#1-#12 MULT. CHOICE QUESTIONS: CHOOSE THE ONE BEST ANSWER

1. Two spherical sub-cellular objects with diameters of 25 nm can be resolved with:
a) the naked eye
b) a light microscope only
c) an electron microscope only
d) a light microscope and an electron microscope
e) sectioning after paraffin embedding

2. Which of the following is MOST intensely stained by hematoxylin:
a) plasmamembranes
b) golgi apparatus
c) rough endoplasmic reticulum
d) smooth endoplasmic reticulum
e) microtubules

3. Which of the following are MOST intensely stained by eosin:
a) intermediate filament proteins
b) lipid droplets
c) TGN
d) nuclei
e) DNA

4. Which of the following is most often performed after a fixed specimen has been coated with a thin layer of gold:
a) light microscopy
b) transmission electron microscopy
c) scanning electron microscopy
d) freeze fracture electron microscopy
e) confocal microscopy

5. Which of the following utilizes a 'pinhole' to eliminate fuzzy images produced by light emitted from above or below the depth of field:
a) light microscope
b) electron microscope
c) confocal microscope
d) all of the above
e) none of the above

6. Regarding 'Cell Theory', which of the following is NOT correct:
a) hereditary information is passed from cell to cell during division
b) energy flow occurs within cells
c) cells are the fundamental unit of structure in living things
d) cells are the fundamental unit of function in living things
e) new cells can be assembled from basic chemical building blocks (ie. *de novo*) in multicellular organisms

7. Which of the following moves material across membranes down a concentration gradient:
a) symports
b) antiports
c) active transport
d) passive transport
e) adenylate cyclase

8. Which of the following triggers the ER-associated degradation response?
a) improper vesicle tethering at the cis-face of the Golgi
b) improper protein folding in the lumen of the ER
c) improper assembly of the large ribosomal subunit in the nucleus
d) improper recognition of the signal sequence on a protein polypeptide by the signal recognition particle
e) complete lack of a signal sequence on a protein polypeptide

9. The internalization of a secreted lysosomal enzyme is an example of:
a) phagocytosis
b) pinocytosis
c) exocytosis
d) ER junction formation at the plasmamembrane
e) receptor-mediated endocytosis

10. Regarding lipid transfer proteins, which of the following is CORRECT:
a) requires ATP to function
b) critical for vesicular lipid trafficking
c) contain transmembrane domains
d) extract lipids from membranes
e) cause closely apposed membranes to fuse

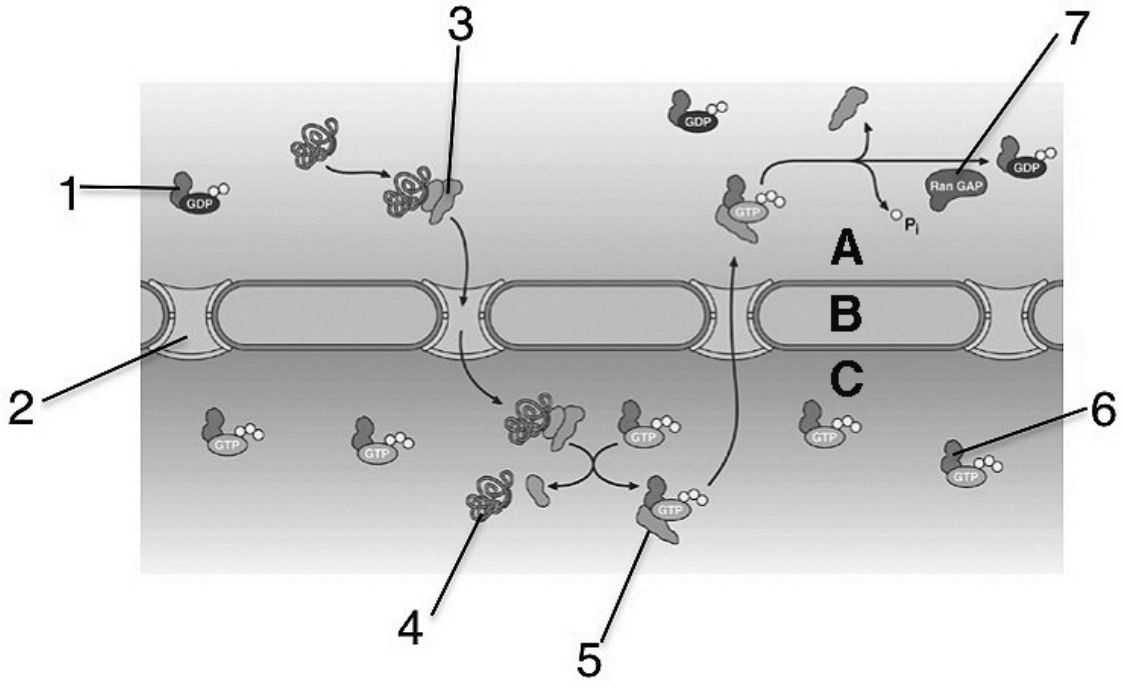
11. Which of the following transports cargo between the membranes of an ER junction:
a) TOM complexes
b) porin complexes
c) lipid transfer proteins
d) SNARE proteins
e) Bridging protein complexes

