

Question Paper

Exam Date & Time: 16-May-2024 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

BPharm Theory End-Semester Examinations, May 2024

Cell and Molecular Biology [PBT-BP808ET -S1]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) Eukaryotic cells divide once in _____ day/s (1)

- [Four](#)
- [One](#)
- [Two](#)
- [Three](#)

2) The doubling time of *Saccharomyces cerevisiae* is about _____ hour and _____ minutes (1)

- [One hour and 50 minutes](#)
- [One hour and 30 minutes](#)
- [Two hours and 30 minutes](#)
- [Two hours and 50 minutes](#)

3) The term given when the number of chromosomes in parent and progeny cells is same is _____ (1)

- [Equatorial division](#)
- [Equational division](#)
- [Exponential division](#)
- [Equilibrium division](#)

4) The phase where chromosomes lie in a line on the equator is the _____ (1)

- [Prophase](#)
- [Anaphase](#)
- [Telophase](#)
- [Metaphase](#)

5) MTOC stands for _____ (1)

- [Macrotubule organizing centre](#)
- [Mitotic Telophase organizing centre](#)
- [Mitotic tubule organizing centre](#)
- [Microtubule organizing centre](#)

6) The phase which is also known as the resting phase is _____ (1)

[Interphase](#)

[Outerphase](#)

[Subphase](#)

[Prophase](#)

7) Part of the chromosome that is connected to the spindle fiber is called _____ (1)

[Chromatid](#)

[Centromere](#)

[Kinetochore](#)

[Microtubule](#)

8) Replacement of one-base pair by another is termed as: (1)

[Frameshift Mutation](#)

[Point Mutation](#)

[Missense Mutation](#)

[Nonsense mutation](#)

9) Which of the following is not true with respect to repair of DNA? (1)

[Base excision repair](#)

[Nucleotide excision
repair](#)

[Mismatch repair](#)

[Single-strand break repair](#)

10) Deamination of Cytosine gives (1)

[Xanthine](#)

[Hypoxanthine](#)

[Uracil](#)

[Adenine](#)

11) Exonuclease, an enzyme associated with cutting the DNA on either side of damaged DNA is primarily associated with (1)

[Base excision repair](#)

[Nucleotide excision repair](#)

[Mismatch Repair](#)

[Double strand break
repair](#)

12) Enzymes that help in joining of okazaki fragments are: (1)

[DNA Polymerase I and Primase](#)

[DNA polymerase III and Primase](#)

[DNA Polymerase I and DNA
ligase](#)

[DNA ligase and RNA Primase](#)

13) Holoenzyme without sigma factor is termed as (1)

[Cofactor](#)

[Coenzyme](#)

[Core enzyme](#)

[Prosthetic group](#)

14) In which of the following methods, the proteins are separated based on their net charge? (1)

[Gel separation chromatography](#)

[Ion-exchange chromatography](#)

[Affinity chromatography](#)

[Dialysis method](#)

15) Mutation, wherein Purine is replaced by pyrimidine and vice versa, is known as (1)

[Transition mutation](#)

[Transversion mutation](#)

[Frameshift mutation](#)

[Missense mutation](#)

16) During the replication process in eukaryotes, the enzyme responsible for proofreading is (1)

[DNA polymerase epsilon](#)

[DNA polymerase alpha](#)

[DNA polymerase delta](#)

[DNA polymerase beta](#)

17) SNP which is pronounced as 'snips' stands for (1)

[Small Nuclear Protein](#)

[Single Nucleotide Particle](#)

[Single Nucleotide Polymorphism](#)

[Small Nicking Points](#)

18) An ideal length of the nucleotide sequence of siRNA used in therapeutics is (1)

[4-8](#)

[8-12](#)

[12-16](#)

[18-22](#)

19) What kind of disease can be cured with the help of gene therapy? (1)

[Infectious](#)

[Hereditary](#)

[Physiological](#)

[Acute](#)

20) What is DICER? (1)

[An enzyme that breaks long strands of double-stranded RNA into siRNA.](#)

[An enzyme that breaks long strands of single-stranded DNA into siRNA.](#)

[An enzyme that inactivates mRNA after siRNA binds to it](#)

[An enzyme that takes siRNA and makes it into mRNA.](#)

II Long Answers

Answer all the questions.

- 1) Enlist any four differences between Mitosis and Meiosis. Explain through the help of diagram, the cell division process in Meiosis. (10)
- 2) Discuss four types of protein structures. (10)

III Short Answers

Answer all the questions.

- 1) Explain the major consequences of point mutation. (5)
- 2) Write about semiconservative nature of replication and add a note on replication bubble. (5)

- 3) Separation of nucleic acids from the cell lysate is taken up on priority. Give reasons for this and explain the methods used for the separation of nucleic acids. (5)
- 4) Explain the reasons for variation in an individual's drug response. (5)
- 5) What is polymorphism? Explain different types of polymorphisms. (5)
- 6) What are microbial nano-particles? How are they produced? What are their advantages? (5)
- 7) Explain the advances and challenges involved in gene therapy. (5)

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