DAYANAND SCIENCE COLLEGE,LATUR.
Department of Biotechnology
M.Sc. Biotechnology (Revised) First-Year

SEM-I SUB- Cell and Developmental Biology (BT-I)
Teacher- Mr. Gangavane S.C. MCQ-100 MARKS

1. This cell is the longest in the human body

(a) Muscle cells

(b) Nerve cells

(c) Bone cells

(d) Gland cells

2. This tissue includes the blood tissue

(a) Muscle tissue

(b) Connective tissue

(c) Epithelial tissue

(d) Nervous tissue

3. Which of this is/are examples of an organ containing a smooth muscle

(a) Iris of eye

(b) Bronchi only

(c) Uterus only

(d) All of the above

4. This structure of the plant cell is non-living

(a) Nucleus

(b) cell wall

(c) cytoplasm

(d) Mitochondrion

5. This cell organelle does not contain DNA

(a) Nucleus

(b) Mitochondria

(c) Lysosomes

(d) Chloroplast

6. The main difference between human cheek cells and onion peel cells is

(a) Presence of cell wall in onion peel cells

(b) Presence of mitochondria in onion peel cells

(c) Absence of endoplasmic reticulum in cheek cells

(d) Absence of the plasma membrane in cheek cells

7. This jellylike substance inside the plasma membrane in which all cell organelles are floating is

(a) Cytoplasm

(b) Tonoplasm

(c) Karyoplasm

(d) Cell sap

8. The organelle serving as a primary packaging area for molecules that will be distributed throughout the cell is

(a) Vacuole

(b) Plastids

(c) Mitochondria

(d) Golgi apparatus

9. Animal cells are interconnected by

(a) Plasma membrane

(b) Cell wall

(c) Desmosomes

(d) Plasmodesmata

10. The Cell theory is not applicable to

(a) Fungi

(b) Algae

(c) Virus

(d) M

11. The power house of cell is called

a) Cell wall

b) Mitochondria

c) Ribosomes

d) Nucleus

12. The kitchen of the cell is called

a) Cell wall

b) Nucleus

c) Vacuoles

d) Plastids

13. The functional unit of life is called

a) Cell

b) Egg

c) Nucleus

d) None of these

14. Chloroplast is found in

a) Plant cell only

b) Animal cell only

c) Both of these

d) None of these

15. The control unit of cell is

a) Nucleus

b) Cell wall

c) Cytoplasm

d) All of these

16. Single celled organisms are called

a) Unicellular

b) Multi-cellular
c) Both of these
d) None of these

17. Tissue is a
a) Group of organs
b) Group of cells
c) Group of tissues
d) Group of organisms

18. Cell is discovered by
a) Robert Brown
b) Robert Hooke
c) John Mendal
d) Charse Darwin

19. The cells capable of changingshapes are
a) Amoeba cell
b) WBC
c) Both of these
d) None of these

20. Hen's egg is a
a) Tissue
b) Organ
c) Organ system
d) cell

21. Which of the following is used by cells to interact with other cells?
a) Cell junctions
b) Cell adhesions
c) Cell detectors
d) Cell tubules

22. What is the name of the interaction made by the immune system?
a) Permanent
b) Transient
c) Active
d) Passive

23. Cell junction is abundant in _____
a) Hepatic cells
b) Cardiac cells
c) **Epithelial cells**
d) Prokaryotic cells

24. What is the function of tight junctions in epithelial cells?
a) Separation of fluids
b) Biocatalyst to enzymes
c) Protection
d) Support and structure

25. Tight junctions are made up of single junctions in our body.
a) True
b) False

26. Which of the following is the continuous channel formed by the cell membranes?
a) Desmosomes
b) Peroxisomes
c) Annulus
d) Integrins

27. What is extravasation?
a) Movement of leukocytes to tissues
b) Movement of leukocytes to blood
c) Lysis of leukocytes
d) Formation of leukocytes

28. Which of the following is a signaling molecule for bacteria?
a) Heteroserine lactones
b) Polyserine lactones
c) Monoserine lactones
d) Homoserine lactones

29. Bacteria uses glycoproteins and glycolipids to attach itself to the host cell.
a) True
b) False

30. Name the chemical carcinogen which causes prostate cancer.
a) Radon

b) Arsenic
c) Cadmium
d) Asbestos

31. _____ and _____ coined the term "Meiosis".
a) Van Burin and Hertwig

b) Boveri and Stuka

c) Walleye and Hofmeister

d) Farmer and Moore

32. Chromatids coiling in the meiotic and mitotic division is _____

a) Plectonemic in both

b) Paranemic in both

c) Paranemic in mitosis and plectonemic in meiosis

d) Plectonemic in mitosis and paranemic in meiosis

33. When there is an increase in the condensation of chromatin during the process of cell division –

a) Heterochromatin increases

b) Euchromatin increases

c) Differentiation of euchromatin & heterochromatin decreases

d) Differentiation of euchromatin & heterochromatin increases

34. The condensation of chromosomes is observed in _____

a) Prophase 1

b) Anaphase 1

c) Metaphase 1

d) None of the above

35. Nuclear DNA replicates in the _____ phase.

a) G2 phase

b) M phase

c) S phase

d) None of the above

36. _____ is a form of cell division which results in the creation of gametes or sex cells.

