



## Sample IMDO Questions

### *Molecular and Cell Biology*

1. Which of the following macromolecules is not a polymer?
  - a. Starch
  - b. Cellulose
  - c. Protein
  - d. DNA
  - e. Phospholipid
2. Where are the large and small subunits of ribosomes assembled?
  - a. Rough endoplasmic reticulum
  - b. Cytosol
  - c. Golgi apparatus
  - d. Nucleolus
  - e. Smooth endoplasmic reticulum
3. What is the motor protein that is associated with microtubules in the flagella?
  - a. Flagellin
  - b. Dynein
  - c. Kinesin
  - d. Actin
  - e. Myosin
4. The uptake of which substance into cells requires receptor-mediated endocytosis?
  - a. Glucose
  - b. Fructose
  - c. LDL
  - d. MHC
  - e. Testosterone
5. How many NADH molecules are produced per acetyl-CoA in the citric acid cycle?
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  - e. 6
6. Which of the following does not function as a second messenger?
  - a. cAMP
  - b. Inositol triphosphate (IP<sub>3</sub>)
  - c. Diacylglycerol (DAG)
  - d. Sodium (Na<sup>+</sup>)
  - e. Calcium (Ca<sup>2+</sup>)



# IMDO

7. Which of the following is not a difference between mitosis and meiosis?
  - a. Separation of chromatids
  - b. Formation of tetrads
  - c. Crossing over
  - d. Synapsis
  - e. Formation of Chiasmata
  
8. Which enzyme untwists the double-stranded DNA and separates the two strands?
  - a. Ligase
  - b. Primase
  - c. Topoisomerase
  - d. DNA Polymerase
  - e. Helicase
  
9. What is the gel electrophoresis of mRNA followed by labeled-probe hybridization called?
  - a. Southern blotting
  - b. Northern blotting
  - c. Western blotting
  - d. Eastern blotting
  - e. In situ hybridization
  
10. What is one method of gene duplication in sexual organisms?
  - a. Reverse transcription
  - b. Genomic imprinting
  - c. Nondisjunction
  - d. Translocation
  - e. Unequal crossing-over

## ***Human Physiology***

1. Which of the following is not a connective tissue?
  - a. Tendon
  - b. Bone
  - c. Blood
  - d. Adipose tissue
  - e. Glia
  
2. Which water-soluble vitamin is needed by pregnant woman to prevent birth defects?
  - a. Thiamine
  - b. Riboflavin
  - c. Niacin
  - d. Folic acid
  - e. Ascorbic acid



# IMDO

3. Which cell secretes pepsinogen in the stomach?
  - a. Parietal cell
  - b. Chief cell
  - c. Mucous cell
  - d. Goblet cell
  - e. Acinar cell
  
4. Which organ or tissue synthesizes erythropoietin, the hormone that stimulates red blood cell production?
  - a. The kidney
  - b. The liver
  - c. The bone marrow
  - d. The pancreas
  - e. The heart
  
5. Which is by far the major mechanism of carbon dioxide transport in the blood?
  - a. Bound to hemoglobin
  - b. Converted to bicarbonate ion and hydrogen ion
  - c. Dissolved in plasma
  - d. As gas bubbles
  - e. Converted to glucose
  
6. Which of the following is not a phagocyte?
  - a. Neutrophil
  - b. Mast cell
  - c. Macrophage
  - d. Eosinophil
  - e. Dendritic cell
  
7. Which of the following hormone or compound has the least effect on blood pressure?
  - a. Cortisol
  - b. Epinephrine
  - c. Angiotensin
  - d. Renin
  - e. Aldosterone
  
8. In which structure are sperm stored after their maturation in the testes?
  - a. Seminiferous tubules
  - b. Epididymis
  - c. Vas deferens
  - d. Seminal vesicle
  - e. Prostate gland



# IMDO

9. Which of the following structures is or are formed from ectoderm?
- Dermis of skin
  - Lining of digestive tract
  - Lining of respiratory tracts
  - Skeleton
  - Teeth
10. What is the neurotransmitter secreted by the motor neurons at the neuromuscular junction?
- GABA
  - Acetylcholine
  - Glutamate
  - Norepinephrine
  - Nitric oxide

## *Human Disease*

1. Which of the following bacterial diseases does not involve a G protein?
- Cholera
  - Tetanus
  - Pertussis
  - Botulism
  - Diarrhea caused by E. coli heat-labile enterotoxin
2. Which of the following is not the result of aneuploidy?
- Down syndrome
  - Klinefelter syndrome
  - William syndrome
  - Turner syndrome
  - Edwards syndrome
3. Which of the following is a proto-oncogene?
- ras
  - p53
  - p21
  - BRCA1
  - APC
4. Which hormone is involved in diabetes insipidus?
- Insulin
  - Glucagon
  - Vasopressin
  - Thyroxine
  - Oxytocin



5. Which compound causes the symptoms of both inflammation and allergy?
- a. Cytokine
  - b. Histamine
  - c. Pyrogen
  - d. Prostaglandin
  - e. Interferon



Answers:

Molecular and Cell Biology 1 e, 2 d, 3 b, 4 c, 5 c, 6 d, 7 a, 8 e, 9 b, 10 e

Human Physiology 1 e, 2 d, 3 b, 4 a, 5 b, 6 b, 7 a, 8 b, 9 e, 10 b

Human Disease 1 b, 2 c, 3 a, 4 c, 5 b