Enrollment ID: _____

Navrachana University

School of Liberal Studies and Education, B.Sc. Program

End-Semester Examination November 2017

Second Year and Semester III

Genetics and Cell Biology - BO 201

Date: 20/11/2017 **Marks: 40**

Time: 3.30 – 5.30 PM

Instructions:

- ➔ Write each answer on a new page
- ➔ Total no of pages = 2
- ➔ Draw a neat and labeled diagram wherever necessary

Q1. Choose the correct answer from the given options: **(1X10=10 Marks)**

1. Mendels law of _____ is also known as law of purity of gametes
   a) Independent assortment
   b) Dominance
   b) Segregation
   c) Recessive characters
2. _____ contain repetitive DNA sequences
   a) Chromosomes
   b) Telomeres
   c) Chromatids
   d) Centromere
3. _____ are found in flowering plants, fruits and ageing leaves
   a) Amyloplasts
   b) Leucoplasts
   c) Elaioplasts
   d) Chromoplasts
4. The SOS regulon is the gene product of _____
   a) Mut S
   b) lex A
   c) uvrA
   d) Mut H
5. The model of plasma membrane in which the protein component forms a monolayer on either side of the plane of lipid micelles is _____
   a) Micellar model
   b) Bilayer model
   c) Fluid mosaic model
   d) Unit membrane model
6. A _____ is made up of one sugar molecule, one phosphate molecule and one of the four bases.
   a) Nucleoside
   b) Nucleolus
   c) Nucleotide
   d) Nucleoplasm
7. _____ is the site of exchange of proteins and RNA between the nucleus and the cytoplasm.
   a) Nuclear pore
   b) Nucleolus
   c) Endopalsmic reticulum
   d) Golgi complex
8. A nucleotide change that results in a codon specifying the same amino acid is a _____ mutation
   a) Missense
   b) Nonsense
   e) Frameshift
   d) Silent
9. The chromosome in which the centromere occurs near the centre or at medium portion of the chromosome forming two unequal arms is _____
   a) Metacentric
   b) Sub-metacentric
   c) Acrocentric
   d) Telocentric
10. Ribosomes are classified on the basis of
    a) Protein composition
    b) Molecular weight
    c)Sedimentation coefficient
    d) r RNA composition

Q2. State with justification whether the following statements are true or false **(1X6= 6 Marks)**

1. The endoplasmic reticulum is the site of protein synthesis.
2. Gorter and Grendel's model of plasma membrane is also known as the unit membrane.
3. DNA replication is dispersive.
4. The segregation of chromosomes takes place during anaphase.
5. The golgi complex is also known as shipper and packager.
6. The grana are the site for dark reactions of photosynthesis.

Q3. Answer in brief (Any four) **(3X4= 12 Marks)**

1. Explain the statement, "the genetic code is universal and degenerate".
2. What are the components of the nuclear membrane?
3. Write about the type of plastids which store starch and the ones storing fats and oils.
4. Explain the process of "non disjunction".
5. What are acrocentric and telocentric chromosomes?

Q4. Answer in detail (Any two) **(5X2= 10 Marks)**

1. Describe the structure of the photosynthesizing organelle in plants.
2. Describe the pathway used to repair the bases damaged by deamination or alkylation.
3. Discuss the process of reduction division.

Q5. In a particular species of flower, tall is dominant to short, and orange petals are dominant to the recessive white color. Use *T* and *t* to symbolize the alleles for height, and *F* and *f* to symbolize the alleles for flower color. A homozygous tall white flower is crossed with a flower heterozygous for both traits. List the genotypes of the parents. What are the F1 genotypic and phenotypic ratios?

(2X1=2 Marks)

---------End of Question Paper---------