Shivaji University, Kolhapur

Question Bank for Mar 2022 (Summer) Examination

Subject Code: 79694

Subject Name: Molecular Cell Biology and Animal Biotechnology (DSE-F29)

B.Sc. CBCS Semester V

Zoology Paper – X

2021-2022

Q.1 Multiple Choice Questions

1. DNA replication is always takes place from ……..
   a) 5’- 3’ b) 3’ – 5’
   c) 5’ – 5’ d) 3’ – 3’
2. The synthesis of m-RNA from DNA is called ……..
   a) Transcription b) Translation
   c) Replication d) Transduction
3. Northern blotting technique is used for ……..blot.
   a) DNA b) RNA
   c) Protein d) Enzyme
4. Protein is a polymer of ……..
   a) Nucleotide b) Amino acids
   c) Fatty acids d) Nucleoside
5. Plasmid are ……
   a) Extra protein in virus b) Bacteria
   c) Extra chromosomal DNA d) DNA Primer
6. Okazaki fragments are joined by …….
   a) DNA ligase b) DNA polymerase
   c) RNA polymerase d) Restriction enzyme
7. …… is a light dependent repair mechanism.
   a) Base excision repair b) Nucleotide excision repair
   c) Mismatch repair d) Photo reactivation
8. ---------- elongation factor is known as translocase
   a) EFG b)EF2
   c) both a and b d) EF-Tu and EF-Ts
9. DNA replication in eukaryotes is done by …….
   a) Semiconservative mode b)Conservative mode
   c) Dispersive mode d) All of the above
10. The synthesis of polypeptide chain from m-RNA is called ……..
    a) Transcription b)Translation
    c) Replication d) Transduction

11. In protein synthesis amino acids are specified by ……. Codons
    a) 20 b) 61
    c) 64 d) 03
12. DNA polymerization is carried out by an enzyme ……..
    a) DNA ligase b) DNA helicase
    c) DNA polymerase d) Topoisomerase
13. The function of DNA helicase is …….
    a) Unwinding of DNA
    b) Termination of DNA replication
    c) Joining of DNA fragments
    d) Cleaving the DNA
14. Dark repair mechanism is also called as ……..repair mechanism.
    a) Base excision repair b) Nucleotide excision repair
    c) Mismatch repair d) Photoreactivation
15. Semi conservative DNA replication was first demonstrated in ----------
    a) *D. melanogaster* b) *E. Coli*
    c) *S. pneumonae* d) *N. crassa*
16. ---------- enzyme separates the two strands of DNA during relication.
    a) Gyrase b) Topoisomerase
    c) Helicase d) DNA polymerase
17. Termination of replication is triggered by ……..
    a) DNA polymerase b) Helicase
    c) SSB d) Tus protein
18. DNA polymerase synthesizes ----------
    a) DNA in 5'-3' direction b) DNA in 3'-5' direction
    c) mRNA in 3'-5' direction d) mRNA in 5'-3' direction
19. Enzyme removes super coiling in replicating DNA ahead of the replication fork is……
    a) Helicases b) Primases
    c) DNA polymerase d) Topoisomerase
20. ……..has a self repairing mechanism.
    a) DNA & RNA b) DNA, RNA and Proteins
    c) Only DNA d) None of these
21. The DNA polymerase involved in base excision repair is…….
    a) DNA polymerase α b) DNA polymerase β
    c) DNA polymerase σ d) DNA polymerase γ
22. The enzyme photolyase is used ……. method of repair.
    a) Base excision b) Photo reactivation
    c) Nucleotide excision d) None of these
23. …….. function of enzyme involved in base excision repair.
    a) Addition of correct base b) Addition of correct nucleotide
    c) Removal of incorrect base d) Removal of phosphodiester bond
24. In eukaryotes and bacteria, the most common form of regulation is……
    a) Promoter control b) Translation control
    c) Repressor control d) Transcriptional control

25. Basic tools of genetic regulation are the ability of some proteins to bind to specific.…
a) Regulatory DNA sequences b) Regulatory RNA sequences
c) Enzymes of cells d) Promoter portions of the gene

26. ……of the following is not a feature of the genetic code.
a) Triplet b) Degenerate
c) Non-overlapping d) Ambiguous

27. …… is not a termination codon.
a) UGA b) AGA
c) AGG d) UAC

28. The wobble hypothesis was devised by ……..
a) Arthur Kornberg b) Francis Crick
c) James Watson d) William Asbury

29. ……. genetic code shows ambiguity.
a) CGU b) AUG
c) GAC d) UGA

30. …….. codons will be there for 20 amino acids?
a) 10 b) 61
c) 30 d) 50

31. AUG codon is ……
a) Initiation codon b) Termination codon
c) Nonsense codon d) Opal codon

32. ……of the following is called amber.
a) AUG b) UAA
c) UAG d) UGA

33. ……..enzyme is used in PCR technique.
a) Taq polymerase b) RNA Polymerase I
c) RNA polymerase II d) RNA polymerase III

