0105N103

Candidate's Seat No :_____

MSc Sem.-2 Examination

407

CB

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

Instructions:

All Questions are compulsory
Draw neat and labeled diagram wherever necessary

Q-1 **14**

(i) Describe principle, methodology and clinical significance of Giemsa Trypsin G banding technique. 7

(ii) Write a principle of FISH technique and explain fluorescent microscopy in detail. 7

OR

(i) Describe cap like structure chromosomes with diagrams. 7

(ii) Describe workflow, principle and applications of BAC FISH probe generation. 7

Q-2 **14**

(i) Describe Micronucleus staining technique and its clinical significance. 7

(ii) Explain in detail different possible variant signal patterns obtained using BCR-ABL DC DF FISH probe. 7

OR

(i) Write a brief note on secondary chromosomal abnormalities in APML patients. 7

(ii) Write a note on filters and their uses in Fluorescence in Situ Hybridization. 7

Q-3 **14**

(i) Describe the algorithm for treating chronic myeloid leukemia patients with Imatinib. 7

(ii) Name the commonly used disinfectants in a laboratory. Explain clean-up procedures for different spillages in laboratory. 7

OR

(i) Describe the NCCN guidelines for disease monitoring and prognosis in acute myeloid leukemia. 7

(ii) Define biosafety and write its principle. Explain risk group classification and biosafety level. 7

Q-4 **14**

(i) Describe the cytogenetic abnormalities in myelodysplastic syndrome. 7

(ii) Explain the role of mechanical safety in maintaining a safe laboratory environment. 7

OR

(P.T.O)

(i) Describe cytogenetic risk group in acute lymphoid leukemia and explain any one risk group in detail. 7

(ii) Which organization provide regulations for laboratories? Describe any three factors of management requirement in accredited laboratory. 7

Q-5 **MCQs/ Short Questions (one or two line answer)/ Fill in the Blanks/ True or False (Any seven out of twelve)** 14

1 **In fluorescence microscopy, which type of mirrors are used?**

a Dichoric b Trichoric
c Focal lens d Single

2 **In which technique, interferometer is used?**

a Q-FISH b M-FISH
c SKY-FISH d COBRA-FISH

3 **Which formula is used for combinations of fluorophore?**

a 2^n+1 b 2^n-1
c n^2+1 d n^2-1

4 **Combinatorial labeling is applied for which type of multiplex FISH technique?**

a COBRA FISH b Multicolor FISH
c Spectral Karyotyping d All of the above

5 **QM banding is used to identify _____.**

a Telomere b X chromosome
c Y chromosome d p arm of the chromosome

6 **C banding demonstrates _____.**

a Chromosome 16 and Y b Chromosome 4 centromere
c Chromosome 8 centromere d Chromosome 12 centromere

7 **Who first invented GTG staining?**

a Gustav Giemsa b Tijo
c Peter Nowell d Painter

8 **Diepoxy butane is used to study _____.**

a Sister Chromatid Exchange b Chromosome aberrations
c GTG Banding d NOR

9 **Most common chromosomal abnormalities observed in AML-M4 patient is_____.**

a N-MYC rearrangements b Inv(16)
c 11q23 rearrangements d Trisomy 12

10 **A hazard warning label**  **is for_____.**

a Toxic vapors & irritants b Biological materials
c Mechanical trauma d Cryogenic materials

11 **Perchloric acid and chromic acid are _____.**

a Corrosives b Ignitable
c Oxidizers d Carcinogens

12 **The relationship between measured and expected values over the analytical measurement range is termed as _____.**

a Trueness b Accuracy
c Precision d Linearity