

Department of Biotechnology

Class: T.Y.B.Sc.

Semester: V

Subject: Cell Biology

Sample Questions

- 1) ----- is the programmed cell death.
  - a) Necrosis
  - b) Lysis
  - c) Phagocytosis
  - d) Apoptosis
  
- 2) Apoptosis activated by external stimulation of signalling pathway is called-----.
  - a) Extrinsic pathway
  - b) Intrinsic pathway
  - c) Signal transduction
  - d) Complement pathway
  
- 3) In extrinsic pathway of apoptosis, stimulation is carried out by extracellular messenger protein-----.
  - a) Caspase
  - b) Cytokines
  - c) Tumor necrosis factor
  - d) Procaspase
  
- 4) Wheel shaped apoptosome consist of -----.
  - a) Cytochrome c
  - b) Procaspase 9
  - c) Apaf 1
  - d) cytochrome
  
- 5) Apoptosis is mediated by proteolytic enzyme called-----.
  - a) Protease
  - b) Phosphatase
  - c) Lipase
  - d) Caspase
  
- 6) ----- are the proteins that induces a cell to begin cell division.
  - a) Mitogen
  - b) Fibrinogen
  - c) Procaspase
  - d) Cytokines
  
- 7) Most of the prokaryotic cells are divide by -----.
  - a) Conjugation
  - b) Meiosis
  - c) Binary fission
  - d) Cell division

- 8) ----- is the example of budding yeast.
- Saccharomyces cerevisiae*
  - Schizosaccharomyces pombe*
  - Candida albicans*
  - Schharomyces pasorianus*
- 9) ----- is the example of fission yeast.
- Saccharomyces cerevisiae*
  - Schizosaccharomyces pombe*
  - Candida albicans*
  - Schharomyces pasorianus*
- 10) In----- nuclear membrane begins to disintegrate and get completely disappear.
- Prophase
  - Anaphase
  - Metaphase
  - Telophase
- 11) In -----chromosomes have reached to opposite poles.
- Prophase
  - Anaphase
  - Metaphase
  - Telophase
- 12) Cell membrane completes constriction in -----.
- Prophase
  - Anaphase
  - Metaphase
  - Telophase
- 13) In----- chromosomes are lined up at mid of cells.
- Prophase
  - Anaphase
  - Metaphase
  - Telophase
- 14) When cyclin concentration is -----, cyclin dependent kinase is inactive.
- High
  - Low
  - Optimum
  - moderate
- 15) ----- regulate cell cycle when they are tightly bound to cdk.
- Cyclin
  - Kinase
  - Phosphorylase
  - Protease
- 16) Proteins involved in negative regulation of cell cycle are -----.
- Rb protein
  - P53

- c) P21
  - d) Kb
- 17) If damaged DNA is detected ----- halts the cell cycle and recruits enzyme to repair DNA.
- a) Cdk
  - b) Cyclin
  - c) P53
  - d) Phosphatase
- 18) If the level of p53 and p21 -----, cell is likely to stop from moving to S phase.
- a) Increases
  - b) Decreases
  - c) Maintain
  - d) Fluctuate
- 19) Cell size is mainly monitor by ----- protein.
- a) Cyclin
  - b) Rb
  - c) P21
  - d) Cdk
- 20) ----- ensure that all of the chromosomes have been replicated and that replicated DNA is not damaged.
- a) G1 checkpoint
  - b) G2 checkpoint
  - c) M checkpoint
  - d) Spindle assembly checkpoint
- 21) ----- determines whether all the sister chromatids are correctly attached to spindle microtubule.
- a) G1 checkpoint
  - b) G2 checkpoint
  - c) M checkpoint
  - d) Spindle assembly checkpoint
- 22) Early embryonic cell cycle posses ----- and -----
- a) S and M phase
  - b) G1 and G2 phase
  - c) G1 and S phase
  - d) G2 and M phase
- 23) Division of chromosome is called -----
- a) Cytokinesis
  - b) Karyokinesis
  - c) Mitosis
  - d) Meiosis
- 24) Division of cytoplasm is called -----
- a) Cytokinesis
  - b) Karyokinesis

