

2021

BIOCHEMISTRY — HONOURS

**Paper : DSE-B-3
(Molecular Diagnostics)**

Full Marks : 50

The figures in the margin indicate full marks.

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

1. Answer **any five** questions: 2×5
- (a) What is the clinical significance of aldolase estimation?
 - (b) What is karyotyping?
 - (c) What are the advantages of DNA based diagnostic techniques over the others?
 - (d) State the applications of the technique FISH.
 - (e) Mention any two types of substrates that are commonly used for the detection of ELISA.
 - (f) What is myocardial infarction? Name any one enzyme that is used as biomarker for diagnosis of acute myocardial infarction.
 - (g) What do you mean by sex-linked inherited disorders? Explain with example.
2. Answer **any two** questions:
- (a) (i) What are VNTR and STR?
(ii) Differentiate between G-banding and C-banding.
(iii) Is a trisomic an aneuploid or polyploid? 2+2+1
 - (b) (i) Briefly describe one major type of ELISA.
(ii) Which genetic tests are available for the detection of Down Syndrome? 3+2
 - (c) (i) How is Corona Virus detected by RT-PCR? Explain with schematic diagram.
(ii) Why are inactivation or blocking step and antigen retrieval step important in IHC? 3+2
3. Answer **any three** questions:
- (a) (i) What are immunosensors? State one application of it.
(ii) State the basic methodological difference between chemiluminescent immuno assay (CLIA) and enzyme-linked immunosorbent assay (ELISA). Which method is advantageous over the other and why?

Please Turn Over

- (iii) How would you detect HbSAg by ELISA?
- (iv) What is RAPD? (2+1)+(2+1)+2+2
- (b) (i) What is DNA fingerprinting? How can this technique be used for determination of paternal identity? What are the different methods that can be used for analysis of DNA after it is extracted from the sample isolated from crime site?
- (ii) How is sickle cell anaemia detected by RFLP? Explain with suitable diagram. (2+2+2)+4
- (c) (i) Briefly describe the basic background for any two inborn error of metabolism and their diagnostic procedure.
- (ii) Name any two enzymes that are used for the diagnosis of pancreatic function.
- (iii) What is the clinical significance of CK and LDH? (2+2)+2+(2+2)
- (d) (i) How would you design primers for PCR?
- (ii) Show the different steps of FISH with schematic diagram.
- (iii) Write short note on RIA.
- (iv) What is AFLP? (2+3+3+2)
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