MAK-003-038502 Seat No. _____

B. Voc. Medical Laboratory & Molecular Diagnostic Technology (Sem. V) (CBCS) Examination

October / November – 2016

MLMDT - 5.2 : Clinical Genetics

Faculty Code : 003
Subject Code : 038502

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.
(2) Figures to right indicate marks.

1 Answer the following questions : **20×1=20**

(1) What is an organism with two identical alleles called?

(2) How many types of gametes will be produced by an individual of AABbCcDd?

(3) What is the allele which is unable to express its effect in the presence of another is called?

(4) Blue Eye Color is recessive to brown eye color. A brown eyed man whose mother is blue eyed marries blue eyed-woman. The children will be
(a) Both blue eye and brown eyed 1:1
(b) All brown eyed
(c) All blue eyed
(d) Blue eyed and brown eyed 3:1

(5) What would be the probability of AABBCC individuals from a mating of two AaBbCc individuals?

(6) If amount of DNA is 2X in G1 phase, what will be the amount of DNA in G2 phase?

(7) Crossing over occurs at _____ stage of meiosis.

(8) How many linkage groups are present in Drosophila, when it has 4 homologous pairs of Chromosomes?

(9) Crossing over is more frequent in female; state whether it is true or false?

(10) What is charge couple device?

(11) What are results of teratogen exposure?

(12) Define : genomic imprinting.

(13) Define : Oligohydramnios.

(14) Define : Philadelphia chromosome.

(15) Define : Bcr-abl fusion protein

(16) Name dye used in Q banding.

(17) Define : WCP

(18) Define : Pedigree analysis

(19) Draw symbol of consangious marriage.

(20) Give symbol of sex unidentified.

2 (a) Attempt any three of the following : **3×2=6**

(1) Define : Genotype and Phenotype.

(2) Write Mendel's law of segregation.

(3) Write down the role of MPF in prophase of mitosis.

(4) Define synapsis and crossing over.

(5) Explain uniparental disomy with example.

(6) Differentiate between angelman and prader-willi syndrome.

(b) Attempt any three of the following : **3×3=9**

(1) A crossing of two hybrid of a flower species the result is shown below. Are these results consistent with expected proportion 9 : 3 : 3 : 1 ?

Magenta Flower Green Stigma	120
Magenta Flower Red Stigma	49
Red Flower Green stigma	36
Red Flower Red Stigma	12

(According to chi square table the value at 3 degree of freedom is 7.82)

(2) State the rules for Inheritance of Autosomal Dominant Traits in Man.

(3) List the factors affecting Linkage.

(4) What are CDK inhibitors? Write the name of any two CDK inhibitors.

(5) Explain mechanism of nondisjunction.

(6) Enlist points of suspect for chromosomal defect.

(c) Attempt any two of the following : **2×5=10**

(1) What is Monohybrid and Dihybrid Cross? State Mendel's Laws of Inheritance.

(2) What is protein kinase? What is the role of protein kinases in Cell Cycle?

(3) Define Gene frequency and genetic frequency. Explain the Hardy Weinberg law of equilibrium.

(4) Brief note on types of numerical abnormality.

(5) Elucidate reasons of getting chromosomal defect.

3 (a) Attempt any three of the following : **3×2=6**

(1) Enlist non invasive methods of PND.

(2) What are effects of insertion?

(3) List function of amniotic fluid.

(4) Enlist types of probe labelling in FISH.

(5) Give importance of pedigree chart.

(6) Applications of phase contrast microscopy.

(b) Attempt any three of the following : **3×3=9**

(1) Note on quadruple screen test.

(2) Note on Teratogen.

(3) How many check points are present in cell? Discuss the role of check point in cell cycle.

(4) Discuss variants of G banding.

(5) Give list of symbols used in pedigree analysis.

(6) Principle and advantages of dark field microscopy.

(c) Attempt any two of the following : **2×5=10**

(1) Brief note on amniocentesis.

(2) Brief note on cytogenetic analysis of human embryo.

(3) Note on Q banding.

(4) Note on pedigree analysis.

(5) Note on types of inheritance pattern.
