

Enrollment ID: _____

NAVRACHANA UNIVERSITY
School of Liberal studies and Education
(B.Sc. Program)
End Semester Examination November 2017
SY-B.Sc 5th Semester

Course Title: Cell Biology, Biochemistry and Genetics (ZO302)

Date: 22/11/2017

Marks: 40

Time: 1:00 pm to 3:00 pm

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Important Instructions

1. All the Questions are Compulsory
2. Please read the questions carefully and answer accordingly
3. Draw a neat and labeled diagram wherever necessary

Q1. Choose the correct option

(1 × 10 = 10 M)

1. Which of the following best describes chemical equilibrium?
 - A) Forward and reverse reactions continue with no effect on the concentrations of the reactants and products.
 - B) Concentrations of products are higher than the concentrations of the reactants.
 - C) Forward and reverse reactions have stopped so that the concentration of the reactants equals the concentration of the products.
 - D) Reactions stop only when all reactants have been converted to products.
2. Which of the following is a *false* statement concerning amino groups?
 - A) They are basic in pH.
 - B) They are found in amino acids.
 - C) They contain nitrogen.
 - D) They are nonpolar.
3. Which of the following is not a polymer?
 - A) Glucose
 - B) Starch
 - C) Cellulose
 - D) Chitin
4. What is the chemical mechanism by which cells make polymers from monomers?
 - A) phosphodiester linkages
 - B) Hydrolysis
 - C) Dehydration reactions
 - D) Ionic bonding of monomers
5. The stage of mitosis when chromosomes condense to form rod-shaped structures visible under the microscope is called:
 - A) interphase
 - B) Prophase
 - C) Metaphase
 - D) Anaphase
6. An allele is ____.
 - A. one of the bases in DNA
 - B. an alternate form of a gene
 - C. another term for epistasis
 - D. present only in males and is responsible for sex determination
7. Genotype is to DNA as phenotype is to

- A. Genotype
 - B. Proteins
 - C. Expressivity
 - D. RNA
8. Mitotic cell division results in two cells that have:
- A. n chromosomes and are genetically identical.
 - B. n chromosomes and are genetically different.
 - C. 2n chromosomes and are genetically identical.
 - D. 2n chromosomes and are genetically different
9. The cell theory is one of the unifying themes of biology. Which of the following statements would be part of the cell theory?
- A. All life is made of cells.
 - B. Cells are the smallest units of life.
 - C. Cells come from preexisting cells.
 - D. All of the above
10. You are told that the cells on a microscope slide are plant, animal, or bacterial. You look at them through a microscope and see cell walls and membrane-bound organelles. You conclude that the cells
- A. Are plant cells.
 - B. Could be either plant or bacterial.
 - C. Are animal cells.
 - D. Could be plant, animal, or bacterial.
 - E. Are bacteria.

Q2. Answer the following questions in brief :

(1 × 10= 10M)

1. Why is Gregor Mendel considered as the father of Genetics?
2. Give examples of any two disaccharides of physiological significance.
3. What is a peptide bond and how is it formed?
4. Which vitamin is necessary for blood clotting?
5. What is co-dominance? How does it differ from complete dominance?
6. What are co-enzymes?
7. What is the difference between competitive and non-competitive inhibitors?
8. What is the structure of the nucleus? Describe its key components.
9. Draw structures of Glucose and fructose.
10. What is the structure of cilia?

Q3. Differentiate between: (Any Four)

(4 × 2=8 M)

1. Autophagy and phagocytosis
2. Peroxisome and lysosome
3. Microtubules and microfilaments
4. Prokaryote and Eukaryote
5. Complementary and supplementary genes

Q4. Write a short note (Any 2)

(2 × 4=8M)

1. Polysaccharides- Starch and Glycogen
2. Cell cycle
3. Endomembrane system in a Eukaryotic cell

Q5. Answer the following questions in detail (Any 3)

(3 × 4 = 12M)

1. Describe the role of golgi complex in the process of cell transport and secretion
2. Describe the monohybrid and dihybrid inheritance citing suitable examples.
3. What are the salient features of Eukaryotic cell membrane? Explain with a suitable diagram.
4. How do enzymes increase the rate of reaction? What are their salient features?

Q6.

(1 × 2 = 2M)

You are expected to layout a diet plan for an undernourished individual. What would be the major components that you would include and why?

*****ALL THE BEST*****