

Department of Biological Sciences
Sample Paper MPhil Molecular Pathology & Genomics (Evening Program)

1. **Which of the following is the correct sequence of the cell cycle in human cells?**
 - a) G1 to G2 to S to M
 - b) G1 to M to G2 to S
 - c) G1 to S to M to G2
 - d) G1 to S to G2 to M

2. **All the following are proteins except:**
 - a) Haemoglobin
 - b) keratin
 - c) enzymes
 - d) antibodies
 - e) glycogen

3. **An individual with type A blood and an individual with type B blood mate and have offspring. What blood type is not possible in their offspring?**
 - a) type O blood
 - b) type A blood
 - c) type B blood
 - d) type AB blood
 - e) all blood types are possible

4. **A gene showing codominance**
 - a) has both alleles independently expressed in the heterozygote
 - b) has one allele dominant to the other
 - c) has alleles tightly linked on the same chromosome
 - d) has alleles expressed at the same time in development
 - e) has alleles that are recessive to each other

5. **The most selective antibiotics are those that interfere with the synthesis of**
 - a) Bacterial DNA
 - b) Bacterial RNA
 - c) Bacterial cell wall
 - d) Bacterial plasma membrane

6. **Fatty acids are stored in mammals as**
 - a) Free fatty acids
 - b) Triacylglycerol
 - c) Phosphatidylcholine
 - d) sphingomyelin
 - e) Cholesterol

7. **Which of the following is not a major component of biological membranes**
 - a) Phosphatidylcholine
 - b) Phosphatidylserine
 - c) Sphingomyelin
 - d) Cholesterol
 - e) triacylglycerol

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8. Proteosomes are involved in

- a) transporting the enzyme to nucleus
- b) binding amino acids to t-RNA
- c) protein synthesis
- d) protein degradation
- e) maintaining the pH of lysosomes

9. Lysosomes are spherical or oval vesicles derived from the Golgi apparatus. They are membrane-bound organelles of varying sizes containing hydrolase enzymes capable of digesting most biological molecules. What is the function of lysosomes?

- a) They manufacture membrane phospholipids and make cholesterol and steroid hormones
- b) They are involved in the synthesis of proteins which may be destined for insertion into membranes, used in lysosomes or exported
- c) They are involved in the concentration, modification and packaging of proteins produced in the rough endoplasmic reticulum
- d) They destroy aged cell organelles that are first engulfed by rough endoplasmic reticulum

10. Nonsense codons:

- a) Cause initiation of transcription
- b) Cause termination of transcription
- c) Cause initiation of translation
- d) Cause termination of translation
- e) Are designated by UAG, UAA, and UGA in all genetic codes