REV-01
MSB/02/07

2024/07

SET A

M.Sc. BOTANY
SECOND SEMESTER [SPECIAL REPEAT]
MOLECULAR BIOLOGY
MSB-204

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

Objective

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: ***1×10=10***

1. During translation, proteins are synthesized by:
   a. Ribosomes using the information on DNA
   b. Lysosome using the information on mRNA
   c. Ribosomes using the information on mRNA
   d. Ribosomes using the information on rRNA

2. DNA fingerprinting technique was developed by:
   a. Jacob Monod
   b. Rosalin Franklin
   c. Alec Jeffreys
   d. Conrad Waddington

3. Identify the correct combination of salient features of the Genetic Code:
   a. Universal, Ambiguous, Degenerate
   b. Degenerate, Non-overlapping, Non-ambiguous
   c. Universal, Non-ambiguous, Overlapping
   d. Degenerate, Overlapping, Commaless

4. All the statements are true regarding RFLP and RAPD except:
   a. RAPD is a quick method compared to RFLP
   b. RFLP is more reliable than RAPD
   c. Species specific primers are required in RAPD
   d. Radioactive probes are not required in RAPD

5. You want your bacterial culture to grow well so you made an enriched media with all forms of carbohydrates. Which of this carbohydrate should you restore first if you want the culture to keep growing at the same rate?
   a. Glucose
   b. Lactose
   c. Galactose
   d. Fructose

6. Which of the following is a correct statement about the process of DNA replication?
   a. DNA synthesis takes place mainly by DNA polymerase I in *E. coli*
   b. Gap filling after the removal of primer is done by DNA polymerase III
   c. SSB proteins bind to the DNA strand in which the leading strand of replicating DNA is synthesized
   d. Direction of DNA synthesis in the lagging strand is 5′----3′ direction

7. Termination of replication is triggered by:
   a. DNA polymerase
   b. Helicase
   c. SSB
   d. Tus protein

8. Sigma factor is component of:
   a. DNA ligase
   b. DNA polymerase
   c. RNA polymerase
   d. Endonuclease

9. Which of the following is a transcription factor?
   a. Gamma factor
   b. Delta factor
   c. Epsilon factor
   d. Rho factor

10. Which of the following is true regarding enhancers?
   a. 10 nucleotide upstream elements
   b. 25 nucleotide downstream elements
   c. Present closer or 1000s nucleotide upstream or downstream of TSS
   d. All of the above

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Descriptive

Time : 1 hr. 15 mins. **Marks : 25**

[Answer question no.1 & any two (2) from the rest]

1. Describe the process of splicing of the group II introns. 5

2. Describe the rho independent and rho dependent termination process of DNA transcription in prokaryotes. 5+5=10

3. Write short notes on: 5+5=10
   a) AFLP
   b) RADP

4. Write short notes on *any two* of the following: 5+5=10
   a) Topoisomerase
   b) Helicase
   c) DNA Polymerase
   d) DNA ligase

5. What is an operon? Explain arabinose operon with proper diagram. 2+8=10

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