12. Which of the following is required to insert a protein, whose gene is encoded by nuclear DNA, into the inner mitochondrial membrane:
a) TOM complex
b) small TIM complex
c) large TIM complex
d) SNARE proteins
e) bridging protein complexes

End of Multiple Choice Questions - Please Proceed to Short Answer Questions

#13-#20 SHORT ANSWER QUESTIONS: ANSWER AS REQUESTED

Fig 01: Nuclear Import & Export



13. In Fig 1, which numbered structure is an importin:
(write the number) _____

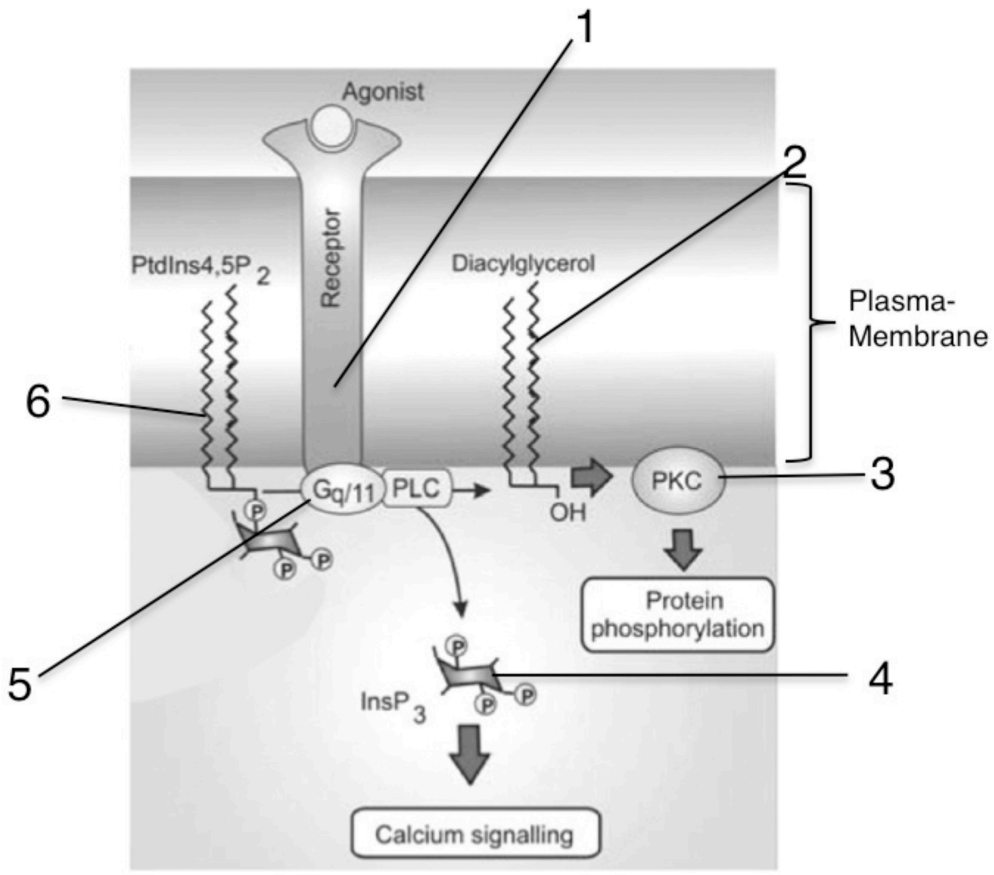
14. In Fig 1, which numbered structure is a GTPase activating protein:
(write the number) _____

15. In Fig 1, which lettered structure represents the subcellular compartment where the protein that helps activate Ran (eg. by removing GDP and adding GTP in its place) is located:
(write the letter) _____

16. In Fig 1, what is the name of structure #2
(Name the structure) _____

End of Questions Related to Fig 1

Fig 02: G Protein-Coupled Receptor Pathway



17. In Fig 2, which numbered structure is a cytoplasmic 'messenger':
(write the number) _____

18. In Fig 2, which numbered structure is able to hydrolyze bound GTP:
(write the number) _____

19. In Fig 2, which numbered structure is an integral membrane protein:
(write the number) _____

20. In Fig 2, why is structure #6 located in the plasmamembrane:
(write an explanation) _____

End of 01Sample Set Questions