

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14BT2004
Sub. Name : CELL BIOLOGY

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

Q. No.	Questions				Course outcome	Marks
PART-A (40X1=40 MULTIPLE CHOICE QUESTIONS)						
1.	Which of the following correctly matches an organelle with its function?				CO 1	
	a. Mitochondrion . . . photosynthesis	b. Nucleus . . . cellular respiration	c. Ribosome . . . manufacture of lipids	d. Central vacuole . . . storage		(1)
2.	The structure within a cell that distinguishes the cell as being eukaryotic, and prokaryotic is				CO 1	
	a. Ribosomes	b. Cell membrane	c. Cell wall	d. Nucleus		(1)
3.	The transport vesicles from the Endoplasmic Reticulum (ER) fuse with the _____ face of the Golgi apparatus.				CO 1	
	a. Cis	b. Trans	c. Coated	d. Median		(1)
4.	Plant cells contain the following 3 structures not found in animal cells				CO 1	
	a. Plastids / Chlorophyll / Membrane	b. Chloroplast / Cell wall / Golgi body	c. Plastids / Cell wall / Chlorophyll	d. Mitochondria / Cell wall / nucleus		(1)
5.	Which of the following is NOT true concerning cytoskeletal elements?				CO 2	
	a. Cilia are small extensions of membrane surrounded microtubules.	b. Intermediate filaments compose flagella	c. Flagella have a 9 + 2 pattern of microtubule structure.	d. Basal bodies are located at the base of cilia and flagella.		(1)
6.	The spindle formation is observed during ----- phase of the cell cycle				CO 2	
	a. G1	b. G2	c. S	d. M		(1)
7.	The cytoskeletal elements which forms nuclear lamina is				CO 2	
	a. Microtubules	b. Microfilaments	c. Intermediary filaments	d. None of the above		(1)
8.	Actin filaments are				CO 2	
	a. also known as microtubules.	b. able to associate with motor proteins in muscular contraction.	c. found in the center of flagella and cilia.	d. intermediate in size between microtubules and microfilaments.		(1)

9.	Gases such as oxygen and carbon dioxide cross the plasma membrane by				CO 3	
	a. secondary active transport proteins	b. passive diffusion through the lipid bilayer	c. specific gas transport	d. primary active transport		(1)
10.	Endocytosis is used by cells to				CO 3	
	a. Ingest bacteria and cell debris	b. Retrieve elements of the plasma membrane after exocytosis	c. Secrete large molecules into the extracellular space	d. is always employed by cells for secretion		(1)
11.	From soil, inorganic ions can be loaded in root hair through				CO 3	
	a. Diffusion	b. Active transport	c. partial osmosis	d. Differential osmosis		(1)
12.	The following membrane transport methods does not require protein channels/ carriers <u>except</u>				CO 3	
	a. Osmosis	b. Phagocytosis	c. Facilitated diffusion	d. Exocytosis		(1)
13.	The pH inside the lysosomes is				CO 3	
	a. Acidic	b. Alkaline	c. Neutral	d. Buffered		(1)
14.	Gap junctions				CO 2	
	a. permit the passage of large proteins from cell to cell	b. form part of the classical junctional complex	c. exist only between epithelial cells	d. are areas of low resistance for nerve stimulation		(1)
15.	Hemidesmosomes are connections between				CO 2	
	a. Cell to cell	b. Cell to internal organ	c. . Cell to matrix	d. Cell to cell membrane		(1)
16.	Which of the following statement is true about Na ⁺ K ⁺ ATPase				CO 3	
	a. Move Na ⁺ and K ⁺ out of the cell	b. Move Na ⁺ and K ⁺ inside the cell	c. Move Na ⁺ out and K ⁺ inside	d. Move K ⁺ out and Na ⁺ inside		(1)
17.	In paracrine signaling, the signaling molecules affect only				CO 4	
	a. Target cells close to the cell which is secreted	b. Target cells far away from the site of synthesis	c. Target cells on the same cells of synthesis	d. Both B and C		(1)

