA samples

B. Analysis of DNA smaples using imprinting devices

C. Techniques used for molecular analysis of different sepecimens of DNA

D. Techinuqes usef of identification of fingerprints of individulas.

Answer: A

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116. During transcription, if the nuncleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be

A. TATGC

B. TCTGG

C. UAUGC

D. UATGC

Answer: B

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117. After a mutation at a genetic locus the character of an organism changes due to the change in :

A. Protein Structure

B. DNA replication

C. Protein synthesis patter

D. RNA transcription patter

Answer: D

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118. During replication of a bacterial chromosome DNA syntnthesis stars from a replication origin site and

A. RNA primers are involved

B. Is facilitted by telomerase

C. Moves in one direction of the site

D. Moves in bi-direction way

Answer: D

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119. The following ratio is generally constant for a given species :

A. A+G / C +T

B. T + C/G + A

C. G + C / A + T

D. A + C / T + G

Answer: C

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120. What is true of E. coli with lac -z gene ?

A. They cannot synthesize permease

B. They cannot synthesize function beta galactosidase

C. They can synthesize transacetylase

D. They cannot transport lactose from the medium into cell

Answer: D

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121. Which antibiotic inhibitis interaction between tRNA and mRNA during

A. Tetracycline

B. Eythromycin

C. Neomycin

D. Streptomycin

Answer: A

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122. During transcription holoenzyme RNA polymerase binds to a DNA sequence and the DNA assumes a saddle like structure at that point. What is that sequence called ?

A. AATT

B. CACC

C. TATA

D. TTAA

Answer: A

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123. Differentiation of organs and tissues in a develping organism, is assoiated with

A. Differentiatial expression of genes

B. Lethal mutations

C. Deletion of genes

D. Development mutations

Answer: B

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124. The nuclease enzyme which brings its attack from the free and of a Polynucleotide, is called

A. Polymerase

B. Endonuclease

C. Exonuclease

D. Kinase

Answer: D

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125. Radio tracer technique show that DNA is in :

A. Multi-helix stage

B. Single- helix stage

C. Double -helix stage

D. None of these

Answer: D

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126. Genes are packed in bacterial chromosome by

A. Acidic protein

B. Actin

C. Histones

D. Basic protein

Answer: A

127. The hereditary material (DNA) present in the bacterium E.coli is :

A. Single -stranded DNA

B. Double-stranded DNA

C. DNA and RNA

D. RNA

Answer: B

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128. The pneumococcus experiment proves that

A. Bacteria do not reproduce sexually

B. RNA sometime controls the production of DNA and proteins

C. DNA is the genetic material

D. Bacteria undergo binary fission

Answer: C

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129. E. Coli about to replicate was placed in a medium containing radio active thymidine for five minutes. Then it was made to replicate in a normal medium. Which of the following observation shall be correct : -

A. Both the strands of DNA will be radioactive

B. One strand radioactive

C. Each strand radioactive

D. None is radioactive

Answer: D

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130. Types of RNA polymerase required in nucleus for RNA synthesis : -

A. 1

B. 2

C. 3

D. 4

Answer: B

131. Transformation experiment was first performed on which bacteria : -

A. E.coil

B. Diplococcus pneumoniae

C. Salmonella

D. Pasteurella pestis

Answer: C

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132. Telomerase is an enzyme which is a

A. Simple protein

B. RNA

C. Ribonucleoprotein

D. Repetitive DNA

Answer: A

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133. In transgenics, expression of transgene in target tissue is determined by :

A. Enhancer

B. Transgene

C. Promoter

D. Reporter

Answer: A

134. A nutritionally wild type organism ,which does not require any additional growth supplement is known as :

A. Osmotroph

B. Mixotroph

C. Auxptroph

D. Prototroph

Answer: C

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135. What is not true for genetic code ?