- c) Mitosis
  - d) Meiosis
- 25) ----- checks whether all the chromosomes aligned properly at metaphase plate.
- a) G1 checkpoint
  - b) G2 checkpoint
  - c) M checkpoint
  - d) Spindle assembly checkpoint
- 26) If enough cells of an organ undergo -----, entire organ will decrease in size.
- a) Atropy
  - b) Hypertrophy
  - c) Metaplasia
  - d) Hyperplasia
- 27) ----- is the increase in cell number as a result of increase in cell division.
- a) Atropy
  - b) Hypertrophy
  - c) Metaplasia
  - d) Hyperplasia
- 28) ----- is the increase in cell size and volume.
- a) Atropy
  - b) Hypertrophy
  - c) Metaplasia
  - d) Hyperplasia
- 29) ----- occurs, when cell of certain type is replace by another cell type, which may be less differentiated.
- a) Atropy
  - b) Hypertrophy
  - c) Metaplasia
  - d) Hyperplasia
- 30) ----- refers to changes in cellular shape, size and/or organization.
- a) Atropy
  - b) Dysplasia
  - c) Metaplasia
  - d) Hyperplasia
- 31) Biological neural network is circuit of -----
- a) Artificial neurons
  - b) Neurons
  - c) Synapse
  - d) Axon
- 32) Hormones are ----- messengers.
- a) Autocrine
  - b) Paraceine
  - c) Endocrine
  - d) Effector

- 33) ----- receive the signal from surrounding neurons.
- a) Dendrites
  - b) Axon
  - c) Soma
  - d) Nucleus
- 34) -----is a thin cylinder that transmit the signal from one neuron to other neuron.
- a) Dendrites
  - b) Axon
  - c) Soma
  - d) Nucleus
- 35) Cells have proteins called ----- that bind to signaling molecules and initiate a physiological response.
- a) Enzyme
  - b) Ligands
  - c) Receptors
  - d) Effector
- 36) Which of the following signal molecule is NOT used for extracellular signaling?
- a) Autocrine
  - b) Endocrine
  - c) Paracrine
  - d) Cyclic AMP
- 37) Name the largest family of cell surface receptor.
- a) GPCR
  - b) Ion channel
  - c) Enzyme linked receptors
  - d) Nuclear receptors
- 38) Name the family of monomeric G protein which regulate the growth of cells.
- a) Ras
  - b) Rab
  - c) Ran
  - d) Rho
- 39) The process in which information carried by extracellular messenger molecules is translated into changes occur inside the cell is referred as -----
- a) Cell signalling
  - b) Signal transduction
  - c) Cell communication
  - d) Cell stimulation
- 40) ----- are the intracellular signalling molecules released by the cell in response to exposure to extracellular signalling molecules.
- a) First messenger
  - b) Second messenger
  - c) Receptors
  - d) Ligand

- 41) G proteins bind to ----- nucleotide.
- a) ATP
  - b) GTP
  - c) CTP
  - d) TTP
- 42) The guanine nucleotide binding site is present on ----- subunit.
- a)  $G_{\alpha}$
  - b)  $G_{\beta}$
  - c)  $G_{\delta}$
  - d)  $G_{\gamma}$
- 43) A G protein is said to be 'on' when its----- subunit is bound to GTP.
- a)  $\alpha$
  - b)  $\beta$
  - c)  $\gamma$
  - d)  $\delta$
- 44) Cell can respond to specific environmental stimulus in a appropriate manner by -----
- a) Cell division
  - b) Cell signalling
  - c) Cell communication
  - d) Cell movement
- 45) ----- is the process that blocks active receptors from accepting extracellular signals.
- a) Desensitisation
  - b) Sensitisation
  - c) Phosphorylation
  - d) Dephosphorylation
- 46) Cells usually communicate with each other through ----- messenger molecule.
- a) Ligand
  - b) Receptors
  - c) Intracellular
  - d) Extracellular
- 47) During ----- signalling, messenger molecule travel only short distance and signals to cells which are in close proximity.
- a) Autocrine
  - b) Paracrine
  - c) Endocrine
  - d) Exocrine
- 48) In ----- signalling, messenger molecule reach their target cell via passage through blood stream.
- a) Autocrine
  - b) Paracrine
  - c) Endocrine
  - d) Exocrine

