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प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No.

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प्रश्नपुस्तिका सीरीज
Question Booklet Series

A

**B.Sc. (Biotechnology) First Semester,
Examination, February/March-2022
BBT-1002
Cell Biology**

Time : 1:30 Hours

Maximum Marks-100

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

- निर्देश : —
1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही— सही भरे, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
 2. इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमें से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने हैं। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET) में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वाइंट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा निर्धारित प्रश्नों से अधिक प्रश्नों के उत्तर दिये जाते हैं तो उसके द्वारा हल किये गये प्रथमतः यथा निर्दिष्ट प्रश्नोत्तरों का ही मूल्यांकन किया जायेगा।
 3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
 4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
 5. ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
 6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी प्रश्नपुस्तिका बुकलेट एवं ओ०एम०आर० शीट पृथक-पृथक उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
 7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : — प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।

Rough Work / रफ कार्य

1. What is a cell?
 - (A) Smallest and advanced unit of life
 - (B) Smallest and basic unit of life
 - (C) Largest and basic unit of life
 - (D) Largest and advanced unit of life
2. Which of the following is used by cells to interact with other cells?
 - (A) Cell tubules
 - (B) Cell junctions
 - (C) Cell adhesions
 - (D) Cell detectors
3. In which of the following type of cells Sarcoplasmic reticulum is found?
 - (A) Muscle cells
 - (B) Liver cells
 - (C) Kidney cells
 - (D) Neurons
4. Which of the following is known as the powerhouse of a cell?
 - (A) Mitochondria
 - (B) Cytoplasm
 - (C) Lysosome
 - (D) Nuclei
5. Which of the following cell doesn't contain a cell wall?
 - (A) Plant cell
 - (B) Bacteria
 - (C) Fungi
 - (D) Animal cell

6. DNA is stored in which of the following cell organelle?
- (A) Cell wall
 - (B) Cell Membrane
 - (C) Nucleus
 - (D) Cytoplasm
7. A cell organelle that is presents in animal cells but absent in plant cells is:
- (A) Cytoplasm
 - (B) Centrosome
 - (C) Mitochondrial
 - (D) Cytoplasm
8. Which of the following polysaccharide is not present in the eukaryotic plant cell wall?
- (A) Chitin
 - (B) Hemicellulose
 - (C) Pectin
 - (D) Cellulose
9. What are the types of nucleic acids are found in living organisms?
- (A) Deoxyribonucleic acid & nucleotide acid
 - (B) Deoxyribonucleic acid & ribonucleic acid
 - (C) Ribonucleic acid & nucleotide acid
 - (D) Ribonucleic acid & nucleoside acid
10. Which of the following statements is not applicable to viruses?
- (A) The virus replicates in a bacterial host
 - (B) The protein coat of a virus does not enter the host cell
 - (C) The genetic material is DNA or RNA
 - (D) Virus replicate autonomously in the absence of host

11. Which of the following type of cells recognize and kill the abnormal pathogen infected cells?
- (A) Mast cells
 - (B) B-lymphocytes
 - (C) T-lymphocytes
 - (D) Neutrophils
12. Complete the reaction: $C_6H_{12}O_6 \longrightarrow$
- (A) $CH_4 + O_2$
 - (B) $C_2H_2 + O_2$
 - (C) $CO_2 + H_2O$
 - (D) $CO + H_2O$
13. Name mitochondria was suggested by:
- (A) Kollicker
 - (B) Altmann
 - (C) Benda
 - (D) Kinsbury
14. Glycolysis occurs in:
- (A) Matrix
 - (B) Stroma
 - (C) Cytoplasm
 - (D) Nucleoplasm
15. What is the function of the cell membrane?
- (A) To control the substances that enters and leaves the cell
 - (B) To carry out respiration
 - (C) To contain the genetic information
 - (D) To synthesise proteins

