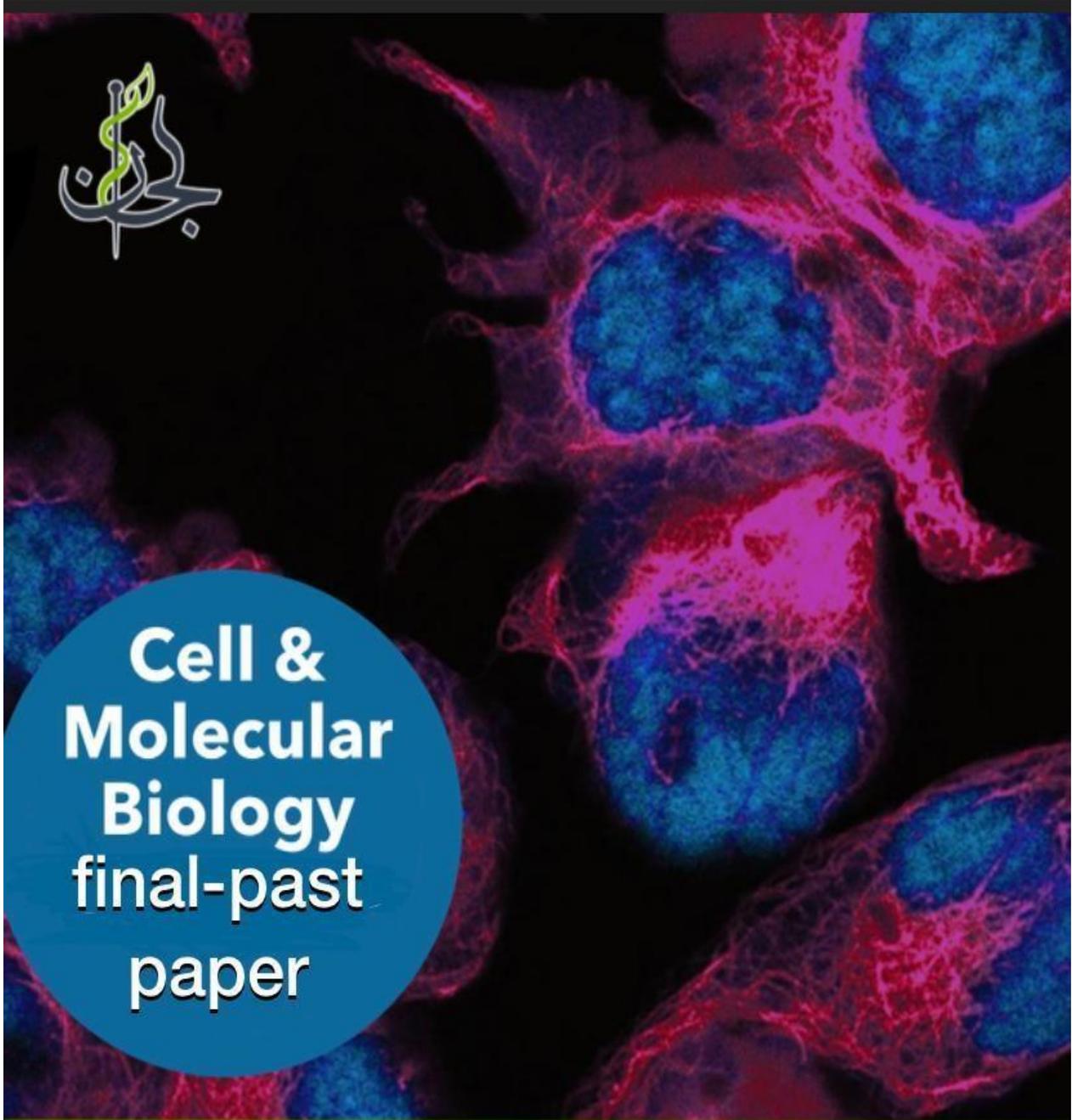




**Cell &  
Molecular  
Biology  
final-past  
paper**



1) Which of the following does represent the most likely secretory pathway for a protein after it has been completely synthesized?

