Register No: ……

B.TECH. DEGREE EXAMINATIONS: MAY / JUNE 2011

Second Semester

BIO TECHNOLOGY

BTY101: Basic Biology and Genetics

Time: Three hours **Maximum Marks: 100**

Answer ALL Questions

PART A (10x1 = 10 Marks)

1. Which of the following is *not* an observation or inference on which natural selection is based?
   a) There is heritable variation among individuals.
   b) Poorly adapted individuals never produce offspring.
   c) Species produce more offspring than the environment can support.
   d) Individuals whose characteristics are best suited to the environment generally leave more offspring than those whose characteristics are less suited.
2. DNA sequences in many human genes are very similar to the sequences of corresponding genes in chimpanzees. The most likely explanation for this result is that
   a) humans and chimpanzees share a relatively recent common ancestor.
   b) humans evolved from chimpanzees.
   c) chimpanzees evolved from humans.
   d) convergent evolution led to the DNA similarities.
3. All fungi share which of the following characteristics?
   a) symbiotic b) pathogenic c) heterotrophic d)flagellated
4. The distinction between sponges and other animal phyla is based mainly on the absence versus the presence of
   a) a body cavity. b) a complete digestive tract.
   c) a circulatory system. d) mesoderm.
5. Which component is *not* directly involved in translation?
   a) mRNA b) ribosomes c) DNA d) tRNA
6. Which of the following is *not* true of a codon?
   a) It consists of three nucleotides.
   b) It may code for the same amino acid as another codon.
   c) It never codes for more than one amino acid.

d) It is the basic unit of the genetic code.

7. Meiosis II is similar to mitosis in that

a) sister chromatids separate during anaphase. b) DNA replicates before the division.

c) the daughter cells are diploid. d) the chromosome number is reduced.

8. Which ofthe following does *not* occur during mitosis?

a) condensation of the chromosomes. b) replication of the DNA.

c) separation of sister chromatids. d) spindle formation.

9. The genetic disorder sickle-cell anemia is an example of

a) pleiotropy. b) epistasis.

c) heterozygous dominance. d) homozygous dominance.

10. Why are there more males with color blindness than females?

a) The gene for color blindness is found on the Y chromosome.

b) The recessive gene is usually masked by another X chromosome in females.

c) Color blindness is an X-linked dominant trait.

d) All the sons of an affected male will have the disorder.

PART B (10 x 2 = 20 Marks)

11. What are the characteristics of living things?

12. Describe Urey-Miller experiment.

13. With suitable illustrations, write about 3 Domain classification.

14. Differentiate between Coelomate and Acoelmate .

15. Draw the structure of a plant cell and its organelles.

16. Define photosynthesis, give the empirical equation.

17. Write short note on epistasis.

18. Differentiate between incomplete and co-dominance.

19. Write short on Balbiani rings, draw a diagram of it.

20. Name few sex chromosome linked disorders.

PART C (5 x 14 = 70 Marks)

21. a) What do you mean by primary, secondary, tertiary and quaternary structure of a protein? And Describe secondary and super secondary structures in detail.

(OR)

b) (i) What are the evidence supports the theory of evolution. (10)

(ii) Define: 1. Evolution (2)

2. Phylogeny (2)

22. a) With neat illustrations explain about the structural organization of bacteria and fungi.

(OR)

b) (i) How are viruses classified, explain the various classifications of virus with suitable examples and diagrams. (6)

(ii) Write short note on

(1) systematic (4)

(2) Diversity (4)

23. a) (i) With a neat sketch, describe the cell cycle (4)

(ii) Explain with suitable diagrams the various stages of mitosis. (10)

(OR)

b) Write short note on the following with a neat sketch

(i) Mitochondria (4)

(ii) Chloroplast (4)

(iii) Nucleus (3)

(iv) Endoplasmic Reticulum (3)

24. a) Write short notes on:

(i) Mendelian law of inheritance (3)

(ii) Law of dominance (3)

(iii) Law of segregation (4)

(iv) Law of independent assortment (4)

(OR)

b) Write short note on

(i) Linkage (5)

(ii) Crossing over (5)

(iii) Describe about alleles involving in ABO blood grouping (4)

25. a) Write in detail about central dogma of life.

(OR)

b) (i) Describe about polyploidy and aneuploidy in detail (10)

(ii) Describe about lamp brush chromosome (4)

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