Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

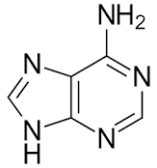
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Theory Examination, July 2020

Course: Biochemistry **Semester: II**
Program: B.Pharma **Time 03 hrs.**
Course Code: BP 203T **Max. Marks: 75**
Instructions: Read the Question Paper Carefully. All Sections are Compulsory

SECTION A

S. No.	CO	Multiple Choice Questions/Fill in the Blanks/ True or False (one marks each)	Marks
Q1		**All COs should be covered**	**20**
1	CO1	A metabolic reaction that results in the formation of ATP or GTP by conversion of a higher energy substrate into a lower energy product is known as	
2	CO1	Name any 1 energy rich molecule	
3	CO1	In exergonic reactions, Gibbs free energy of products is higher than reactants. True/False	
4	CO1	Amino acids present in the body are of L configuration. True/False	
5	CO3	$CH_3(CH_2)_{12}CH_2CH_2COOH$ is a. Stearic acid b. Oleic acid c. Palmitic acid d. α- Linolenic acid	
6	CO1	Which of the following is an example of ω-3 fatty acids a. α-linolenic b. Eicosapentaenoic acid c. Docosahexaenoic acid d. All of the above	
7	CO2	Pentose sugar is formed in which pathway a. Glycolysis b. Beta oxidation c. HMP shunt d. All	
8	CO2	Formation of glucose from lactate can be done through which biochemical process a. Glycolysis under aerobic conditions b. Glycogenolysis c. Gluconeogenesis d. Glycolysis under anaerobic conditions	
9	CO2	Non-insulin dependen diabetes mellitus is also known as Type – 1 Diabetes mellitus. True/False	
10	CO2	TCA cycle is one of the most important cycle for energy generation from acetyl CoA. What does TCA stands for?	
11	CO3	Which of the following is not a ketone body a. Acetone b. Alpha - Ketoglutarate c. Beta - Hydroxybutyrate d. Acetoacetate	

12	CO3	Disorder in the metabolism of Phenyl alanine to tyrosine is a. Phenyketonuria b. Albinism c. Alkeptonuria d. Tyrosinemia	
13	CO3	Which of the following is more related to sleep - awake cycles a. Melatonin b. Noradrenaline c. Adrenaline d. Dopamine	
14	CO4	Recycling of components of nucleotides to form the nucleotides is known as de novo synthesis. True/False	
15	CO4	Which of the following is true about SARS-CoV-2 a. It is crown shaped virus b. Contains RNA c. It has spike proteins d. All are true	
16	CO4	Define gout? (word limit - 15 words)	
17	CO4	Which of the following is not a pyrimidine nucleotide a. Uracil b. Thymine c. Cytosine d. Guanine	
18	CO5	Name any type of reaction in which thiamine pyrophosphate is used as a coenzyme	

19	CO5	Which of the following is true a. Apoenzyme = Holoenzyme + Prosthetic group b. Holoenzyme = Apoenyme + Prosthetic group c. Prosthetic group = Holoenzyme + Apoenzyme d. None	
20	CO5	Enzymes show high specificity. True/ False	
SECTION B			
Attempt Any two out of three , 10 marks each			
Q2		**All COs should be covered**	**20**
	CO2	Some of the intermediates of glycolysis are written below in a random manner. [5+4+1] a. Arrange them in the proper sequence i. Fructose – 6 – Phosphate ii. Glucose – 6 – Phosphate iii. Phosphoenol Pyruvate iv. Glyceraldehyde – 3 – Phosphate v. Fructose – 1,3 – bisphosphate b. Write the sequence of steps in electron transport chain c. Name the enzyme involved in oxidative phosphorylation	
	CO3	a. What is the significance of beta oxidation[2+2+1+2+3] b. Name and structure 16:0 fatty acid c. If double bond is present in the structure of fatty acid. Beta oxidation occur in which configuration. (cis or trans) d. What is the role of carnitine shuttle system e. How many ATPs are generated from beta oxidation of 16:0 fatty acid	
	CO4	a. Name the enzymes involved in the process of DNA replication [3+3+3+1] b. Write some amino acids which are used in the de novo synthesis of purines c. Write some amino acid which are used in the de novo synthesis of pyrimidines d. Name the following nucleotide 	
SECTION C			
Attempt any 7 out of 9 (7X5=35)			
Q3		**All COs should be covered each question carry five marks**	**35**
1	CO2	a. Number of GTP, NADH and $FADH_2$ produced in TCA cycle [3+2] b. Name two starting materials for gluconeogenesis	
2	CO2	a. HMP shunt stands for Hexose Mono Phosphate shunt. This pathway results in the synthesis of ribose which is not a hexose. What do you think, why it is known as HMP shunt?	

