

Question Paper

Exam Date & Time: 07-Jul-2023 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

BPharm (Second Semester)
End Semester Theory Examination, 2023
Biochemistry (Theory) [PBT-BP203T-S2]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) Glutamic acid is represented by the alphabet (1)
- [D](#)
[E](#)
[N](#)
[Q](#)
- 2) An example of pyrophosphate class of high energy compound is (1)
- [ATP](#)
[Acetyl CoA](#)
[Acyl CoA](#)
[Phosphagens](#)
- 3) Measure of the change in heat content of the reactants, compared to products is (1)
- [Entropy](#)
[Free energy](#)
[Enthalpy](#)
[Bioenergetics](#)
- 4) Which of the following is a product of transaldolase activity? (1)
- [Ribose-5-phosphate](#)
[Erythrose-4-Phosphate](#)
[Sedoheptulose-7-phosphate](#)
[Glyceraldehyde-3-phosphate](#)
- 5) Which of the following is an oxidative decarboxylation? (1)
- [Isocitrate to alpha ketoglutarate](#)
[Isocitrate to oxalosuccinate](#)
[Alpha ketoglutarate to succinyl CoA](#)
[Fumarate to Malate](#)
- 6) The measurement of a pitch of the B form of DNA is (1)
- [0.34 nm](#)

[3.4 nm](#)

[34 nm](#)

[3.4 A](#)

7) The repair DNA polymerase is (1)

[DNA pol I](#)

[DNA pol II](#)

[DNA pol III](#)

[DNA pol](#)

[IV](#)

8) The property of the genetic code which justifies the availability of 61 codons for 20 amino acids is (1)

[Universality](#)

[Specificity](#)

[Non-overlapping](#)

[Degeneracy](#)

9) If the codon sequence on an mRNA is CGCACGAUGAACCGAGUCUUUAUACAGCGUUUC how many amino acids will be formed during its translation? (1)

[11](#)

[9](#)

[6](#)

[5](#)

10) D arm of tRNA is called so due to the presence of (1)

[Dihydrouridine](#)

[Dihydroadenine](#)

[Dichlorouridine](#)

[Dichloroadenine](#)

11) Which of the following is a peptidyl transferase inhibitor? (1)

[Streptomycin](#)

[Tetracycline](#)

[Chloramphenicol](#)

[Erythromycin](#)

12) 'Beads on a string' pattern in nucleosome is (1)

[10 nm](#)

[fiber](#)

[30 nm](#)

[fiber](#)

[Rosette](#)

[Loop](#)

13) The precursor for synthesis of catecholamines is (1)

[Tryptophan](#)

[Tyrosine](#)

[Melatonin](#)

[Serotonin](#)

14) The number of ATPs derived when Myristic acid, a 14 carbon containing fatty acid undergoes complete oxidation is (1)

[131](#)

[129](#)

[114](#)

[112](#)

15) Which of the following is regarded as a true ketone? (1)

[Acetoacetyl CoA](#)

[HMG CoA](#)

[Acetoacetate](#)

[Acetyl CoA](#)

16) The precursor of Arachidonic acid is (1)

[Palmitic acid](#)

[Oleic acid](#)

[Linolenic acid](#)

[Linoleic acid](#)

17) The coenzyme FMN is derived from vitamin (1)

[B1](#)

[B2](#)

[B3](#)

[B9](#)

18) In competitive inhibition, which of the following is true? (1)

[Vmax remains unchanged whereas Km increases](#)

[Km decreases and Vmax increases](#)

[Vmax and Km are lowered simultaneously](#)

[Vmax is lowered whereas Km remains unchanged](#)

19) The coenzyme which helps in transfer of 'one carbon' is a derivative of which Vitamin? (1)

[Niacin](#)

[Riboflavin](#)

[Folic acid](#)

[Thiamine](#)

20) The term Enzyme was coined by (1)

[Menten](#)

[Wilhelm Friedrich Kuhne](#)

[Haldane](#)

[Berzelius](#)

II Long Answers

Answer all the questions.

1) Explain the reactions of aerobic oxidation of glucose in cytosol. Add a note on chemiosmotic hypothesis of oxidative phosphorylation. Explain the reactions of aerobic oxidation of glucose in cytosol. Add a note on chemiosmotic hypothesis of oxidative phosphorylation. (10)

2) Explain the following: (10)
A. Steps in transcription process (5 m)
B. Primary gout as a metabolic disorder and its treatment (5m)

III Short Answers

Answer all the questions.

- 1) Define the terms redox potential and bioenergetics. Draw the ATP-ADP cycle. (5)
- 2) a. Sketch Malate Aspartate Shuttle and discuss its significance. (2.5m) (5)
b. Write a note on Oral Glucose Tolerance Test. (2.5m)
- 3) Write briefly on the reactions involving Fatty acid synthase complex for the De novo synthesis of Palmitic acid. (5)
- 4) Write about the energetics, disorders and regulation associated with ornithine cycle. (5)
- 5) Justify the given statements: (5)
A. Tyrosine becomes essential amino acid during phenylketonuria [2]
B. Urine of black urine disease patients resembles coke in color. [2]
C. The synthesis of immediate precursor of urea can occur in majority of tissues but urea synthesis occurs majorly only in liver. [1]
- 6) With the help of a neat labeled diagram, explain the effect of substrate analogue on enzyme activity. Give a suitable example for the same. (5)
- 7) Give the IUB classification of enzymes, citing suitable reaction under each class. (5)

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