Short answers (about 1-6 marks/ each depending on the question)
Anchoring junctions
Permeability Pore and why it is needed
Pinocytosis
Explain relationship between introns, exons and domains

Given a table you have to name 3 classes of chemical messengers and give an example of each

Name two motor proteins and give an example of their roles and location

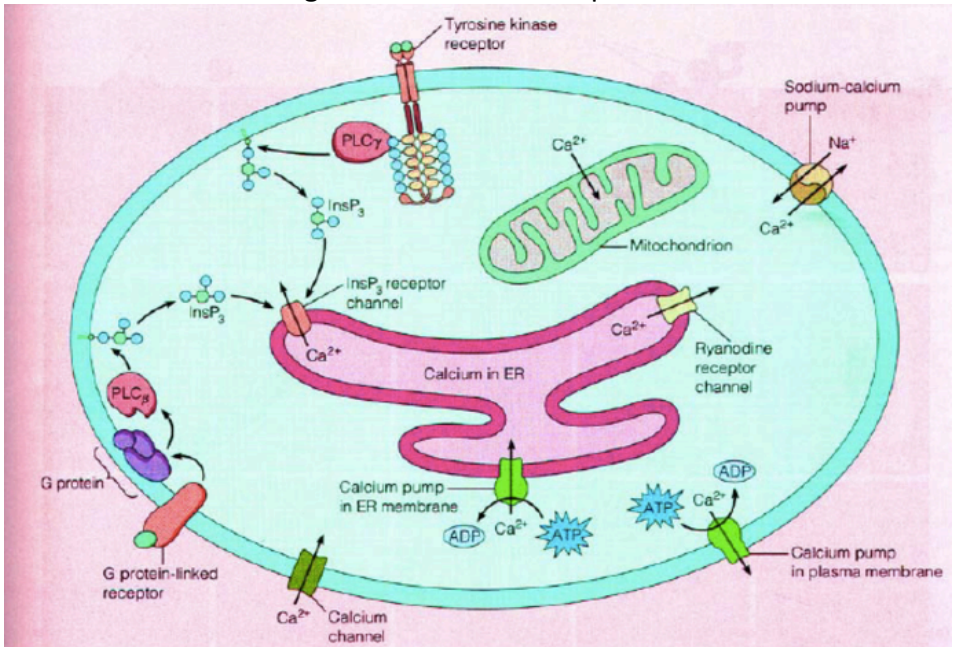
(4 points / each) Compare and contrast - choose 2 out of the 3 topics (a, b, or c)
a) Facilitated Diffusion vs. Secondary Active Transport
b) Apoptosis vs. Necrosis
c) Tyrosine Kinase enzyme receptors vs. G- coupled receptors

(6 points) Identity which type of mutation given a sequence of DNA nucleotides (5' → 3') – there are 3 mutations that you have to translate into amino acid sequence. and name

True/ False (explain if false):
1) Mitochondria and viruses are the same size
2) Photosynthesis converts light photon into chemical energy
3) ? Something about microscopes
4) The nucleus and mitochondria are both double membraned

(6 points) Explain how activated p53 triggers apoptosis via the intrinsic apoptotic pathway (see answer in DGD 11's correction scheme).

(6 points) Explain how calcium is regulated in the cell through the mitochondria using this exact diagram (however all the words/labels are missing on the diagram on the exam) – you must name/label and briefly explain 4 of the selected regulation mechanisms and then choose 2 others shown in the diagram and label and explain them



Draw a eukaryotic replication bubble (label everything)

Long answers

(8 points) Explain the steps of the transcription of genes in Prokaryotes (and name the location where it occurs) and given a gene sequence you have to transcribe it into mRNA sequence.

(12 points) Explain the steps of the translation of mRNA (and name the location where it occurs) and given an mRNA sequence you have to translate it into its corresponding amino acid chain (she gives you a codon table). Also explain how tRNA becomes charged with its specific amino acid.