DBK-003-1015030 Seat No. _____

B. Sc. (Sem. V) (CBCS) (W.E.F. 2016) Examination

June - 2022

Biochemistry : Paper - 502

(Intermediary Metabolism)

Faculty Code : 003

Subject Code : 1015030

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instruction : Attempt any five questions from the following :

1	(a)	(i)	What is the name of first phase of glycolysis ?	**1**
		(ii)	Define regulatory enzymes.	**1**
		(iii)	Write the full form of HMP shunt.	**1**
		(iv)	Write the names of two enzymes of glycogen metabolism.	**1**
	(b)		What is Cori cycle ? Write in brief.	**2**
	(c)		Explain regulation of glycogen phosphorylase.	**3**
	(d)		Explain dephosphorylation phase of glycolysis.	**5**
2	(a)	(i)	What is the name of second phase of glycolysis ?	**1**
		(ii)	Write the names of regulatory enzymes of glycolysis.	**1**
		(iii)	Describe the importance of PPP pathway.	**1**
		(iv)	Write the function of branching and debranching enzymes in glycogen metabolism.	**1**
	(b)		Describe how pyruvate is converted into lactate ?	**2**
	(c)		Discuss oxidative phase of HMP shunt.	**3**
	(d)		Write a detail note on different reactions of TCA cycle in detail. (Without structures)	**5**
3	(a)	(i)	Write the name of complex I of ETC.	**1**
		(ii)	Write the full form of ETC.	**1**
		(iii)	What is the name of complex V in ETC ?	**1**
		(iv)	Where ETC is located ?	**1**

(b) Define uncouplers and write their examples. 2

(c) Discuss inhibitors of mitochondrial ETC and their site of action. 3

(d) What is the role of complex II in ETC ? 5

4 (a) (i) Which substance act as a terminal electron acceptor in mitochondrial electron transport chain ? 1

(ii) What is Q-cycle ? 1

(iii) Describe the subunits of mitochondrial F_o-F_1 ATPase. 1

(iv) What is the role of iron-sulfur proteins in mitochondrial electron transport chain ? 1

(b) Write the names of four complexes of mitochondrial ETC. 2

(c) What is the connection between mitochondrial ETC and oxidative phosphorylation ? 3

(d) Draw a labelled diagram of Mitochondrial ETC showing the arrangements of components of Complexes I to IV. 5

5 (a) (i) Write the full form of LDL. 1

(ii) Define PUFA. 1

(iii) Write the difference between VLDL and HDL. 1

(iv) Write the example of long chain fatty acid. 1

(b) Define the term chylomicron and write its function. 2

(c) How odd chain fatty acids are oxidized by beta oxidation ? 3

(d) Describe the process of beta oxidation of fatty acids. 5

6 (a) (i) Why LDL is termed as bad cholesterol ? 1

(ii) Write metabolic fates of Acetyl CoA. 1

(iii) What are Ketone bodies ? Write examples of Ketone bodies. 1

(iv) When 18 Carbon fatty acid is oxidized, how many cycles of beta oxidation are required ? And how many molecules of acetyl CoA would be produced ? 1

(b) Why does complete oxidation of fatty acids produce more ATPs than Glucose ? 2

(c) Discuss different types of phospholipases and their importance. 3

(d) Write the reactions of fatty acid synthesis from acetyl CoA. 5

7	(a)	(i)	Define kilo calorie.	1
		(ii)	Write the full form of GABA.	1
		(iii)	Write two examples of essential amino acids.	1
		(iv)	Write two examples of prosthetic group.	1
	(b)		Describe the term ketogenic amino acids with examples.	2
	(c)		Describe the Ammonotelic, Ureotelic and Uricotelic organisms with examples.	3
	(d)		Discuss urea cycle in detail without structures.	5
8	(a)	(i)	Which are the fuels of the body ? Write their calorific values.	1
		(ii)	What is the importance of GABA ?	1
		(iii)	Write the difference between essential and non essential amino acids with its examples.	1
		(iv)	Name the coenzyme that is essential in transamination reactions.	1
	(b)		What do you understand by urea bicycle ?	2
	(c)		Explain oxidative deamination reaction very briefly.	3
	(d)		Write a detail note on transamination reaction.	5
9	(a)	(i)	Write the full form of HGPRT.	1
		(ii)	Write the difference between purines and pyrimidines.	1
		(iii)	Draw the structure of Thymidine.	1
		(iv)	Draw the structure of Guanine.	1
	(b)		Draw the structure of purine ring with its various elemental sources.	2
	(c)		What you understand by Gout ?	3
	(d)		Write a detail note on purine catabolism.	5
10	(a)	(i)	Deficiency of HGPRT cause the disease known as _____.	1
		(ii)	Name the end product of pyrimidine catabolism.	1
		(iii)	Write the difference between CPS-I and CPS-II.	1
		(iv)	Draw the structure of adenine.	1
	(b)		Write the significance of nucleotide metabolism.	2
	(c)		How ribose sugar is converted to deoxyribose sugar ?	3
	(d)		Explain denovo biosynthesis of pyrimidine.	5