2022

Human Physiology

[P.G.]

(M.Sc. Third Semester End Examination-2022)

PAPER-301

Full Marks:40 ***Time: 02 Hrs***

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Unit – 23

Marks 20

Cellular Molecular Physiology

1. Answer any two questions of the following: **2x2= 4**

a) What is meant by hyper chromatism? 2

b) What is polyadenylation?. 2

c) What is the significance of repetitive sequence? 2

d) What is Kornberg enzyme? 2

2. Answer any two questions of the following: **2x4 = 8**

a) Describe in detail about the role of DNA polymerases. 4

b) Write briefly on the structure of chromatin. Differentiate between A-DNA and Z-DNA. 2+2

c) What is Pribnow box? Describe with suitable diagram about elongation of an RNA chain in eukryotes.

d) What are chemical mutagens? Describe Down Syndrome and Klinefelter syndrome with underlying causal factors.

3. Answer any one question of the following: 1x8 = 8

a) i) What is 5′ capping?

ii) What are introns?

iii) Describe the process of initiation of translation with suitable labelled diagram. 1+1+(4+2)

b) i) Describe the process of promoter recognition during transcription in prokaryotic system with suitable diagram.

ii) Explain the SOS inducible repair mechanism. 4+4

Unit – 24
Marks 20
Human Genetics

1. Answer any two questions of the following: 2x2= 4

a) What do you mean by testiculoa feminization? Name the gene mtation that causes this syndrome. 2

b) How hypoploidy can cause an abnormal phenotypic appearance? Explain it on the basis of human chromosome number 5. 2

c) Calculate the probability of homozygous allele at all the loci in an off spring, if a cross between two individual with enotype PpQq RRSStt and p p q q r r SS t t occurs 2

d) How nondisjunction can cause hyperploid or hypoploid cells?

2. Answer any two questions of the following: 2x4 = 8

a) Write down the chromosome formula, elinical syndrome and phenotypic effect of following abnormal karyotype.

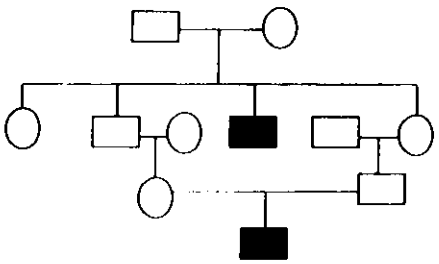
i) 45X

ii) 47XXY 2+2

b) Diagrammatically represent the different type of inversion takes place inchromosome. 4

c) What is Hardy-Weinberg Principle? Define genetic drift. 3+1

d) i) Is the trait that is segregating in the following pedigree due to a dominant or a recessive allele



ii) Feulgon's reagent is usually used to stain chromosomes. How does it act / interact with chromosomes? 2+2

3. Answer any one question of the following: 1x8 = 8

a) i) Define epistasis and pleotropy.

ii) A geneticist has obtained two free breeding browing strains of mice, each homozygous for an independently discovered recessive nutation that prevents the formation of hair on the body. One nutant strain is called naked and other is called hairless. To determine whether the two nutations are alleles the geneticist crosses naked and hairless mice with each other. All the offspring are wild type; i.e. hairs all over their bodies. After intercrossing these F1 mice the geneticist observed 115 wild type mice and 85 mutant mice in F2. Are the naked and hairless nutations alleles? How would you explain the segregation of wild type and mutant mice in the F2? 1+1+(1+5)

b) i) What arc the basic difference between sterile and fertile polyploidy organism? Briefly describe one mechanism by which a fertile tetraploid can origin.

ii) Discuss the genetic basis for Sickle cell anemia. (1+4)+3