a) Mitosis

b) Meiosis

c) Miosis

d) None of the above

37. ____ is the number of DNA in the chromosome at the G2 stage of the cell cycle

a) 1

b) 2

c) 3

d) 0

38. The stage which serves as a connecting link between meiosis 1 and meiosis 2

a) Interphase 2

b) Interphase 1

c) Interkineses

d) None of the above

39. The longest stage in the cell cycle is

a) **Interphase**

b) Anaphase

c) Metaphase

d) None of the above

40. The _____ state implies the exit of cells from the cell cycle

a) S

b) G1

c) G2

d) G0

41. Synapsis is defined as the pairing of _____

a) Acentric chromosomes
b) Non-homologous chromosomes
c) Any chromosomes
d) Homologous chromosomes

42. Mitosis can be observed in _____

a) Polyploid individual
b) Diploid individual
c) Haploid individual
d) Both (1,) (2) and (3)

43. The spindle apparatus is formed during the _____ phase of mitosis.

a) Telophase
b) Metaphase
c) Prophase
d) Anaphase

44. Cyclin is associated with _____

a) Leptospirosis

b) Glycolysis

c) Cylosis

d) Mitosis

45. If an individual wants to view diakinesis, which of these would be

a) Hair

b) Leaf

c) Onion root

d) Flower bud

46. Chromosome structure can be observed best during ____

a) Anaphase
b) Metaphase
c) Prophase

d) None of the above

47. Name the cells which lost their control of the regulated division, differentiation, and apoptosis?
a) Tumor cell
b) Immune cell
c) Platelets
d) Stem cells

48. All tumor cells are cancerous cells.
a) True
b) False

49. Name the process by which a malignant cell spread throughout normal cells?
a) Transformation
b) Metastasis
c) Invasiveness
d) Progression

50. Which of the following is NOT the type of cancer?
a) Carcinomas
b) Sarcomas
c) Leukemia
d) Caspases

51. What is the origin of the cancerous cells?
a) Monoclonal
b) Polyclonal
c) Stem cells
d) Mesodermal cells

52. Name the process of transition from normal cells to cancerous cells?
a) Ubiquitylation

b) Polymerization
c) Transformation
d) Metastasis

53. Which of the following is the characteristic of a cancer cell?
a) Density dependent inhibition
b) Contact inhibition
c) Loss of anchorage dependence
d) Apoptosis

54. Arrange the following sequences of tumor development in the correct order?
1) Metastasis
2) Progression
3) Promotion
4) Initiation
a) 2, 3, 4, 1
b) 4, 3, 2, 1
c) 1, 2, 3, 4
d) 1, 3, 4, 2

55. What is angiogenesis?
a) Differentiation process
b) Growth factors
c) Contact inhibition
d) Blood vessel formation

56. Which of the following is NOT the example of proto-oncogenes?
a) Rb
b) Src
c) Myc
d) Abl

57. Which of the following mutation causes Burkitt's lymphoma?
a) Point mutation
b) Chromosomal translocation
c) Deletion
d) Duplication

58. Which of the following chromosomal alteration causes retinoblastoma?
a) Deletion in chromosome 11

b) Translocation between chromosome 9 and 22
c) Deletion in chromosome 13
d) Translocation between chromosome 8 and 21

59. Name the genes which directly inhibit cell growth or promote cell death.
a) Gatekeeper genes
b) Caretaker genes
c) Checkpoints
d) Transcription factors

60. If DNA is damaged, which of the following gene arrest cell cycle?
a) Rb
b) p53
c) Hedgehog receptor
d) p16

61. A _____ is an excised piece of leaf or stem tissue used in micropropagation.A. Microshoot
B. Medium
C. Explant
D. Scion

62. The larval epidermis is produced by.
A. Clear cytoplasm
B. Yellow cytoplasm
C. Gray vegetal cytoplasm
D. Brown cytoplasm

63. An internal factor that influences growth in plants is.
A. Hormones
B. Water
C. Nutrition
D. All of the above

64. Signs of aging include.
A. Loss of hair pigment
B. Dryness and wrinkling of skin
C. Forgetfulness
D. All of the Above

65. Synthesis of cytoplasm and cell wall material takes place during.
A. Maturation
B. Cell division
C. Elongation
D. Differentiation

66. The secondary tissue is added by the.
A. Intercalary meristem
B. Vascular cambium
C. Apical meristems
D. Both A and B
67. Acetabularia is a kind of.
A. Fungi
B. Protist
C. Multicellular alga
D. Unicellular alga

68. Stage one in differentiation involves.
A. Recognition of apical meristems
B. Formation of embryo
C. Recognition of cambium
D. Production of leaf primordial

69. Phenomena that some cells evoke a specific developmental response in other cells is.
A. Embryonic influence
B. Embryonic induction
C. Embryonic stimulation
D. Embryonic dominance

