KHAIRA COLLEGE KHAIRA,BALASORE

BOTANY QUESTION BANK

4TH SEMESTER

CORE COURSE VIII: MOLECULAR BIOLOGY

1. The function of β subunit of polymerase is

a. Template binding
b. Catalytic binding
c. Promoter binding
d. Cation binding

2. Which of the σ factors is heat stable?

a. σ^{54}
b. σ^{70}
c. σ^{28}
d. σ^{32}

3. The mRNA codon of valine is

a. GUC
b. UGG
c. CCA
d. TTG

4. True replication of DNA is due to

a. Phosphate backbone
b. Hydrogen bonding
c. Complementary base pairing rule
d. None

5. Which of the following statements is not applicable to viruses?

a. The virus replicates in a bacterial host
b. The protein coat of a virus does not enter the host cell
c. The genetic material is DNA or RNA
d. Virus replicate autonomously in the absence of host

6. Mode of DNA replication is

a. Conservative and bidirectional
b. Semiconservative and unidirectional
c. Semiconservative and bidirectional
d. Conservative and unidirectional

7. Which enzyme is used to join nicks in the DNA strand?

a. Primase
b. DNA polymerase
c. DNA ligase
d. Endonuclease

8. Which enzyme is used in the unwinding of DNA?

a. Ligase
b. Topoisomerase
c. Helicase
d. Exonuclease

9. Which of the following processes does not occur in prokaryotes?

a. Transcription
b. Splicing
c. Translation
d. Replication

10. cDNA is synthesised from RNA by the enzyme

a. DNA polymerase
b. DNA synthetase
c. DNA convertase

d. Reverse transcriptase

11. Which of the following base-pairing rule is correct?

a. Adenine with guanine and thymine with cytosine
b. DNA base pairing is non-specific
c. Adenine with cytosine and guanine with thymine
d. Adenine with thymine and guanine with cytosine

12. DNA synthesis can be measured by estimating the incorporation of radiolabelled

a. Thymine
b. Guanine
c. Cytosine
d. Adenine

13. How many RNA polymerases are present in a bacterial system?

a. 4
b. 2
c. 1
d. 3

14. During DNA replication the synthesis of the leading strand of DNA results in fragments known as

a. Okazaki fragments
b. Satellite segments
c. Kornberg segment
d. Double-helix segment

15. Short strands of ——- primer are used in DNA replication.

a. DNA
b. RNA
c. Histone
d. Protein

Answer Key

1- b	**2- d**	**3- a**	**4- c**	**5- d**
6- c	**7- c**	**8- c**	**9- b**	**10- d**
11- d	**12- a**	**13- c**	**14- a**	**15- b**

Short questions:

1. Replication in prokaryotes
2. Transcription in prokaryotes
3. Translation in prokaryotes
4. Replication in eukaryotes
5. Transcription in eukaryotes
6. Translation in eukaryotes
7. Central dogma
8. Genetic code
9. Genetic material
10. Nucleic acids and their types
11. Z-DNA
12. DNA and its types
13. RNA and its types
14. Activation of amino acids

15. Charging of t-RNA

16. t-RNA

17. Initiation factors of translation in prokaryotes

18. Enzymes needed in replication of prokaryotes

19. Wobble hypothesis

20. Purines and pyrimidines

Long questions:

1. What is replication? Explain the process in prokaryotes with well labelled diagrams.

2. What are the various steps in transcription in eukaryotes, explain in detail?

3. Describe the process of transcription in prokaryotes in detail.

4. Describe the 3 important DNA polymerases, I, II and III, in replication process of prokaryotes.

5. Describe the process of replication in eukaryotes. How is it different from the replication in prokaryotes?

6. Describe the process of translation in prokaryotes in detail.

7. Describe the process of translation in eukaryotes in detail.

8. „DNA is the genetic material", explain with any two experiments with well labelled diagrams.

9. Describe the experiment which shows that replication is semi-conservative in detail.

10. What is genetic code? What are its characteristics?

11. What are nucleic acids? Give structural details (monomers, composition etc).