National Board of Examinations

Question Paper Name :	DNB Biochemistry Paper2
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DNB Biochemistry Paper2

Group Number :	1
Group Id :	327187623
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Group Marks :	100
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

DNB Biochemistry Paper2

Section Id :	327187626
Section Number :	1
Section type :	Offline

Mandatory or Optional :	Mandatory
Number of Questions to be attempted :	10
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	327187630
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 3271875312 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

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. a) Describe in detail the role of osteoclasts and osteoblasts in bone mineralisation process. [4]

b) Explain how various factors affect bone mineralisation and demineralisation. [4]

c) List four biochemical tests performed to evaluate post-menopausal osteoporosis. [2]

Question Number : 2 Question Id : 3271875313 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Describe the changes in heme and globin structure that occur during oxygenation of hemoglobin. [2]

b) List the factors causing right-ward shift of the oxygen dissociation curve. [3]

c) Explain the molecular basis of sickle cell anemia and discuss how its laboratory diagnosis is established. [5]

Question Number : 3 Question Id : 3271875314 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Explain how the intestinal iron absorption is regulated. [4]

b) Mention the reference range of serum total iron, total iron binding capacity, ferritin and transferrin saturation levels. [2]

c) Mention the changes that occur in the above-mentioned parameters in a patient with i) iron deficiency anaemia ii) haemochromatosis. [4]

Question Number : 4 Question Id : 3271875315 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Explain how the electron transport chain generates pH gradient accross inner mitochonrial membrane and how this pH gradient drives ATP synthesis. [4]

b) List one inhibitor of each complex of electron transport chain (ETC). [2]

c) Suggest an experiment with its biochemical basis to determine the site of action of an ETC inhibitor (i.e., to determine which complex of ETC is inhibited by an inhibitor). [4]

Question Number : 5 Question Id : 3271875316 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) The biochemical basis of metabolic adaptations in well-fed state and prolonged fasting. [6]

b) Role of fructose 2,6-Bisphosphate in regulation of a tandem enzyme and in reciprocal regulation of glycolysis and gluconeogenesis. [4]

Question Number : 6 Question Id : 3271875317 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) With an example define ω3 fatty acids. Describe their physiological functions. [1+2]
b) List four endocrine functions of adipose tissue. Explain the role of adipocytes in energy homeostasis of human body. Explain biochemically how an endocrine dysruptor can affect energy homeostasis. [2+3+2]

Question Number : 7 Question Id : 3271875318 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

Explain why/how:
a) Carnitine deficiency sometimes leads to hypoglycemia. [3]
b) Glucose entry in hepatocytes increases with the rise in insulin level. [3]
c) AMP concentration is a more sensitive indicator of cells energetic state than ATP. [2]
d) HbA1c is not recommended in hemolytic anemia patients with diabetes mellitus for monitoring their glycemic status. [2]

Question Number : 8 Question Id : 3271875319 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Explain biochemical basis of genetic and non-genetic facors resulting in hyperuricemia/gout. [5]
b) Describe the role of anti-metabolites as chemotherapeutic agents. [5]

Question Number : 9 Question Id : 3271875320 Question Type : SUBJECTIVE Consider As

Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Role of folate in one carbon metabolism and how Vitamin B12 deficiency leads to folate trap. [3+2]

b) Metabolic functions of pyridoxal phosphate, biochemical basis of pyridoxine-INH interaction and pyridoxine-dependent seizures in infancy. [2+1+2]

Question Number : 10 Question Id : 3271875321 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 10

a) Describe the chemical nature and mechanism of any four functions of dietary fibres. [5]

b) Discuss how different biochemical laboratory tests can be used in assessment of nutritional status of an individual. [5]