- 49) Protein tyrosin kinases are the enzyme that ----- specific tyrosin residue on protein substrate.
- Dephosphorylate
  - Stimulate
  - Phosphorylate
  - Deactivate
- 50) Cell ----- refers to changes made by cell in response to varying environmental changes.
- Signalling
  - Response
  - Adaptation
  - Modification
- 51) Programmed cell death is termed as -----
- Metastasis
  - Apoptosis
  - Proliferation
  - Mitotic termination
- 52) Which of the following characteristic benign tumour does not possess?
- Undergoes metastasis
  - Develops blood supply
  - Cell divides an unlimited number of times
  - Grows without needing a growth signal
- 53) Migration of cancerous cells from the site of origin to other part of the body forming secondary tumors is called -----.
- Diapedesis
  - Metastasis
  - Proliferation
  - Apoptosis
- 54) Burkitt's lymphoma is associated with -----.
- Hepatitis A virus
  - Hepatitis B virus
  - Epstein-Barr Virus
  - Papillomavirus
- 55) Cervical Cancer, and Penile Cancers are mostly associated with-----.
- Hepatitis A virus
  - Hepatitis B virus
  - Epstein-Barr Virus
  - Papillomavirus
- 56) Kaposi's Sarcoma is associated with-----.
- Hepatitis A virus
  - Herpesvirus
  - Epstein-Barr Virus
  - Papillomavirus

- 57) Liver cancers are associated with-----.
- Hepatitis A virus
  - Herpesvirus
  - Epstein-Barr Virus
  - Papillomavirus
- 58) A carcinogen is-----.
- Any substance involved in causing cancer
  - A gene
  - A type of blood disease
  - Another name for cancer
- 59) Which types of cancers are more likely to be altered by chemotherapy?
- Fast-growing tumors
  - Slow growing tumors
  - Metastasized tumors
  - Localized tumors
- 60) Which of the following is least often considered a factor influencing the type of radiation chosen?
- Type and size of tumor
  - Proximity to normal tissues that are sensitive to radiation
  - Age of patient receiving the treatment
  - Gender of patient receiving the treatment
- 61) Name the cancer that starts in the skin or the tissues that line other organs?
- Leukemia
  - Pancreas
  - Carcinoma
  - Sarcomas
- 62) Name the cancer that occurs in bone marrow and creates blood cells?
- Sarcoma
  - Myeloma
  - Lymphoma
  - Leukemia
- 63) Name the cancer of connective tissues or the cancer that occurs in the connective tissues in the body?
- Lymphoma
  - Sarcoma
  - Carcinoid
  - Medulloblastoma
- 64) Neoplasms tend to have-----.
- uncoordinated growth and are malignant
  - uncoordinated growth and grow excessively
  - uncoordinated growth and are benign
  - Just grow out of control

- 65) Which type of cancer treatment works best for when cancer has metastasized around the body?
- a) Chemotherapy
  - b) Radiotherapy
  - c) Hormone therapy
  - d) Surgery
- 66) Which of the following is NOT the example of proto-oncogenes?
- a) Rb
  - b) Src
  - c) Myc
  - d) Abl
- 67) Which of the following mutation causes Burkitt's lymphoma?
- a) Point mutation
  - b) Chromosomal translocation
  - c) Deletion
  - d) Duplication
- 68) Name the genes which directly inhibit cell growth or promote cell death.
- a) Gatekeeper genes
  - b) Caretaker genes
  - c) Checkpoints
  - d) Transcription factors
- 69) If DNA is damaged, which of the following gene arrest cell cycle?
- a) Rb
  - b) p53
  - c) Hedgehog receptor
  - d) p16
- 70) The most common solid tumors – breast, colon etc. arise in ----- cells.
- a) Epithelial
  - b) Mesothelial
  - c) nerve cells
  - d) muscle cells
- 71) Proto-oncogenes are possessed by the -----.
- a) RNA virus
  - b) DNA virus
  - c) Cells themselves
  - d) Pathogenic bacteria
- 72) The oncogenes act -----.
- a) Dominantly
  - b) Recessively
  - c) Occasionally

