

National Board of Examinations

Question Paper Name :	DNB Biochemistry Paper3
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DNB Biochemistry Paper3

Group Number :	1
Group Id :	3271871071
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	100
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

DNB Biochemistry Paper3

Section Id :	3271871074
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 :	3271871078
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 3271879762 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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) What are cellular RNAs and their functions? [3]
- b) Describe the major differences between prokaryotic and eukaryotic mRNAs. [2]
- c) Describe the different processing and splicing events that occur during synthesis of eukaryotic mRNA. [5]

Question Number : 2 Question Id : 3271879763 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

- a) Which commonly used antibiotics are directed at inhibition of bacterial RNA polymerase but do not affect the mammalian complex? Why are these drugs less effective against fungal infections? [7]

b) Explain how RNAi is used as a therapeutic option. [3]

Question Number : 3 Question Id : 3271879764 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) Describe about DNA-binding transcription factors, proteins that bind to DNA sequences that are physically linked to their target transcriptional promoter elements, modulating gene transcription. [7]

b) Explain that the processes of gene transcription, RNA processing and nuclear export of RNA are all coupled. [3]

Question Number : 4 Question Id : 3271879765 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) How is the genetic information of DNA transcribed into myriad distinct forms of ribonucleic acid (RNA)? [7]

b) Explain why genomic nuclear eukaryotic DNA is doubled stranded and highly negatively charged. [3]

Question Number : 5 Question Id : 3271879766 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Explain the following:

a) The genetic code is degenerated and not quite universal. [3]

b) Aminoacyl-tRNA synthetases have proof reading ability. [2]

c) The major steps in synthesis and degradation of a cytosolic protein. [5]

Question Number : 6 Question Id : 3271879767 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) The human genome project. [4]

b) Recombinant DNA technology. [3]

c) Gene therapy. [3]

Question Number : 7 Question Id : 3271879768 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) Compare and contrast antigen recognition by the cells of innate and adaptive immune responses. [4]

b) Outlines and functions of cytokines, chemokines and adhesion molecules. [6]

Question Number : 8 Question Id : 3271879769 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) How can different immunoglobulins (in millions) be synthesized in the body? [4]

b) Outline the key differences between polyclonal and monoclonal antibodies. [2]

c) Explain the salient features of autoimmune and immunodeficiency disorders. [4]

Question Number : 9 Question Id : 3271879770 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) Describe an overview of important aspects of the biochemical and genetic features of cancer cells. [5]

b) Briefly describe the concepts of genomic instability, aneuploidy and angiogenesis in tumors. [5]

Question Number : 10 Question Id : 3271879771 Question Type : SUBJECTIVE Consider As Subjective : Yes Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

a) Distinguish between oncogene and tumor suppressor genes and describe the roles of tumor progression. [4]

b) Discuss the use of tumor markers for following responses to treatment and to direct recurrence. [3]

c) Discuss the regulation of apoptosis by caspases and bel2 family members. [3]