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ATTACH THE QUESTION PAPER WITH THE ANSWER BOOKLET

Date: 20-4-21

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**M.Sc MICROBIOLOGY- II SEMESTER**

**SEMESTER EXAMINATION- APRIL 2020.**

**MB8318- MOLECULAR BIOLOGY**

**Time: 2 ½ hrs Max Marks: 70**

This question paper has **1Z** printed pages and **4** parts.

**I. Answer any Five of the following questions: 5X3 =15**

1. How do proteins move in and out of the nucleus?
2. With an example state the benefits of RNA editing to the cell.
3. List three inhibitors of replication with their modes of action.
4. List differences between mi and siRNA.
5. What are the evidences that suggest that tRNA and rRNA molecules are modified versions of their primary transcripts?
6. Scientific reports mention that “disruption of gene regulation causes cancer”, can you give one example to justify this statement.
7. How is EF-Tu recycled?

**II. Answer any Five of the following questions: 5x5= 25**

1. What is the mechanism of capping?
2. Describe the mechanism of retrograde transport.
3. What is epigenetic regulation? Which enzymes play and important role in attaining this regulation and how?
4. Explain the Pol II mediated initiation of transcription.
5. a. Explain the charging of the initiator tRNA in prokaryotes.

b. How does translocation occur?

1. How will the arabinose operon function if:

a. only repressor protein is present.

b. both repressor and inducer are present.

1. Describe the different levels of packaging of DNA seen in a eukaryotic nucleus.

**III. Answer any Two of the following questions: 2x10 =20**

 15. Explain how sex determination takes place in drosophila.

 16.a. How does nonstop mediated decay occur in the cell?

 b. List 5 post translational modifications and their significance.

 17.a. Explain the mechanism of reverse transcription.

 b. How does ligase enzyme seal nicks?

**IV. Answer the following: 1x10 = 10**

18.a. An E. coli strain is isolated that produces B galactosidase and permease constitutively. Provide the genotypes of two possible mutations that could cause this phenotype, then describe how each mutation would behave in a partial diploid in which the second operon is wild-type for the entire lac system. **6m**

b. How does the attenuator control of tryptophan react to shortages of other amino acids? **4m**