16. According to Schleiden and Schwann:
- (A) All cells have nuclei
 - (B) All cells are living
 - (C) Cells are fundamental units of all the living organisms
 - (D) Cells arise from pre-existing cells
17. A nucleus in prokaryotic cell is represented as:
- (A) A well defined nucleus
 - (B) Nucleolus
 - (C) Double stranded circular DNA
 - (D) Single stranded DNA
18. The largest cell organelle is:
- (A) Nucleus
 - (B) Endoplasmic reticulum
 - (C) Chloroplast
 - (D) Mitochondria
19. Ribosomes of Mitochondria and chloroplast are:
- (A) 50-70S
 - (B) 80 S
 - (C) 40 S
 - (D) 60S
20. Intake of water by formation of food vacuole is called:
- (A) Pinocytosis
 - (B) Phagocytosis
 - (C) Imbibition
 - (D) Absorption

21. The electron transport chain lies in mitochondrial:
- (A) Matrix
 - (B) Inner membrane
 - (C) Outer membrane
 - (D) Inter membrane space
22. The most recent model of membrane structure is:
- (A) Bilayer model
 - (B) Sandwich model
 - (C) Fluid mosaic model
 - (D) Unit membrane model
23. Movement from high to low concentration is:
- (A) Osmosis
 - (B) Diffusion
 - (C) Filtration
 - (D) Centrifugation
24. The nucleosomes are found in:
- (A) Chromosomes
 - (B) Nucleus
 - (C) Nucleolus
 - (D) nucleoid
25. Na^+/K^+ pump is an example of:
- (A) Active transport
 - (B) Passive transport
 - (C) Facilitated diffusion
 - (D) Osmosis

26. Nuclear pores allow passage of:
- (A) Lipids
 - (B) Proteins
 - (C) Both
 - (D) None
27. Function of Golgi bodies in plants is:
- (A) Transport of metabolites
 - (B) Translocation of enzymes
 - (C) Synthesis of cell-wall
 - (D) Production of micro bodies
28. Chemical constituent of nucleus is:
- (A) RNA
 - (B) DNA
 - (C) DNA, RNA, Proteins
 - (D) DNA and RNA
29. Cellular components can be physically separated from each other by:
- (A) Centrifugation
 - (B) Radioactive tracers
 - (C) Microscopy
 - (D) Chromatography
30. Which structure performs a similar function in both plant and animal cell?
- (A) Ribosomes
 - (B) Contractile vacuoles
 - (C) Chloroplasts
 - (D) Cell wall

31. Cell membranes are composed mainly of:
- (A) Sugar and proteins
 - (B) Lipids and proteins
 - (C) Starch and lipids
 - (D) Sugar and lipids
32. Hydrolytic enzymes are abundant in:
- (A) Peroxisomes
 - (B) Microsomes
 - (C) Lysosome
 - (D) Mitochondria
33. Ribosomes are the centre of:
- (A) Respiration
 - (B) Photosynthesis
 - (C) Protein synthesis
 - (D) Fat synthesis
34. One of the following is a single-membrane structure:
- (A) Chloroplast
 - (B) Nucleus
 - (C) Mitochondria
 - (D) Lysosome
35. Mitochondrial genome is made up of:
- (A) DNA
 - (B) RNA
 - (C) Proteins
 - (D) Lipids

36. In centriole, microtubules are arranged in this order:
- (A) $9 + 2$
 - (B) $9 + 4$
 - (C) $9 + 0$
 - (D) $9 + 1$
37. Concept of unit membrane was given by:
- (A) Danielli and Davson
 - (B) Singer and Davson
 - (C) Buvat
 - (D) Robertson
38. Janus-green-B is used for staining:
- (A) Ribosomes
 - (B) Chloroplast
 - (C) Mitochondrion
 - (D) All of these
39. Plant cell wall is composed of:
- (A) Chitin
 - (B) Cellulose
 - (C) Cholesterol
 - (D) Proteins
40. Plasmolysis in plant cell occurs due to:
- (A) Exosmosis
 - (B) Endosmosis
 - (C) Imbibitions
 - (D) Pinocytosis