- A) RER—> Golgi —> secretory vesicle —> environment
- B) RER—> Golgi —> SER —> environment
- C) cytoplasm— RER—> Golgi —> secretory vesicle — > environment
- D) SER — > Golgi— > secretory vesical —> environment
- E) RER —> secretory vesical —> Golgi — >environment

The answer is = **a**

2)Each of the following is a smooth endoplasmic reticulum function, EXCEPT :

- A) synthesis of steroid hormones
- B) detoxification of many organic compounds, like barbiturates and ethanol
- C) release of glucose into the bloodstream
- D) sequestration of calcium
- E) synthesis of the heme groups

The answer is = **e**

3)What does appear to be the purpose of molecular chaperones like Bip?

- A) they recognize and bind to unfolded or misfolded proteins and help them attain native structure
- B) they recognize and bind to unfolded or misfolded DAN and help them attain native structure
- C) they recognize and bind to unfolded or misfolded RAN and help them attain native structure
- D) they recognize and bind to unfolded or misfolded carbohydrates and help them lose their native shape
- E) they transport secretory vesicles

The answer is = **a**

4) On which of the following intracellular location does clathrin organize a coat and form vesicles?

- A) lysosomes
- B) trans-Golgi complex
- C) endoplasmic network
- D) inner membrane of mitochondria
- E) regulated secretory vesicles

The answer is = **b**

5) Which coated vesicle materials in an anterograde direction from the end ERGIC forward toward the Golgi stack?

- A) clathrin- coated vesicles
- B) cadmium-coated vesicles
- C) COPII- coated vesicles
- D) COPI- coated vesicles
- E) both COPII-coated vesicles and COPI-coated vesicles

The answer is = **c**

6) What is the arrangement of organelles in a secretory cell from the basal end of the apical end?

- A) Golgi complex- RER- secretory vesicles –environment
- B) nucleus and RER – Golgi complex – SER – secretory vesicles – environment
- C) SER- nucleus and RER- secretory vesicles – Golgi complex - environment
- D) RER – Golgi complex – secretory vesicles – environment
- E) secretory vesicles – nucleus and RER – SER – Golgi complex – environment

the answer is = **d**

7) What is responsible for transforming the oligosaccharide chain from lipid carrier to specific asparagine residues?

- A) Membrane – bound glycosyltransferase
- B) Membrane – bound oligosaccharyltransferase
- C) membrane – bound gangliosides
- D) glycosylsynthetase
- E) peptidyltransferase

The answer is = **b**

8) Which type of cytoskeletal element is characterized as a hollow, rigid cylindrical tube with walls composed of tubulin subunits?

- A) microfilaments
- B) microtubules
- C) intermediate filament
- D) Minitubules
- E) All of these choices

The answer is = **b**

9) Structures that move from the cell body of a neuron down the axon toward the neuron terminals are said to move in a(n) ..... direction

- A) retrograde
- B) astronomical
- C) Anterograde
- D) Radial
- E) Intergrade

The answer is = **c**

10) Which of the following motors is associated with microfilaments?

- A) kinesin
- B) dyneins
- C) myosin
- D) kinesin and dyneins
- E) kinesins and myosin

The answer is = **c**

11) What is the name of the light staining at the outer edges of a sarcomere?

- A) a band
- B) H zone
- C) z line
- D) I bands
- E) m lines

The answer is = **d**

12) Which type of actin-binding protein is known to decrease cytoplasmic viscosity by breaking existing actin filaments into one or more pieces?

- A) monomer –polymerizing proteins
- B) cross – linking proteins
- C) actin- filament depolymerase
- D) filament-severing proteins
- E) end-blocking proteins

The answer is = **d**

13) Which type of cytoskeletal elements is described as tough ,rope like fibers composed of a variety of related proteins?

- A) microfilament
- B) microtubules
- C) microfilaments
- D)Indeterminate filaments
- E) intermediate filament

The answer is = **e**

14) Which of the following molecular motors is known to travel in retrograde direction along microtubules?