- d) Frequently
- 73) The first tumor-suppressor gene to be studied is associated with -----.
- a) Myeloma
  - b) Sarcoma
  - c) Retinoblastoma
  - d) Carcinoma
- 74) For the development of cancer, which of the following is the most influential component of the genome?
- a) EGF
  - b) Cytochrome c
  - c) TP53
  - d) T53
- 75) p53 is capable of binding to which family of proteins?
- a) Bcl-1
  - b) Bcl-2
  - c) Bcl-3
  - d) Bcl-4
- 76) A zygote is completely divided into two by a cleavage, the cleavage type is-----.
- a) Equatorial
  - b) Meroblastic
  - c) Radial
  - d) Holoblastic
- 77) The cellular movements during gastrulation are called-----.
- a) Epiboly
  - b) Emboly
  - c) morphogenetic movement
  - d) evolution
- 78) Which of the following develops from ectoderm?
- a) Spinal cord and brain
  - b) Liver and heart
  - c) Eye and skin
  - d) Notochord and vertebral column
- 79) How many cleavages are completed in 16 cell stages of frog's egg?
- a) 3
  - b) 8
  - c) 4
  - d) 12

- 80) During cleavage, the embryo-----.
- a) enlarges in size
  - b) decreases in size
  - c) retains the same size at the beginning
  - d) gradually enlarges in size
- 81) The central fluid filled cavity of blastula is known as-----.
- a) archenteron
  - b) blastocoels
  - c) morula
  - d) blastocyst
- 82) Which of the following structures is derived from the endoderm?
- a) Endothelium of blood vessels.
  - b) Epithelium of respiratory tract
  - c) Excretory part of the urinary system
  - d) Vertebral column
- 83) Egg implantation is followed by-----.
- a) Parturition
  - b) Copulation
  - c) Fertilization
  - d) Gestation
- 84) After fertilization the zygote goes through a rapid period of cell divisions called -----.
- a) implantation
  - b) organogenesis
  - c) blastulation
  - d) cleavage
- 85) Implantation is usually completed after -----.
- a) the nervous system forms
  - b) gastrulation has occurred
  - c) the yolk sac forms
  - d) the blastocyst is entirely surrounded by endometrium
- 86) The outermost embryonic membrane is the -----.
- a) amnion
  - b) allantois
  - c) placenta
  - d) chorion
- 87) The process that transforms the embryo into a three-layered stage is called -----.
- a) gastrulation
  - b) sedimentation
  - c) cleavage
  - d) blastulation

- 88) The process by which the three primary germ layers form is known as -----.
- gastrulation
  - placentation
  - organogenesis
  - implantation
- 89) A fertilized egg is called a-----.
- Germ cell
  - Blastula
  - Zygote
  - Embryo
- 90) Embryonic stem cells can differentiate into which types of cell?
- Only brain stem cells and specialized brain cells
  - All types of specialized cells in the body
  - Only cells that can produce insulin
  - Only cells that can produce artificial skin
- 91) In a developing embryo, stem cells differentiate into-----.
- Ectoderm
  - Endoderm
  - Mesoderm
  - Oocyte
- 92) In human females, the fertilized eggs get implanted in the uterus after -----.
- One month of fertilization
  - Two months of fertilization
  - Seven days of fertilization
  - Three weeks of fertilization
- 93) The most correct sequence of early development following fertilization is-----.
- zygote, blastomeres, morula, blastocyst
  - oocyte, zygote, morula, blastocyst
  - zygote, conceptus, blastocyst
  - polar bodies, zygote, conceptus, blastocyst
- 94) The process in which the ectoderm covers entire embryo is called-----.
- Morula
  - Blastula
  - Epiboly
  - Endoderm
- 95) The process during which the neural tubes begin to form is called-----.
- Ovulation
  - Neurulation

- c) Blastulation
  - d) Gastrulation
- 96) Which of the following structures is derived from the endoderm?
- a) Endothelium of blood vessels.
  - b) Epithelium of respiratory tract
  - c) Excretory part of the urinary system
  - d) Vertebral column
- 97) Embryonic stem cells of mammals are derived from-----.
- a) Trophoectoderm
  - b) Inner cell mass
  - c) Gametes
  - d) Blastocoel
- 98) Embryonic induction is caused by part developing from-----.
- a) Endoderm
  - b) Mesoderm
  - c) Ectoderm
  - d) Extra embryonic layer
- 99) During cleavage, what is true about cells?
- a) nucleocytoplasmic ratio remains unchanged
  - b) size does not increase
  - c) there is less consumption of oxygen
  - d) the division is like meiosis.
- 100) Morphogenetic movement involves-----.
- a) Movement of organs
  - b) Movement of small cell masses
  - c) Movement of large cell masses
  - d) Cell differentiation