

National Board of Examinations

Question Paper Name : DNB Biochemistry Paper4
Subject Name : DNB Biochemistry Paper4
Duration : 180
Total Marks : 100
Display Marks: No

Maximum Instruction Time : 0

Question Number : 1 Question Id : 32718733364 Consider As Subjective : Yes

Please write your answers in the answer booklet within the allotted pages as follows:-

Question Number	Answer to be attempted within	Question Number	Answer to be attempted within
Q. 1	Page 1-5	Q. 6	Page 26-30
Q. 2	Page 6-10	Q. 7	Page 31-35
Q. 3	Page 11-15	Q. 8	Page 36-40
Q. 4	Page 16-20	Q. 9	Page 41-45
Q. 5	Page 21-25	Q. 10	Page 46-50

1. Explain the principle and uses of the following techniques in clinical laboratory:

- a) HPLC. [5]
- b) qPCR. [5]

Question Number : 2 Question Id : 32718733365 Consider As Subjective : Yes

- a) Explain why a 'primer pair' instead of a 'single primer' is used in the polymerase chain reaction (PCR)? [2]
- b) Name any two computer program used for designing PCR primers. [2]
- c) What are the properties of an ideal primer set? [3]
- d) What is difference between reverse transcriptase PCR & real time PCR? Write application(s) of reverse transcriptase PCR and real time PCR. [3]

Question Number : 3 Question Id : 32718733366 Consider As Subjective : Yes

- a) Describe nuclear magnetic resonance (NMR) and its applications in biochemistry. [5]
- b) Describe MALDI-TOF mass spectrometry and its applications. [5]

Question Number : 4 Question Id : 32718733367 Consider As Subjective : Yes

- a) Whole genome sequencing and genome wide association study. [5]
- b) Comparative genomic hybridization. [5]

Question Number : 5 Question Id : 32718733368 Consider As Subjective : Yes

- a) What are the sources of cell free DNA (cfDNA) in plasma? [4]
- b) Discuss applications and potential applications of cfDNA in diagnostics. [6]

Question Number : 6 Question Id : 32718733369 Consider As Subjective : Yes

Principle and uses of the following techniques:

- a) SDS-PAGE. [3]
- b) Density gradient centrifugation. [3]
- c) Flow cytometry. [4]

Question Number : 7 Question Id : 32718733370 Consider As Subjective : Yes

Discuss about genome editing technologies, with emphasis on principle of CRISPER-cas9 and its applications. [10]

Question Number : 8 Question Id : 32718733371 Consider As Subjective : Yes

- a) Discuss the various methods to estimate HbA1c. How is the HbA1c test report interpreted? [7]
- b) How does hemolytic anemia influence HbA1c test result? [3]

Question Number : 9 Question Id : 32718733372 Consider As Subjective : Yes

Enumerate mutation detection techniques. Discuss any two techniques in detail. [10]

Question Number : 10 Question Id : 32718733373 Consider As Subjective : Yes

- a) Define Artificial Intelligence (AI). Mention its uses in health care. [5]
- b) How is laboratory diagnosis of CSF-rhinorrhea and chyluria established? [2]
- c) Write the diagnostic significance of enzyme assay in CSF. [3]