

PBT-BP808ET End semester Exami...

(BPharm - Semester -VIII, PBT- BP808ET: Cell and Molecular Biol...)

Answer all questions

* This form will record your name, please fill your name.

1. Which of the following hormone inhibits the adenylyl cyclase enzyme?

(1 Point)

- Glucagon
- Epinephrine
- Adrenocorticotrop hormone
- Somatostatin ✓

2. Which of the following DNA-dependent RNA polymerase is required in the transcription of mRNA genes.

(1 Point)

- RNA polymerase I
- RNA polymerase II ✓
- RNA polymerase III
- RNA polymerase IV

3. Many cells can precisely control the time of their death by the process known as ---- ↘

(1 Point)

- Autophagy
- Apoptosis ✓
- Necrosis
- Necroptosis

4. The Insulin receptor is a -----

(1 Point)

- Receptor enzyme ✓
- Voltage-gated ion channel
- GPCR
- Ligand-gated ion channel

5. The lipid bilayer hypothesis was proposed by

(1 Point)

- Robert Hooke
- SJ Singer and G. L. Nicolson
- Gorter and Grendel ✓
- Theodor Schwann and Matthias Jakob Schleiden

Migration of centrioles to opposite sides of the cell begins at-----
(1 Point)

- Metaphase
- Telophase
- Prophase
- Anaphase

7. ---- enhances contrast in unstained cells by amplifying variations in refractive index within specimen; especially useful for examining living, unpigmented cells.
(1 Point)

- Scanning electron microscopy
- Confocal microscopy
- Transmission electron microscopy
- Phase contrast microscopy

8. The hormone used for super ovulation in donor mice in the process of transgenic mouse production via pronuclear injection method is
(1 Point)

- Estrogen
- Chorionic gonadotropin
- FSH
- LH

9. Identify the protein factor that prevents premature binding of tRNAs to the ribosome at the A site, that is required in the translation initiation in bacterial cells. (1 Point)

- IF-2
- IF-4
- IF-1
- IF-3

10. Morula stage is (1 Point)

- 24-36 hour old embryo
- 120 hours-144 hours old embryo
- 48-96 hours old embryo
- 36-48 hours old embryo

11. ddNTPs are useful in (1 Point)

- Maxam-Gilbert method of DNA sequencing
- All of the above
- PCR
- Sanger method of DNA sequencing

Which among the following is NOT true about cell membrane or plasma membrane?
(1 Point)

- Cell Membrane or Plasma membrane separates the interior of cells from the outside environment.
- Proteins maintain the fluidity of plasma membrane under various temperature.
- Involved in cell adhesion and Ion conductivity.
- Provide mechanical strength to the cell.

13. In which of the following cell types telomerase activity is low?
(1 Point)

- Bone marrow
- Option 4
- Sperm cells
- Fibroblast cells

14. Maxam Gilbert method of DNA sequencing is a chemical degradation method. Which among the following chemicals is useful in the degradation of pyrimidines?
(1 Point)

- Hydrazine
- Dimethyl sulphate
- Sodium hydroxide
- Formic acid

15. During cell cycle, cellular contents except chromosomes are duplicated during
(1 Point)

- G1 phase
- M Phase
- G2 Phase
- S phase

16. In which form does DNA double helix occurs under low humidity (75%) and high salt conditions?
(1 Point)

- Z-DNA
- A-DNA
- C-DNA
- B-DNA

17. Which of the following is a termination codon?
(1 Point)

- UUA
- UUU
- CAU
- AUG

Identify the uncommon amino acid from the following residues.

(1 Point)

- Arginine
- 6-N-methyllysine
- Lysine
- Histidine

19. Which among the following is NOT true about the carbohydrates of plasma membrane?

(1 Point)

- The glycocalyx is highly hydrophilic
- Glycocalyx is composed of glycoproteins and glycolipids.
- They are always found on the cytosolic side of the membrane and are bound with proteins to form glycoproteins
- Carbohydrates of plasma membrane can form unique patterns that allow the cell to be recognized.

20. RNA is involved in a wide range of cellular processes, identify the type of RNA involved in rRNA processing.

(1 Point)

- snoRNA
- tRNA
- snRNA
- rRNA

 Microsoft Forms

MCCQs
Answer keys

Manipal Academy of Higher Education
Manipal College of Pharmaceutical Sciences

End semester Examination July 2021

VIII Semester BPharm

Subject and subject code: Cell and Molecular Biology (Theory) PBT BP-808ET

II. Short Answers

6 Q x 5 marks = 30marks

Answer All the Questions

1. Write about the mechanism of transcription in eukaryotes.
2. Write about the classification of Amino acids based on the R group and briefly describe the various levels of structure in proteins.
3. Write about the cyclic pathway by which chaperones assist in protein folding.
4. List the names of six general types of signal transducers and write about the key features of the molecular mechanism of signal transduction.
5. Write a short note on the principle and working of the flow cytometer. How can it be used in cell cycle analysis?
6. Outline fluid mosaic model of the plasma membrane.

VIII Semester, B. Pharm

Answer Key

1. Mechanism of transcription in eukaryotes
 - I. Description of RNA Polymerase II
 - II. Common sequences in promoters recognized by eukaryotic RNA polymerase II
 - III. The sequential assembly of TBP (often with TFIIA), TFIIB, TFIIE plus Pol II, TFIIE, and TFIIH
 - IV. Assembly of RNA Polymerase and Transcription Factors at a Promoter
 - V. Elongation, termination and release

2.
 - i. Nonpolar, Aliphatic R Groups
 - ii. Aromatic R Groups Phenylalanine, tyrosine, and tryptophan
 - iii. Polar, Uncharged R Groups
 - iv. Positively Charged (Basic) R Groups
 - v. Negatively Charged (Acidic) R Groups

Levels of structure in proteins. The primary structure consists of a sequence of amino acids linked together by peptide bonds and includes any disulfide bonds. The resulting polypeptide can be coiled into units of secondary structure, such as an α helix. The helix is a part of the tertiary structure of the folded polypeptide, which is itself one of the subunits that make up the quaternary structure of the multisubunit protein, in this case hemoglobin.

3. Chaperones in protein folding. The cyclic pathway by which chaperones bind and release polypeptides is illustrated for the *E. coli* chaperone proteins DnaK and DnaJ, homologs of the eukaryotic chaperones Hsp70 and Hsp40. The chaperones do not actively promote the folding of the substrate protein, but instead prevent aggregation of unfolded peptides. For a population of polypeptides, some fraction of the polypeptides released at the end of the cycle are in the native conformation. The remainder are rebound by DnaK or are diverted to the chaperonin system (GroEL; see Fig. 4-31). In bacteria, a protein called GrpE interacts transiently with DnaK late in the cycle (step 3), promoting dissociation of ADP and possibly DnaJ. No eukaryotic analog of GrpE is known.

4.
 - i. Eukaryotic cells have six general types of signaling mechanisms: gated ion channels; receptor enzymes; membrane proteins that act through G proteins; nuclear proteins that bind steroids and act as transcription factors; membrane proteins that attract and activate soluble protein kinases; and adhesion receptors that carry information between the extracellular matrix and the cytoskeleton.

 - ii. Specificity, Amplification, desensitization/Adaptation, and Integration.