70. Effect of auxin diffusing from an apical bud on lateral shoots is known as.
A. Promoting effect
B. Compensatory effect
C. Inhibitory effect
D. Supporting effect

71. The notochord is one of few prominent structural features in chick embryo of about.
A. 15 hours
B. 18 hours
C. 13 hours
D. 10 hours

72. This is also known as meroblastic cleavage

(a) Partial

(b) Unequal holoblastic

(c) Equal holoblastic

(d) Superficial

73. The type of cleavage found in insects

(a) Holoblastic

(b) Discoidal

(c) Superficial

(d) Meroblastic

74. Discoidal and superficial cleavages are types of

(a) Unequal holoblastic

(b) equal holoblastic

(c) both (a) and (b)

(d) Meroblastic

75. If the first cleavage furrow divides zygote completely into two, the cleavage type is

(a) meroblastic

(b) holoblastic

(c) equatorial

(d) radial

76. The only human system that is derived from all the three germ layers is

(a) Nervous system

(b) Digestive system

(c) Respiratory system

(d) Excretory system

77. The fertilized egg divides by the process of

(a) Oogenesis

(b) Cleavage

(c) Regeneration

(d) Invagination

78. If an unfertilized egg is pricked with a microneedle, it will

(a) transform into a tadpole at a faster rate

(b) die immediately

(c) will remain undivided

(d) start dividing

79. A freshly unfertilized egg of hen contains

(a) 10,000 cells

(b) 1,000 cells

(c) 100 cells

(d) one cell

80. How many cleavages are completed in the 16-celled stage of an egg?

(a) 12

(b) 8

(c) 4

(d) 3

81. The spindle in the determinate cleavage is

(a) Horizontal

(b) Oblique

(c) Vertical

(d) Sub-equatorial

82. The evolutionary advantage of meiosis can be best explained by which of these statements?

(a) Meiosis alternates with mitosis from one to the next generation

(b) Meiosis is essential for sexual reproduction

(c) Passing of the same genetic system from one to next generation

(d) Genetic recombination is possible from one to next generation

83. One of these events does not take place during meiosis

(a) One successive division without any DNA replication

(b) Chiasmata formation and crossing over

(c) Segregation of homologous chromosomes

(d) Separation of sister chromatids

84. The meiotic division takes place in

(a) Meristematic cells

(b) Conductive cells

(c) Reproductive cells

(d) Vegetative cells

85. Name the event wherein the paternal and maternal chromosomes change their material with each other in cell division

(a) Crossing over

(b) Synapsis

(c) Dyad forming

(d) Bivalent forming

86. The reason for daughter cells to differ from parent cells and also each other in meiosis is;

(a) Segregation and crossing over

(b) Segregation and independent assortment

(c) Segregation, crossing over and independent assortment

(d) Independent assortment and crossing over

87. Continuous variations are due to

(a) Mutation

(b) Crossing over

(c) Polyploidy

(d) Chromosomal aberrations

88. Synapsis takes place between

(a) Spindle fibre and centromere

(b) mRNA and ribosomes

(c) a female and a male gamete

(d) Two homologous chromosomes

89. Mendelian factor (Aa) is segregated during

(a) Anaphase I

(b) Anaphase II

(c) Diplotene

(d) Zygotene/Pachytene

90. The stage of prophase I wherein crossing over occurs is

(a) Zygotene

(b) Diplotene

(c) Leptotene

(d) Pachytene

91. Meiosis I is reductional division and meiosis II is equational division because of

(a) Separation of chromatids

(b) Crossing over

(c) The disjunction of homologous chromosomes

(d) The pairing of homologous chromosomes

92. The Myelin sheath is derived from the
(a) Microglia
(b) Neuroglial cells
(c) Schwann cells
(d) Nerve cells

93. Nissl's granules are found in
(a) Nerve cells
(b) WBC
(c) RBC
(d) Platelets

94. Which of these is a disease of the myelin sheath?
(a) Polio
(b) Leprosy
(c) Multiple sclerosis
(d) Alzheimer

95. This neurotransmitter is not a biogenic amine
(a) Serotonin
(b) Dopamine
(c) Norepinephrine
(d) Neuropeptides

96. A nerve impulse jumps from one _____ to another during saltatory conduction
(a) Synapse
(b) Axon
(c) Node of Ranvier
(d) Myelin sheath

97. _____ are the neurons carrying impulses away from the central nervous system
(a) Efferent nerves
(b) Afferent nerves
(c) Extensors
(d) Sensory nerves

98. This amongst the following is found in muscle cells and nerves
(a) membrane potential

(b) potassium equilibrium potential
(c) resting potential
(d) sodium equilibrium potential

99. Which of these has the highest permeability in a resting nerve cell?
(a) Cl-
(b) Na+
(c) K+
(d) I-

100. Neurotransmitters can inhibit or excite neurons. _____ for example, is inhibitory whereas _____ is excitatory
(a) GABA; glutamate
(b) Glutamate; GABA
(c) Serotonin; dopamine
(d) None of these