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(To be filled in the OMR Sheet)

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No. | | | | | | | | |

प्रश्नपुस्तिका सीरीज
Question Booklet Series
C

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 भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
2. **इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमे से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने है। 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 प्वांइट 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 जॉच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभॉति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।**

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Rough Work / रफ कार्य

1. 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)

2. 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

3. 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

4. All of the following are associated with the extracellular matrix of animal cells except:

   (A) Proteoglucans

   (B) Cellulose

   (C) Fibronectins

   (D) Collagen

5. 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

6. 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

7. 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

8. 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

9. 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

10. Cytoplasm without cell organelles is termed as _____.

(A) Cytosol

(B) Cyclosis

(C) Lymph

(D) Blood

11. 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

12. What is the site of rRNA synthesis within a cell?

(A) Chromatin

(B) Nucleolus

(C) Perinuclear space

(D) Centrosomes

13. Which type of chromosome has its centromere at its tip?

(A) Acrocentric chromosome

(B) Telocentric chromosome

(C) Sub – metacentric chromosome

(D) Metacentric chromosome

14. 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

15. Water entering roots through diffusion is a _____.

(A) Endosmosis

(B) Osmosis

(C) Passive absorption

(D) Active absorption

16. Which among the following is not a part of endomembrane system?

(A) Endoplasmic reticulum

(B) Mitochondria

(C) Vacuoles

(D) Golgi apparatus

17. Posttranslational modification of many eukaryotic proteins begins in the _____.

(A) Endoplasmic reticulum

(B) Mitochondria

(C) Chloroplasts

(D) Nucleus

18. 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

19. Sarcoplasmic reticulum is associated with:

(A) Hormone synthesis

(B) Protein synthesis

(C) Release of calcium ions from muscle contractions

(D) None of the above

20. The ER and bodies linked with it during ultracentrifugation are separated as a fraction known as:

(A) Episome

(B) Polysome

(C) Microsome

(D) Quantasome

21. 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

22. The intrinsic protein present in the cell membrane mainly functions as:

(A) Enzymes

(B) Carrier

(C) Pores

(D) Channels

23. 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

24. 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

25. 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

26. F_0-F_1 Particles are located on:

(A) Thylakoids

(B) Inner mitochondrial membrane

(C) Golgian vacuoles

(D) None of the above

27. 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

28. Which of the following organelle has a continuous connection with nuclear membrane?

(A) Golgi apparatus

(B) Lysosome

(C) RER

(D) SER

29. Which of the following organelle is called 'Suicidal Bag'?

(A) Mitochondria

(B) Endoplasmic reticulum

(C) Lysosome

(D) Ribosome

30. The abnormal growth of cells in the body is known as_____.

(A) Cancer

(B) Malignancy

(C) Both (A) and (B)

(D) Only (A)

31. 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

32. Food substances are digested with the help of enzymes that are present in:

(A) Mitochondria

(B) Golgi complex

(C) Lysosomes

(D) Ribosome

33. 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

34. Which of the following cell organelles is called digestive bags?

(A) Nucleus

(B) Lysosomes

(C) Chloroplast

(D) Mitochondria

35. The elements that present in Protoplasm:

(A) Carbon, Hydrogen

(B) Carbon, Hydrogen, Nitrogen, and Oxygen

(C) Carbon, Nitrogen, and Oxygen

(D) Helium, Carbon, Oxygen

36. The study of the cell, its types, structure, functions, and its organelles are known as:

(A) Biology

(B) Cell Biology

(C) Microbiology

(D) Biotechnology

37. Which of the following is not a constituent of the chromosome?

(A) Pigments

(B) Nucleic acids

(C) Histone proteins

(D) Non histone proteins

38. Replacement of a purine residue by a pyrimidine residue, the effect termed as_____.

(A) Mutation

(B) Substitution mutation

(C) Transversion

(D) Transition

39. The agents responsible for bringing variation in genetic message, known as:

(A) Unusual bases

(B) Tautomers

(C) Mutagen

(D) Isomers

40. Nucleosome core particle contains a double stranded DNA fragment of _____base pairs.

(A) 148

(B) 144

(C) 156

(D) 146

41. Membrane contain about _____protein _____carbohydrate dry weight.

(A) 30% &20%

(B) 40%&20%

(C) 10% &5%

(D) 60% & 40%

42. Na-K ATPase pump is example of_____type of transport.

(A) Active transport

(B) Passive transport

(C) Symport

(D) Antiport

43. _____enhances stability of lipid bilayer and reduces their permeability.