A. It is unambiguous

B. A codon in mRNA is read in a non-contiguous fashion

C. It is nearly universal

D. It is degenerate

Answer: B

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136. Semiconservative replication of DNA was first demonstrated in

A. Salmonella typhimurim

B. Drosophilla melanogaster

C. Eschericahia coli

D. Streptococcus pneumoniae

Answer: C

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137. Which one of the following statement about the particular entity is true ?

A. Nucleosome is formed of nucleotide

B. DNA consists of a core of eight histones

C. Centromere is found in animal cell, which produces aster during cell divison.

D. The gene for producing insulin is present in every body cell

Answer: C

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Assignment Section D Assertion Reason Type Questions

1. A : RNA polymerase is of three types in eukaryotes for the synthesis of all types of RNAs.

R : RNA polymerase consists of six types of polympeptides alongwith rho factor which is involved in termination of RNA synthesis.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

2. The binding site of tRNA with mRNA & amino acids respectively are

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the

assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

3. A: Operator gene is functional when it is not blocked by repressor.

R: Regulator gene produces active protein only which acts on operon system in E.coil.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

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4. A: Peptidyl transfer site is contributed by larger sub-unit of ribosome.

R: The enzyme peptidyl transferase is contributed by the both 23S and 16S ribosomal sub-units .

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

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5. A: Teminism is unidirectional flow of information.

R: It requires DNA dependent RNA polymerase enzyme.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

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6. A : In bacterial translation mechanism, two tRNA are required by methionine.

R: AUG codes for methionine and it shows nornambiguity also.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

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7. A: Nutritional mutant strain of pink mould is auxotroph.

R: It is not able to prepare its own metabolites form the raw materials obtained form outside .

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

8. A : DNA fingerprinting are important to scientists in human genomics.

R: Molecular probe is small DNA segment synthesized in laboratory with know sequence that recognise complementary sequence in RNA.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: B

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9. A : c-DNA libraries are important to scientists in human genomics.

R: c- DNA is synthetic type of DNA generated from mRNA.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

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10. A : SNPs- pronounced "snips " are common in human genome.

R : It is minute variations that occurs at a frequency of one in every 300 bases.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: D

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11. A : Catalytic functions were assigned to RNA molecule during evolution.

R: The rate of mutation is quite fast in RNA.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

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12. A : Kornberg enzyme is asscoitated with the removal of primers and thymine dimer.

R: DNA polymersase I does exonuclease activity in $5 \rightarrow 3$ and $3 \rightarrow 5$ directions.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: B

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13. A : Wobbling reduces the number of tRNAs required for polypeptides synthesis.

R: It increase the effect of code degeneracy.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: D

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14. A : Unknown DNA after hybridization with VNTR probe, the autoradiogram gives may bands of differing sizes in DNA profiling .

R: These bands represents DNA fingerpint of organism.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is true statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

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15. A: Polypeptide sequence are dictated by DNA and represented by mRNA.

R: Sequence of amino acids in a polypeptide can be predicted by the exact sequence of nucleotides on the mRNA and template DNA.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: A

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16. A: Triplet genetic code can be confirmed by frame shift mutations.

R : Frame shifing involves the change in protein product coded by triplet codons.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: C

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17. A : Lac operon exerts negative control only.

R: The operator is occupied by aporepressor during regulation.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: D

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18. A : Single DNA depenedent RNA polymerase catalyases transcription of all types of RNA in all except bacteria.

R: Structural genes in bacteria are monocistronic

.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: B

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19. A : Sigma factor of RNA polymerase recognizes the start single region in prokaryotes.

R: Promotor region lies at 5' of template strand.

A. If both Assertion & Reason are true and the reason is the correct explanation of the

assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: B

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20. A: HGP was completed in 2003 by sequencing all genes of all chromosomes.

R: All conding and noncoding genes were sequenced by ESTs.

A. If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark

B. If both Assertion & Reason are true and the reason is not the correct explanation of the assertion , then mark

C. If Assertion is ture statement but Reason is false, then mark.

D. If both Assertion and Reason are false statements, then mark.

Answer: B

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