41. Plasma membrane is:
- (A) Semipermeable
 - (B) Flexible
 - (C) Lipoprotein structure
 - (D) All of the above
42. A nucleus is present in:
- (A) Bacteria
 - (B) Amoeba
 - (C) Mycoplasma
 - (D) Blue-green alga
43. The protein synthetic machinery of cell is:
- (A) Lysosome
 - (B) Ribosome
 - (C) Mitochondria
 - (D) Endoplasmic reticulum
44. Which of the following are enucleate?
- (A) Heart cells
 - (B) Bone
 - (C) RBCs
 - (D) Sperms
45. Chromosomes are located in:
- (A) Golgi bodies
 - (B) Ribosomes
 - (C) Lysosomes
 - (D) Peroxisomes

46. The lysosomes arise from:
- (A) Endoplasmic reticulum
 - (B) Golgi Bodies
 - (C) Nuclear envelop
 - (D) Plasma membrane
47. A definite shape is given to cells by:
- (A) Cell wall
 - (B) Plasma membrane
 - (C) Ribosomes
 - (D) Nucleus
48. The term cell is not applied for:
- (A) Algae
 - (B) Bacteria
 - (C) Virus
 - (D) Fungi
49. Microfilaments are composed of a protein called:
- (A) Tubulin
 - (B) Actin
 - (C) Myosin
 - (D) Chitin
50. Glycolipids in the plasma membrane are located at:
- (A) Inner leaflet of the plasma membrane
 - (B) The outer leaflet of the plasma membrane
 - (C) Evenly distributed in the inner and outer leaflets
 - (D) It varies according to cell types

51. Large subunit of ribosomes consist of:
- (A) 16S rRNA and 21 proteins
 - (B) 5S, 23SrRNA and 49 proteins
 - (C) 5S, 23S rRNA and 32 proteins
 - (D) 16S rRNA and 33 proteins
52. The following reaction occurs in: $\text{H}_2\text{O}_2 \longrightarrow \text{H}_2\text{O} + \text{O}_2$.
- (A) Glyoxisomes
 - (B) Peroxisomes
 - (C) Lysosomes
 - (D) Ribosomes
53. Plant vacuoles have:
- (A) Acidic pH
 - (B) Neutral pH
 - (C) Basic pH
 - (D) pH equal to that of cytosol
54. The assembly of 80S ribosome (in Svedberg units) in prokaryotes requires joining of:
- (A) 50 S and 30 S ribosomal subunits
 - (B) 40S and 60S ribosomal subunits
 - (C) 30 S and 60 S ribosomal subunits
 - (D) 50 S and 60 S ribosomal subunits
55. Programmed cell death is called as _____.
- (A) Apoptosis
 - (B) Cell ageing
 - (C) Cell lysis
 - (D) None of these

56. Zygotene is characterized by_____.
- (A) Chiasmata formation
 - (B) Crossing over
 - (C) Pairing of homologous chromosomes
 - (D) Tetrad formation
57. Transport is a main function of:
- (A) Plasma membrane
 - (B) Cell wall
 - (C) Golgi complex
 - (D) Ribosome
58. _____enhances stability of lipid bilayer and reduces their permeability.
- (A) Cholesterol
 - (B) Cephalin
 - (C) Glycerol
 - (D) Sphingomyelin
59. Na-K ATPase pump is example of_____type of transport.
- (A) Active transport
 - (B) Passive transport
 - (C) Symport
 - (D) Antiport
60. Membrane contain about _____protein _____carbohydrate dry weight.
- (A) 30% &20%
 - (B) 40%&20%
 - (C) 10% &5%
 - (D) 60% & 40%

61. Nucleosome core particle contains a double stranded DNA fragment of _____base pairs.
- (A) 148
 - (B) 144
 - (C) 156
 - (D) 146
62. The agents responsible for bringing variation in genetic message, known as:
- (A) Unusual bases
 - (B) Tautomers
 - (C) Mutagen
 - (D) Isomers
63. Replacement of a purine residue by a pyrimidine residue, the effect termed as_____.
- (A) Mutation
 - (B) Substitution mutation
 - (C) Transversion
 - (D) Transition
64. Which of the following is not a constituent of the chromosome?
- (A) Pigments
 - (B) Nucleic acids
 - (C) Histone proteins
 - (D) Non histone proteins
65. The study of the cell, its types, structure, functions, and its organelles are known as:
- (A) Biology
 - (B) Cell Biology
 - (C) Microbiology
 - (D) Biotechnology