34. Ti plasmid is the example of --------
a) Virulence plasmid b) Cosmid
c) Fertility plasmid d) Phagemid

35. Lambda bacteriophage shows life cycles as……..
a) lysogenic b) lytic and lysogenic
c) lytic d) saprophytic

36. Cosmid can accommodate upto …….kb of DNA.
a) 50 b) 60
c) 80 d) 42

37. Phagemid show properties of vectors …….. and ……..
a) Plasmid, bacteriophage b) cosmid, plasmid
c) bacteriophage, cosmid d) only plasmid

38. Which one of the following statements is incorrect regarding the cloning vectors?
a) Vector should have origin of replication
b) Vector should be capable of transferring the transgene
c) Vector should have antibiotic resistance genes
d) None of the above

39. The process of introduction of DNA fragment from a donor bacterium to a recipient bacterium that converts one genotype to another is known as……...

a) DNA hybridization b) DNA isolation

c) DNA replication d) DNA transformation

40. Southern blotting is used to identify …… in a complex mixture.

a) DNA fragment b) RNA fragment

c) amino acid d) fatty acids

41. Western blotting technique is used for identification of particular ……..from sample.

a) RNA hybrid b) DNA

c) DNA hybrid d) protein

42. Sanger sequencing method is used for sequencing of ……..

a) DNA b) RNA

c) Protein d) RNA – DNA hybrid

43. For primer annealing step in PCR technique, the temperature used is……˚C.

a) 30-35 b) 100-110

c) 50-60 d) 80-90

44. DNA finger printing technology is used for……..

a) paternity testing b) RNA identification

c) protein identification d) DNA hybridization

45. The heat shock step is used in ……. method of DNA transformation.

a) Electroporation b) calcium chloride

c) Electrophoresis d) none of these

46. Restriction enzymes are ……..

a) Molecular scissors b) chaperons

c) chaperonins d) digestive enzymes

47. The sequence of the structural genes in lac operon are……

a) lacA-lacZ-lacY b) lacZ-lacA-lacY

c) lacZ-lacY-lacA d) lacA-lacY-lacZ

48. The restriction enzyme EcoR I is obtained from bacterium…..

a) *E. coli* b) *E. hermanii*

c) *H. influenza* d) *Agrobacterium*

49. In cDNA library the complementary DNA is prepared from …….

a) t-RNA b) m-RNA

c) r-RNA d) DNA

50. The structural gene … are responsible for the synthesis of galactoside permease enzyme

a) z b) y

c) a d) all the above

Q.2 Long answer questions

1. What is genetic code? Explain the properties of Genetic code.
2. Relate protein synthesis and its two major phases to the central dogma of molecular biology.
3. What is polymerase chain reaction? Explain in detail.
4. What is DNA replication? Explain the mechanism of semiconservative mode.
5. Define restriction enzymes and give its classification in detail?
6. What is DNA repair? Describe base excision & nucleotide excision repair mechanisms.
7. What is lac operon? Explain it in detail with all its components.
8. What is DNA repair? Explain the DNA mismatch repair.
9. What is DNA transformation? Describe the methods of DNA transformation.
10. Describe Western blotting techniques? Add a note on their significance.
11. What is DNA Fingerprinting? Write its principle, procedure and application.
12. What is DNA damage? Describe types of DNA damage.
13. What is DNA sequencing? Explain in detail Sanger's method.
14. Explain in detail construction of cDNA libraries.
15. Write an account on transcription process in eukaryotes.

Q.3 Short notes

1. Okazaki fragments
2. Cosmid as a cloning vector
3. Southern blotting
4. Wobble Hypothesis
5. Photoreactivation repair mechanism
6. Lac operon
7. Application of Polymerase chain reaction
8. pBR322
9. Dispersive type of replication
10. Base pair excision repair mechanism
11. RNA polymerase in prokaryotes
12. Causes of DNA damage
13. Nucleotide excision repair
14. cDNA libraries
15. Electroporation method of transformation techniques
16. Lambda bacteriophage cloning vector
17. Southern blotting
18. DNA Microarray
19. Plasmid as a cloning vector
20. Genomic libraries
21. Nomenclature and classification of restriction enzymes
22. Codon Assignment
23. Genetic code is commaless and has polarity.
24. Initiation and termination codon.
25. Genetic code is non-overlapping and non-ambiguos.
26. Transamination.
27. Post transcriptional modification in RNA.
28. Phagemids
29. Nothern Blotting.
30. Calcium Chloride method of DNA Transformation.