(A) Cholesterol

(B) Cephalin

(C) Glycerol

(D) Sphingomyelin

44. Transport is a main function of:
(A) Plasma membrane
(B) Cell wall
(C) Golgi complex
(D) Ribosome

45. Zygotene is characterized by_____.
(A) Chiasmata formation
(B) Crossing over
(C) Pairing of homologous chromosomes
(D) Tetrad formation

46. Programmed cell death is called as_____.
(A) Apoptosis
(B) Cell ageing
(C) Cell lysis
(D) None of these

47. 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

48. Plant vacuoles have:
(A) Acidic pH
(B) Neutral pH
(C) Basic pH
(D) pH equal to that of cytosol

49. The following reaction occurs in: $H_2O_2 \longrightarrow H_2O + O_2$.
(A) Glyoxisomes
(B) Peroxisomes
(C) Lysosomes
(D) Ribosomes

50. 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

51. 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

52. Microfilaments are composed of a protein called:

(A) Tubulin

(B) Actin

(C) Myosin

(D) Chitin

53. The term cell is not applied for:

(A) Algae

(B) Bacteria

(C) Virus

(D) Fungi

54. A definite shape is given to cells by:

(A) Cell wall

(B) Plasma membrane

(C) Ribosomes

(D) Nucleus

55. The lysosomes arise from:

(A) Endoplasmic reticulum

(B) Golgi Bodies

(C) Nuclear envelop

(D) Plasma membrane

56. Chromosomes are located in:

(A) Golgi bodies

(B) Ribosomes

(C) Lysosomes

(D) Peroxisomes

57. Which of the following are enucleate?

(A) Heart cells

(B) Bone

(C) RBCs

(D) Sperms

58. The protein synthetic machinery of cell is:

(A) Lysosome

(B) Ribosome

(C) Mitochondria

(D) Endoplasmic reticulum

59. A nucleus is present in:

(A) Bacteria

(B) Amoeba

(C) Mycoplasma

(D) Blue-green alga

60. Plasma membrane is:

(A) Semipermeable

(B) Flexible

(C) Lipoprotein structure

(D) All of the above

61. Plasmolysis in plant cell occurs due to:

(A) Exosmosis

(B) Endosmosis

(C) Imbibitions

(D) Pinocytosis

62. Plant cell wall is composed of:

(A) Chitin

(B) Cellulose

(C) Cholesterol

(D) Proteins

63. Janus-green-B is used for staining:

(A) Ribosomes

(B) Chloroplast

(C) Mitochondrion

(D) All of these

64. Concept of unit membrane was given by:

(A) Danielli and Davson

(B) Singer and Davson

(C) Buvat

(D) Robertson

65. In centriole, microtubules are arranged in this order:

(A) 9 + 2

(B) 9 + 4

(C) 9 + 0

(D) 9 + 1

66. Mitochondrial genome is made up of:

(A) DNA

(B) RNA

(C) Proteins

(D) Lipids

67. One of the following is a single-membrane structure:

(A) Chloroplast

(B) Nucleus

(C) Mitochondria

(D) Lysosome

68. Ribosomes are the centre of:

(A) Respiration

(B) Photosynthesis

(C) Protein synthesis

(D) Fat synthesis

69. Hydrolytic enzymes are abundant in:

(A) Peroxisomes

(B) Microsomes

(C) Lysosome

(D) Mitochondria

70. Cell membranes are composed mainly of:

(A) Sugar and proteins

(B) Lipids and proteins

(C) Starch and lipids

(D) Sugar and lipids

71. Which structure performs a similar function in both plant and animal cell?

(A) Ribosomes

(B) Contractile vacuoles

(C) Chloroplasts

(D) Cell wall

72. Cellular components can be physically separated from each other by:

(A) Centrifugation

(B) Radioactive tracers

(C) Microscopy

(D) Chromatography

73. Chemical constituent of nucleus is:

(A) RNA

(B) DNA

(C) DNA, RNA, Proteins

(D) DNA and RNA

74. Function of Golgi bodies in plants is:

(A) Transport of mutabolities

(B) Translocation of enzymes

(C) Synthesis of cell-wall

(D) Production of micro bodies

75. Nuclear pores allow passage of:

(A) Lipids

(B) Proteins

(C) Both

(D) None

76. Na^+/K^+ pump is an example of:

(A) Active transport

