

Register Number:

B.TECH DEGREE EXAMINATIONS: MAY/JUNE 2014

(Regulation 2009)

Second Semester

BIOTECHNOLOGY

BTY101: Basic Biology and Genetics

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The unique chemical element of life is
 - a) Nitrogen
 - b) oxygen
 - c) Sulphur
 - d) Carbon
2. The evidence of the fundamental molecular unity of life is
 - a) Photosynthesis
 - b) DNA code for amino acids
 - c) Antibiotic resistance
 - d) Genetic changes
3. The main body of fungus called as
 - a) Hyphae
 - b) mycelium
 - c) Conidia
 - d) Mycorrhizae
4. Which of these characteristics of living things is exhibited by a virus?
 - a) Heredity
 - b) metabolism
 - c) response to stimulus
 - d) interaction with the environment
5. The protein synthesis in the cell is taking place at
 - a) Mitochondria
 - b) Smooth endoplasmic reticulum
 - c) Nucleus
 - d) Rough endoplasmic reticulum
6. Which stage of photosynthesis make the energy storage molecules ATP and NADPH?
 - a) First stage
 - b) Second stage
 - c) Third stage
 - d) Forth stage
7. If the F₁ is crossed with only dominant homozygous parent then it is called
 - a) Test cross
 - b) Crossing over
 - c) Crossing error
 - d) Back cross
8. The genes responsible for the human blood group AB are
 - a) Gene IA
 - b) Gene IB
 - c) Gene IA IB
 - d) Gene i

9. The number of DNA base pairs in the chromosome of an *E. coli* cell, is
 - a) 1
 - b) 4,639,221
 - c) 46
 - d) Plasmids
10. Lampbrush chromosomes are present in the oocytes of following animals except
 - a) Amphibians
 - b) birds
 - c) Mammals
 - d) insects

PART B (10 x 2 = 20 Marks)

11. What are the findings of Stanley Miller's experiment?
12. RNA may be the first gene or first catalyst-justify the statement?
13. What is systematics?
14. How are viruses are classified?
15. Sketch the structure of mitochondria?
16. What is binary fission?
17. Define the Law of Segregation?
18. Define-epistasis
19. Differentiate the chromosomal DNA from plasmid DNA?
20. What are the different types of polyploidy?

PART C (5 x 14 = 70 Marks)

21. a) Describe the chemical foundations of living organisms?

(OR)

- b) Explain about the phylogeny of life with its three domains?

22. a) Illustrate the structural organization of bacteria?

(OR)

- b) Describe the structural organization of plant cell with a neat diagram?

23. a) (i) Explain the fine structure and functions of nucleus? (7)
(ii) Explain the fine structure and functions of golgi apparatus? (7)

(OR)

b) Explain the various stages of mitotic cell division?

24. a) (i) Explain the Law of Independent Assortment with suitable examples? (7)
(ii) Explain the Non-Mendelian inheritance in detail? (7)

(OR)

- b) (i) What is crossing over? Discuss the factors affecting the crossing over? (10)
(ii) Write down the importance of crossing over? (4)

25. a) Explain the genome organization in eukaryotes?

(OR)

b) Discuss in detail about the sex chromosomes linked disorders?