- A) kinesin
- B) dyneins
- C) myosin
- D) kinesin and dyneins
- E) kinesins and myosin

The answer is = **b**

15) The binding of glucagon to its receptor on skeletal muscle cells will cause all of the following ,except :

- A) increase cAMP
- B) activate adenylyl cyclase
- C) increase intracellular Ca<sup>++</sup>
- D) activates a G<sub>s</sub> – protein
- E) activates a G<sub>i</sub> – protein

The answer is = **e**

16) Which intracellular proteins contain SH2 domains?

- A) RTK
- B) RTK-linked adaptor proteins
- C) GPCR
- D) Sos
- E) Ras protein

The answer is = **b**

17) All of the following is true about kinases, except:

- A) activates glycogen synthesis and breakdown
- B) is activated by cAMP
- C) activates glycogen phosphorylation kinase
- D) inhibits glycogen synthase
- E) phosphorylates glycogen synthase

The answer is = **a**

18) Which enzyme is inhibited by cAMP?

- A) glycogen phosphorylase
- B) glycogen phosphorylase kinase
- C) glycogen phosphorylase kinase
- D) glycogen synthase
- E) protein kinase A (PKA)

The answer is = **d**

19) Which of the following is true about SOS protein :

- A) is a G protein – coupled receptor
- B) activates Ras
- C) activates Raf (kinase)
- D) is related to RTK signaling
- E) B&D

The answer is = **e**

20) The  $\text{Ca}^{+}$  which is released into the sarcoplasm by inositol 1,4,5-trisphosphate comes from?

- A) mitochondria
- B) the SER
- C) extracellular to intracellular
- D  $\text{Ca}^{2+}$  calmodulin complexes
- E) lysosomes

The answer is = **b**

21) Which of the following characteristics are not a basic property of cells?

- A) cells have plasma membrane, DNA and lysosomes
- B) cells engage in numerous mechanical activities
- C) cells generally respond to stimuli
- D) cells are capable of self-regulation
- E) cells evolve

The answer is = **a**

22) The genetic material of a prokaryotic cell is present in a ..... region of the cell

- A) nucleus
- B) chromatic region
- C) nucleoid
- D) pharmacopeia
- E) genome

The answer is = c

23) Which of the following is not a model organism?

- A) *Mus musculus*
- B) *Drosophila melanogaster*
- C) *Homo sapiens*
- D) *Arabidopsis thaliana*
- E) *Caenorhabditis elegans*

The answer is = c

24) What is probably the signal most important distinction between prokaryotes and eukaryotes?

- A) the existence of the Golgi complex
- B) the separation of genetic material from the surrounding cytoplasm
- C) the existence of ribosomes
- D) the lysosomes and peroxisomes

The answer is = b (not sure)

25) A transport receptor that moves macromolecules from the cytoplasm to the nucleus is called a .....

- A) exhaling
- B) transportin
- C) reception
- D) exportin
- E) importin

The answer is = e

26)What is the name of the proteins that make up the nuclear lamina and for which protein superfamily they belong?

- A) lamins,intermediate filament
- B) keratin, laminins
- C) actin, microfilaments
- D) Lamins, laminins
- E) keratin, intermediate filament

The answer is = a

27) Which of the following is a function of membranes?

- A) helps cells respond to external stimuli
- B) selectively permeable barrier
- C) compartmentalization
- D) mediates intercellular interactions
- E) all of these are correct

The answer is = e

28) What are the building blocks of phosphoglyceride, specifically phosphatidic acid?

- A) glycerol +2 phosphate groups +1 fatty acid
- B) glycerol + 1 phosphate group+2 fatty acid
- C) glycerol + 1 phosphate group
- D) glycerol + 1 phosphate group +3 fatty acid
- E) glycerol+ 3 fatty acids

The answer is = b

29) What kind of membrane protein penetrates into the hydrophobic part of the lipid bilayer?