66. The elements that present in Protoplasm:
- (A) Carbon, Hydrogen
 - (B) Carbon, Hydrogen, Nitrogen, and Oxygen
 - (C) Carbon, Nitrogen, and Oxygen
 - (D) Helium, Carbon, Oxygen
67. Which of the following cell organelles is called digestive bags?
- (A) Nucleus
 - (B) Lysosomes
 - (C) Chloroplast
 - (D) Mitochondria
68. Which of the following cell organelles is present in animal cells but not present in plant cells?
- (A) Nucleus
 - (B) Centrosome
 - (C) Golgi complex
 - (D) Plastids
69. Food substances are digested with the help of enzymes that are present in:
- (A) Mitochondria
 - (B) Golgi complex
 - (C) Lysosomes
 - (D) Ribosome
70. In paracrine signaling, the signaling molecules affects only:
- (A) Target cells close to the cell from which it was secreted
 - (B) Target cells distant from its site of synthesis in cells of an endocrine organ
 - (C) Both (A) and (B)
 - (D) None of the above

71. The abnormal growth of cells in the body is known as_____.
- (A) Cancer
 - (B) Malignancy
 - (C) Both (A) and (B)
 - (D) Only (A)
72. Which of the following organelle is called ‘Suicidal Bag’?
- (A) Mitochondria
 - (B) Endoplasmic reticulum
 - (C) Lysosome
 - (D) Ribosome
73. Which of the following organelle has a continuous connection with nuclear membrane?
- (A) Golgi apparatus
 - (B) Lysosome
 - (C) RER
 - (D) SER
74. Which of the following statements were true regarding ER?
- (A) ER provides structural framework to the cell
 - (B) ER acts as intra cellular transporting system
 - (C) SER is involved in the synthesis of lipid
 - (D) All of the above
75. F_0 - F_1 Particles are located on:
- (A) Thylakoids
 - (B) Inner mitochondrial membrane
 - (C) Golgian vacuoles
 - (D) None of the above

76. The number of nuclear pores depends on:
- (A) Size of cells
 - (B) Transcriptional activity of the cell
 - (C) DNA content of the cell
 - (D) All of the above
77. In cell fractionation, the various fractions obtained during differential centrifugation are_____.
- (A) Plastidial, mitochondrial and microsomal
 - (B) Nuclear, mitochondrial and microsomal
 - (C) Nuclear, plastidial and cytosol
 - (D) Plastidial, microsomal and cytosol
78. Rate of diffusion of a substance depends on:
- (A) Presence of semi-permeable membrane
 - (B) Concentration gradient of solute
 - (C) Concentration of solvent
 - (D) Concentration of ions
79. The intrinsic protein present in the cell membrane mainly functions as:
- (A) Enzymes
 - (B) Carrier
 - (C) Pores
 - (D) Channels
80. This is a correctly matched pair:
- (A) Lysosomes – involved in synthesizing amino acids
 - (B) Microsomes – take part in photosynthesis
 - (C) Centrosomes – Provides enzymes essential for digestion
 - (D) Endoplasmic reticulum – has a role in the formation of a new nuclear membrane while cell divides

81. The ER and bodies linked with it during ultracentrifugation are separated as a fraction known as:
- (A) Episome
 - (B) Polysome
 - (C) Microsome
 - (D) Quantasome
82. Sarcoplasmic reticulum is associated with:
- (A) Hormone synthesis
 - (B) Protein synthesis
 - (C) Release of calcium ions from muscle contractions
 - (D) None of the above
83. The main organelle involved in modification and routing of newly synthesized proteins to their destinations is:
- (A) Endoplasmic reticulum
 - (B) Lysosome
 - (C) Mitochondria
 - (D) Chloroplast
84. Posttranslational modification of many eukaryotic proteins begins in the _____.
- (A) Endoplasmic reticulum
 - (B) Mitochondria
 - (C) Chloroplasts
 - (D) Nucleus
85. Which among the following is not a part of endomembrane system?
- (A) Endoplasmic reticulum
 - (B) Mitochondria
 - (C) Vacuoles
 - (D) Golgi apparatus

