16. Define codon. Describe how aminoacyl tRNAs are brought to the 'A' site of the ribosome, peptide bond formation occurs and ribosome translocate during the elongation phase of bacterial translation. 1+3=4

17. Describe how 5' capping and 3' polyadenylation occurs in eukaryotic mRNA. 2+2=4

18. Describe the biogenesis of miRNA and the regulation of eukaryotic gene by miRNA.2+2=4

GROUP—C

Answer *any* **one** of the following question : 8×1=8

19. How are tryptophan operon regulated by repressor and lactose operon by activator? What are Shine-Dalgarno sequence and site directed mutagenesis? 3+3+1+1

20. Describe the role of snRNPs in the splicing process. What is RNA editing? Name two methods of RNA editing. How O-linked glycosylation occurs in eukaryotic cell? 4+1+1+2

★★★

2024

M.Sc. 2nd Semester Examination

MICROBIOLOGY

PAPER : MCB-202

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer from both the Units.

UNIT—A (202.1)

GROUP—A

Answer *any* **two** of the following questions : 2×2=4

1. Define competence.

2. Why Hfr strain is so named?

3. How many different types of allele are possible from an individual with AaBbCcDd genotype?

4. What is polygenic trait? Give example.

GROUP—B

Answer *any* **two** of the following questions : 4×2=8

5. What is linkage? How is it related with crossing over? Define linked gene and linkage group. 1+1+1+1

6. Write in brief about the significance of horizontal gene transfer in prokaryotes. 4

7. What is epistasis? Write the phenomen of recessive epistasis with example of Bombay phenotype. 1+3

8. Explain the mechanisms of dosage compensation among different eukaryotes. 4

GROUP—C

Answer *any* **one** of the following questions : 8×1=8

9. ABO blood groups are the example of complete dominance, codominance and multiple allelism.Explain. 6+2

10. How specialized transduction differs from generalized transduction? What is transposable element? Explain with an example, how the linkage mapping of different gene is done. 3+2+3

UNIT—B (202.2)

GROUP—A

Answer *any* **two** of the following questions : 2×2=4

11. Mention three possible reasons for the occurrence of spontaneous mutation.

12. Distinguish between base excision and nucleotide excision repair in prokaryotes.

13. Name the enzymes and proteins involved in *E.coli* DNA replication.

14. What is alternative splicing?

GROUP—B

Answer *any* **two** of the following questions : 4×2=8

15. What is promoter? Describe how *E.coli* RNA polymerase finds the promoter and then initiates transcription. 1+3=4