

SEMESTER EXAMINATION-2021
CLASS – B.SC. HONOURS BIOMEDICAL SCIENCE SUBJECT-
GENOME ORGANIZATION AND FUNCTION
PAPER CODE: PAPER TITLE-BMS-E502

Time: 3 hour

Max. Marks: 70

Min. Pass: 40%

Note: Question Paper is divided into two sections: **A and B**. Attempt both the sections as per given instructions.

SECTION-A (SHORT ANSWER TYPE QUESTIONS)

Instructions: Answer any five questions in about 150 words (5 X 6 = 30 Marks) each. Each question carries six marks.

Question-1: Write a short note on Riboswitches and RNA interference

Question-2: What is the difference between miRNA and siRNA?

Question-3: Define RNA editing. Mechanism and steps involved in RNA editing with examples?

Question-4: Define eukaryotic and prokaryotic gene regulation and state the difference between them?

Question-5: What is DNA methylation? Give its functions?

Question-6: Explain Human genome project and goals of HGP?

Question-7: What are applications of Human genome project and Ethical, legal, social issues related to it?

Question-8: Write a short note on Gene density, CpG islands and Gene clusters.

Question-9: Define Genetic markers. Types and uses of genetic markers?

Question-10: Explain tools and techniques used in human genome project?

SECTION-B (LONG ANSWER TYPE QUESTIONS)

Instructions: Answer any FOUR questions in detail. Each (4 X 10 = 40 Marks) question carries 10 marks.

Question-11: Discuss in detail about principles of Transcriptional regulation in prokaryotes. Give details on bacterial gene regulation with reference to lactose, tryptophan and arabinose operon.

Question-12: Discuss eukaryotic gene regulation with reference to Transcriptional controls.

Question-13: Give introduction to Genome Projects along with organization and goals of human genome project.

Question-14: Discuss tools (Vectors- BAC, PAC, YAC and sequencing techniques) and approaches (Hierarchical and shotgun sequencing), Outcomes and ethical issues of human genome projects.

Question-15: Give a detailed account on genetic markers and their applications.

- Question-16: Give detail on genomic control with respect to gene amplification and deletions, DNA rearrangements, chromosome puffs, DNA methylation.
- Question-17: Discuss RNA interference, miRNA, siRNA, Regulatory RNA and X-inactivation (reference of calico cats), RNA editing.
- Question-18: Discuss various applications in human diseases with an example of CFTR.

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