- A) phosphatidylcholine
- B) lipid – anchored protein
- C) glucocerebroside
- D) peripheral proteins
- E) integral protein

The answer is = e

30) Which characteristic determines directly or indirectly determines the transition temperature?

- A) whether the fatty acid chains of the lipids are saturated or unsaturated
- B) the length of the fatty acid chains
- C) the extent to which the fatty acid chains of the lipids contain double bonds
- D) the ability of lipid molecules to be packed together
- E) all of these are correct

The answer is = e

31) A channel that opens in response to changes in ionic charge across a membrane is called a.....?

- A) voltage- gated channel
- B) electric- gated channel
- C) ligand-gated channel
- D) positive-gated channel
- E) charge-gated channel

The answer is = a

32) The movement of water through semipermeable membrane down the concentration gradient is called.....?

- A) metabolism
- B) solubility
- C) denaturation
- D) diffusion
- E) osmosis

The answer is = e

33) Which of the following is an example of co-transport active transport?

- A) Na<sup>+</sup>/K<sup>+</sup> ATPase
- B) glucose permease transport
- C) O<sub>2</sub> diffusion across a membrane
- D) Na<sup>+</sup>/ glucose symport
- E) aquaporin water transport

The answer is = d

34) The temperature at which a lipid bilayer shifts from a fluid state to a crystalline gel is called the :

- A) transition temperature
- B) temperature optimum
- C) gelation temperature
- D) PH optimum
- E) transition

The answer is = a

35) Which of the following lipids is found in lipid rafts in animal cell plasma membranes?

- A) phosphatidylinositol
- B) phosphatidylcholine
- C) phosphatidylethanolamine
- D) cholesterol
- E) phosphatidylserine

The answer is = d

36) The Na<sup>+</sup>/K<sup>+</sup>ATPase pump actively moves:

- A) 2 Na<sup>+</sup> in ,3 K<sup>+</sup> out
- B) 2 Na<sup>+</sup> out, 3 K<sup>+</sup> in
- C) 3 Na<sup>+</sup> in, 2 K<sup>+</sup> out
- D) 1 Na<sup>+</sup> out, 1 K<sup>+</sup> in
- E) 3 Na<sup>+</sup> out, 2 K<sup>+</sup> in

The answer is = c

37) Which of the following organelles has the ability to breakdown hydrogen peroxide?

- A) lysosomes
- B) mitochondria
- C) late endosomes
- D) peroxisome
- E) smooth endoplasmic reticulum

The answer is = d

38) Inner mitochondrial membrane invaginated sheets, make :

- A) pseudopodia
- B) inner boundary membrane
- C) cristae
- D) matrix
- E) outer boundary membrane

The answer is = c

39) Which of the following isn't a function of extracellular matrix of animal cells?

- A) cell division
- B) cell adhesion
- C) cell motility
- D) cell differentiation
- E) DNA replication

The answer is = e

40) All of the following is true about focal adhesions , except :

- A) have been implicated in cell locomotion
- B) collect information about the chemical properties of the extracellular environment
- C) transmit information to the cell interior that may lead to changes in cell adhesion, proliferation or survival
- D) contain integrins that develop transient interaction with the extracellular matrix
- E) all of these are correct

The answer is = e

41) The degradation of the extracellular matrix, along with cell surface proteins, is accomplished mostly by a ..... containing enzyme family called.....?

- A) copper, MMPs
- B) magnesium, matrix metalloproteinases
- C) zinc , matrix metalloproteinases
- D) copper, matrix metalloproteinases
- E) manganese, MMPs

The answer is = c

42) What substance joins proteoglycans together into gigantic complexes called proteoglycan aggregates ?

- A) hyaluronic acid
- B) fibronectin
- C) proteoglycans
- D) hyaluronidase
- E) laminin

The answer is = a

43) In animals, the extracellular matrix plays important roles in each of the following processes, except :

- A) DNA replication
- B) cell differentiation
- C) cell division
- D) cell adhesion
- E) cell motility

The answer is = a