86. Water entering roots through diffusion is a _____.
(A) Endosmosis
(B) Osmosis
(C) Passive absorption
(D) Active absorption
87. What is the meaning of Omnis cellula-e cellula?
(A) All cells have a nucleus
(B) Cell is the basic unit of life
(C) Living things are composed of cells
(D) All cells arise from pre-existing cells
88. Which type of chromosome has its centromere at its tip?
(A) Acrocentric chromosome
(B) Telocentric chromosome
(C) Sub – metacentric chromosome
(D) Metacentric chromosome
89. What is the site of rRNA synthesis within a cell?
(A) Chromatin
(B) Nucleolus
(C) Perinuclear space
(D) Centrosomes
90. What is the space between the two membranes of the nuclear envelope known as?
(A) Reticular space
(B) Intra – membrane space
(C) Perinuclear space
(D) Somatic space

91. Cytoplasm without cell organelles is termed as _____.
(A) Cytosol
(B) Cyclosis
(C) Lymph
(D) Blood
92. Which among the following is incorrect about RBCs?
(A) RBCs are anucleate because this allows them contain more oxygen and therefore carry more oxygen
(B) Immature RBCs do contain nucleus which lets them to reproduce but in the later stage of their life they become devoid of nucleus
(C) RBCs contain all other organelles like mitochondria, Golgi apparatus and SER etc.
(D) Due to lack of nucleus, they don't get involved in the protein synthesis
93. What is the difference between eukaryotic and prokaryotic cell when it comes to nucleus?
(A) Eukaryotic cell contains nucleus whereas prokaryotic cell don't
(B) Eukaryotic nucleus contains genetic material in them whereas prokaryotic nucleus don't
(C) Eukaryotic cell contains membrane bound nucleus whereas prokaryotic cell don't
(D) Eukaryotic cells contain both DNA and RNA whereas prokaryotic cell has only RNA
94. Which among the following statements is incorrect about plasma membrane?
(A) Plasma membrane is a selectively permeable membrane and allows only those particles that protect the cell
(B) Movement of air and water takes place through diffusion and osmosis respectively
(C) Osmosis and diffusion are examples of active transport
(D) Active transport takes place through use of energy

95. Which among the following is incorrect about fluid mosaic model?
- (A) Plasma membrane was coined by Singer and Nicholson to be a fluid mosaic model
 - (B) According to this model, the proteins are dispersed randomly on the surface and the interior of the plasma membrane
 - (C) The word fluid in this model refers to the fluid flexible nature of the plasma membrane
 - (D) The model fails to explain the cell growth and cell division
96. Cells can be described as having a cytoskeleton of internal structures that contribute to the shape, organization, and movement of the cell. All of the following are part of the cytoskeleton except:
- (A) Microtubules
 - (B) Actin
 - (C) Intermediate filaments
 - (D) The cell wall
97. All of the following are associated with the extracellular matrix of animal cells except:
- (A) Proteoglycans
 - (B) Cellulose
 - (C) Fibronectins
 - (D) Collagen
98. Which of the following is not a known function of the cytoskeleton?
- (A) To hold mitochondria and other organelles in place within the cytosol
 - (B) To provide mechanical support to the cell
 - (C) To maintain characteristic shape of the cell
 - (D) To maintain a critical limit on cell size

99. Which of the following relationships between cell structures and their respective functions is not correct?
- (A) Chromosomes: genetic control information
 - (B) Chloroplasts: chief site of cellular respiration
 - (C) Mitochondria: formation of ATP
 - (D) Ribosomes: site of protein synthesis
100. In cell fractionation various components of cells including its organelles can be isolated in different layers depending upon_____.
- (A) Their physical properties like size & weight
 - (B) Physical properties of the medium like its density
 - (C) Their electrical properties like their charges
 - (D) Both (A) and (B)

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