(B) Passive transport

(C) Facilitated diffusion

(D) Osmosis

77. The nucleosomes are found in:

(A) Chromosomes

(B) Nucleus

(C) Nucleolus

(D) nucleoid

78. Movement from high to low concentration is:

(A) Osmosis

(B) Diffusion

(C) Filtration

(D) Centrifugation

79. The most recent model of membrane structure is:

(A) Bilayer model

(B) Sandwich model

(C) Fluid mosaic model

(D) Unit membrane model

80. The electron transport chain lies in mitochondrial:

(A) Matrix

(B) Inner membrane

(C) Outer membrane

(D) Inter membrane space

81. Intake of water by formation of food vacuole is called:

(A) Pinocytosis

(B) Phagocytosis

(C) Imbibition

(D) Absorption

82. Ribosomes of Mitochondria and chloroplast are:

(A) 50-70S

(B) 80 S

(C) 40 S

(D) 60S

83. The largest cell organelle is:

(A) Nucleus

(B) Endoplasmic reticulum

(C) Chloroplast

(D) Mitochondria

84. A nucleus in prokaryotic cell is represented as:

(A) A welled fined nucleus

(B) Nucleolus

(C) Double stranded circular DNA

(D) Single stranded DNA

85. According to Schleiden and Schwaan:

(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

86. 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

87. Glycolysis occurs in:

(A) Matrix

(B) Stroma

(C) Cytoplasm

(D) Nucleoplasm

88. Name mitochondria was suggested by:

(A) Kollicker

(B) Altmann

(C) Benda

(D) Kinsbury

89. 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) $CO + H_20$

90. 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

91. 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

92. 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

93. Which of the following polysaccharide is not present in the eukaryotic plant cell wall?

(A) Chitin

(B) Hemicellulose

(C) Pectin

(D) Cellulose

94. A cell organelle that is presents in animal cells but absent in plant cells is:

(A) Cytoplasm

(B) Centrosome

(C) Mitochondrial

(D) Cytoplasm

95. DNA is stored in which of the following cell organelle?

(A) Cell wall

(B) Cell Membrane

(C) Nucleus

(D) Cytoplasm

96. Which of the following cell doesn't contain a cell wall?

(A) Plant cell

(B) Bacteria

(C) Fungi

(D) Animal cell

97. Which of the following is known as the powerhouse of a cell?

(A) Mitochondria

(B) Cytoplasm

(C) Lysosome

(D) Nuclei

98. In which of the following type of cells Sarcoplasmic reticulum is found?

(A) Muscle cells

(B) Liver cells

(C) Kidney cells

(D) Neurons

99. 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

100. 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

******

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1. Examinee should enter his / her roll number, subject and Question Booklet Series correctly in the O.M.R. sheet, the examinee will be responsible for the error he / she has made.
2. **This Question Booklet contains 100 questions, out of which only 75 Question are to be Answered by the examinee. Every question has 4 options and only one of them is correct. The answer which seems correct to you, darken that option number in your Answer Booklet (O.M.R ANSWER SHEET) completely with black or blue ball point pen. If any examinee will mark more than one answer of a particular question, then the first most option will be considered valid.**
3. Every question has same marks. Every question you attempt correctly, marks will be given according to that.
4. Every answer should be marked only on Answer Booklet **(O.M.R ANSWER SHEET).**Answer marked anywhere else other than the determined place will not be considered valid.
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