KATHMANDU UNIVERSITY
End of Semester Examination
August/September, 2017

Marks Scored :

Level : B. Sc.
Year : I

Course : HBIO 103
Semester : II

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Exam Roll No. :

Time: 30 min

F. M. : 20

Registration No.:

Date SEP 14 2017

SECTION "A"

[20Q × 1 = 20 marks]

Multiple choice question.

1. A well known examples of multiple alleles in human beings is that of the
   a. Skin colour b. Rhesus factor c. Blood group d. Factor

2. Cystic fibrosis is a disease of
   a. Heart b. Kidneys c. Liver d. Lungs

3. To specify an amino acid , genetic code was
   a. One base b. Three base c. Two base d. Four base

4. The second stage of gene expression in which mRNA directed polypeptide synthesis by ribosome takes place is
   a. Transcription b. Translation c. Transformation d. Transduction

5. If a small segment of chromosome may be missing, a situation called
   a. Deletion b. Diversion c. Duplication d. Inversion

6. Hereditary condition in which the affected individuals are unable to breakdown the aminoacid phenylanaline is
   a. Alkaptonuria b. Homocystinuria c. Uricosuria d. Phenylketonuria

7. Physical and physiological appearances of trait in an individual is
   a. Karyotype b. Genome c. Genotype d. Phenotype

8. If the sequences of one chain is ATTGCAT, the sequences of its partner in the duplex must be
   a. TAATGCA b. TAACGTA c. TACAGCA d. TAATGTA

9. Which of the following prenatal diagnosis is possible for all of following condition **EXCEPT**?
   a. Sickle cell trait b. Beta thalassemia
   c. Ectodermal dysplasia d. Duchenner muscular dystrophy

10. Acquiring of information about the phenotypes of family members to infer the genetic nature of trait fron the pattern of its inheritance is
   a. Maternal analysis b. Paternal analysis
   c. Pedigree analysis d. Chromosomal analysis

11. Chromosome is a bearer of hereditary in the form of
   a. Spindles b. Genes c. Phosphoric acid d. Histones

12. Down syndrome is characterized by
    a. 19 trisomy
    b. 21 trisomy
    c. Only one X chromosome
    d. Two X and one Y chromosome

13. The syndrome in which individual somatic cell contains three sex chromosome XXX is called
    a. Down syndrome
    b. Super female
    c. Turner syndrome
    d. Klinefelter syndrome

14. In a family, father is having a disease and mother is normal. The disease is inherited to only daughters and not to the sons. What type of disease is this?
    a. Sex linked dominant
    b. Sex linked recessive
    c. Autosomal dominant
    d. Autosomal recessive

15. Retinoblastoma:
    a. Is associated with loss of the short arm of chromosome 13
    b. Is an autosomal dominant condition
    c. Is inherited in the minority of bilateral cases
    d. Is caused by mutation in the growth suppressor gene

16. If different alleles are present in the same genotype then it is called
    a. Homozygous b. Diallelic c. Hetreozygous d. Polyallelic

17. Genetic disorder in which urine containing homogentisic acid and turned black on exposure to air is called
    a. Alkaptonuria b. Proteinuria c. Homocystinuria d. Phenylketonuria

18. Anuploidy is the second major category of chromosome mutation in which chromosome number is abnormal. So, monosomic means
    a. 2n-2 b. 2n-1 c. 2n+1 d. n+1

19. Structural disorder of haemoglobin leads to
    a. α thalassaemia b. Haemophilia c. β thalassaemia d. Sickle cell anemia

20. Bipin brother suffer phenylketonuria(PKU), a recessive disorder. The brothers parents donot have PKU. What are the chances that Bipin, who is normal for this trait, is a carrier of PKU?
    a. 1/4 b. 1/3 c. 1/3 d. 2/3

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SECTION "B"

Attempt *ALL* questions. Draw a well labeled diagram where necessary.

1. Define and mention the advantages of prenatal diagnosis. Add notes on Amniocentesis. [1+2+3=6]

2. What is genetic code? Explain the salient features of genetic code. [1+5=6]

OR

Define pedigree. Explain the mendelian and non-mendelian inheritance patterns in human with appropriate examples. [1+5=6]

3. Write short notes on *(ANY THREE)*: [3×5=15]
   a. Pseudogenes
   b. Genetic drift
   c. X-chromosome Inactivation
   d. ABO blood group System

4. What is cystic fibrosis? Explain its etiology, symptoms and Pathophysiology. Mention the name of test which is used to diagnose the cystic fibrosis. [1+1+1+3+1=7]

5. Write the differences between (*ANY THREE*) [3×3=9]
   a. Nuclear DNA and Mitochondrial DNA
   b. Somatic Cell Gene Therapy and Germ Line Gene Therapy
   c. Heterochromatin and Euchromatin
   d. Asymmetric Karyotype and Symmetric Karyotype

6. Why is an Rh incompatibility so dangerous while ABO incompatibility is not during Pregnancy? Explain the concept of Erythroblastosis Foetalis. [2+5]

OR

Define chromosome. Mention and explain the types of human chromosome on the basis of position of centromere. Add notes on functional importance of chromosome. [1+3+3=7]

7. Give reason why blood group AB is Universal receiver. [2]

8. Define the following terms: [3×1=3]
   a. Mutation
   b. Immunogenetics
   c. Alleles