18.	Which of the following is not the Primary messenger of cell signaling				CO 4	
	a. Insulin	b. Testosterone	c. Thyroxine	d. Adenylate cyclase		(1)
19.	The enzyme which splits PIP ₂ to Inositol triphosphate and Diacyl glycerol is				CO 4	
	a. Phosphokinase C	b. Phosphorylase C	c. Phospholipase C	d. Lipokinase		(1)
20.	The following statements about G protein coupled receptors are correct except				CO 4	
	a. They are involved in signal cascades	b. They become activated when GDP is bound	c. They are seven transmembrane helical proteins	d. They are bound to trimeric G protein		(1)
21.	Name the enzyme activated by transducin (G α)				CO 4	
	a. Adenylate cyclase	b. Phospholipase C	c. cGMP phosphodiesterase	d. Protein Kinase		(1)
22.	Aspirin reduces inflammation and pain by inhibiting ----- enzyme in the synthesis of the prostaglandins				CO 4	
	a. Quanylyl cyclase	b. Phosphorylase kinase	c. Glycogen synthase	d. Cyclooxygenase 2		(1)
23.	Gibberlin is an example of				CO 4	
	a. Neurotransmitter	b. Plant growth hormone	c. Neuropeptides	d. Steroid hormone		(1)
24.	Name the enzyme which can modify the activity of a protein by addition of phosphate group				CO 4	
	a. Phosphatase	b. cAMP	c. Protein kinase	d. G protein		(1)
25.	What is the membrane potential in resting cells?				CO 3	
	a. -50mV to -70mV	b. -90 mV to -100 mV	c. +30 mV to +60 mV	d. +60 mV to +80 mV	d	(1)
26.	Acetyl choline receptor located in the synaptic cleft is				CO 3	
	a. Ligand gated Sodium channel	b. Ligand gated Calcium channel	c. Voltage gated Sodium channel	d. Voltage gated Potassium channel		(1)
27.	How many molecules of Glucose are transported by Na Glc symporter				CO 3	
	a. 2	b. 3	c. 4	d.		(1)
28.	Na ⁺ K ⁺ ATPase is an example of				CO 3	
	a. Antiport	b. Symport	c. Uniport	d. ABC		(1)
29.	What is the effect of Nitroglycerin?				CO 4	
	a. Relaxes smooth muscle	b. Contracts smooth muscle	c. Inhibitor of Guanylyl cyclase	d. Activates Diesterase		(1)
30.	All the following statements on calcium signaling are true except				CO 4	
	a. Activates calcium calmodulin Kinase	b. Inhibits actin myosin interaction	c. Helps in aggregation of blood platelets	d. Inhibits exocytosis of enzymes in		(1)

				pancreatic cells		
31.	Retroviruses code for ----- enzyme which convert RNA to DNA				CO 3	
	a. Replicase	b. Polymerase	c. Reverse transcriptase	d. Helicase		(1)
32.	Which is the most fastest mean of transport				CO 3	
	a. Passive diffusion	b. Facilitated diffusion	c. Channel proteins	d. Carrier proteins		(1)
33.	Which of the following terms is used to describe a membrane protein capable of moving substances from a low to a high concentration?				CO 3	
	a. Transporter	b. Pump	c. Diffuser	d. Oxidiser		(1)
34.	The transport which involves conformational change during transport				CO 3	
	a. Ion channels	b. Osmosis	c. Passive diffusion	d. Carrier proteins		(1)
35.	Calmodullin is a protein that regulates the level of ----- ion inside the cytoplasm				CO 4	
	a. Na ⁺	b. Ca ²⁺	c. K ⁺	d. Cl ⁻		(1)
36.	The major biomolecule that is responsible for uptake of materials across plasma membrane is				CO 3	
	a. Protein	b. Carbohydrate	c. Phospholipids	d. Lipids		(1)
37.	What is the immediate source of energy for active transport?				CO 3	
	a. carbohydrates	b. lipids	c. ATP	d. amino acid		(1)
38.	Eukaryotic cells have transport vesicles, endoplasmic reticulum, Golgi apparatus and a nuclear envelope. Taken together, all these membranes represent the				CO 1	
	a. transfer system	b. nuclear system	c. endomembrane system	d. cytoskeletal system		(1)
39.	Diphtheria toxin is an example of					
	a. Exotoxin	b. Endotoxin	c. Exozymes	d. None of the above	CO 3	(1)
40.	Which of the following is a cell adhesion molecule				CO 2	
	a. Integrin	b. Lysin	c. Myosin	d. Keratin		(1)

PART B(8 X 5 = 40 MARKS) (ANSWER ANY EIGHT)

41.	Brief on the organization of mitochondria with a neat diagram. Add a note on its functions	CO 1	(5)
42.	Differentiate Prokaryotic and Eukaryotic cell.	CO 1	(5)
43.	Compare and contrast Microtubules and Microfilaments.	CO 2	(5)
44.	Tabulate the differences between passive diffusion and facilitated diffusion.	CO 3	(5)
45.	Brief on various cell adhesion molecules and cell junctions	CO 2	(5)
46.	Hormones that activate a receptor coupled to G _s stimulate the proliferation of thyroid cells. How would inhibitors of cAMP phosphodiesterase affect the proliferation of cells.	CO 4	(5)
47.	What are G proteins? How do they influence signaling.	CO 4	(5)
48.	Comment on different types of cell signaling.	CO 4	(5)
49.	Give an account on Steroid receptors	CO 4	(5)
50.	How does rod cells promote light vision?	CO 4	(5)

PART C(2 X 10 = 20 MARKS) (ANSWER ANY TWO)

51.	With a neat diagram, explain the function of Na^+K^+ pump. How does the pump help to maintain the osmotic balance of the cell.	CO 3	(10)
52.	Draw the structure of cAMP. Substantiate the role of cAMP as second messenger with suitable explanation.	CO 4	(10)
53.	Name the phases of cell cycle and its major features of each phase and molecules that control cell cycle	CO 1	(10)

ALL THE BEST