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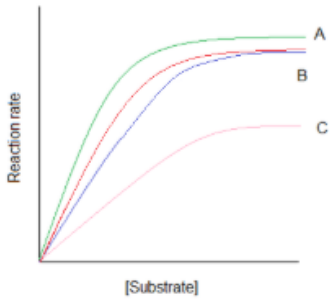
<tr><td></td><td></td><td>[Hint: Dictionary meaning of shunt is: push or pull (a train or part of a train) from the main line to a siding or from one line of rails to another.
"their train had been shunted into a siding"] [3+2]

b. Name two important products generated in HMP shunt pathways</td><td></td></tr>
<tr><td>3</td><td>CO1</td><td>a. Give biological role of carbohydrates [2+2+1]
b. Give biological role of proteins
c. Name one sulphur containing amino acid</td><td></td></tr>
<tr><td>4</td><td>CO3</td><td>Match the following
<table>
<tr><td>Lipoproteins</td><td>Role</td></tr>
<tr><td>p. LDL</td><td>i. Transports excess cholesterol from tissues to liver</td></tr>
<tr><td>q. HDL</td><td>ii. Transport of cholesterol to peripheral tissues</td></tr>
<tr><td>r. Chylomicrons</td><td>iii. Transports of triglycerides from liver to adipose tissue</td></tr>
<tr><td>s. VLDL</td><td>iv. Transports of dietary triglycerides to liver</td></tr>
</table></td><td></td></tr>
<tr><td>5</td><td>CO5</td><td>a. What do you mean by competive inhibition[2+2+1]
b. What happens to Km and Vmax in competitive inhibition
c. Give one example of competitive inhibition</td><td></td></tr>
<tr><td>6</td><td>CO5</td><td>a. Potassium cyanide is a poison which combines with cytochrome a_3 to prevent binding of oxygen to the enzyme without altering the Km of the reaction. This represents …….. inhibition [1+3+1]
b. If red line indicates normal reaction, which curve in the following graph represents non-competitive inhibition

c. Name any two enzymes used for diagnosis of liver disorders.</td><td></td></tr>
<tr><td>7</td><td>CO1</td><td>a. Define [4+1]
i. Epimers
ii. Isoelectric point
iii. Sphingolipids
iv. Lagging stand
b. In endergonic reactions are spontaneous as change in gibb’s free energy is negative. True/False</td><td></td></tr>
<tr><td>8</td><td>CO3</td><td>Give answers to the questions related to the following reaction [2+2+1]</td><td></td></tr>
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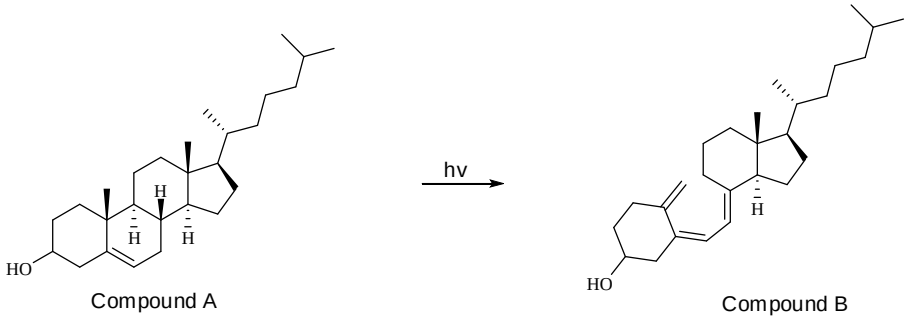
<tr><td></td><td></td><td> 

Compound A Compound B

a. Name compound A and B
b. Name some hormones whose starting material is compound A
c. Write any disorder related to compound A

[Hint: Compound B is an important water in-soluble vitamin]</td><td></td></tr>
<tr><td>9</td><td>CO5</td><td>a. Define isoenzymes [2+3]

b. Match the following
<table>
<tr><td>a. Thiamine</td><td>i. Transfer of formyl group</td></tr>
<tr><td>b. Serotonin</td><td>ii. Transamination reactions</td></tr>
<tr><td>c. cofactor of folic acid</td><td>iii. Mood</td></tr>
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<tr><td></td><td></td><td></td><td>35</td></tr>
<tr><td></td><td></td><td>Total</td><td>75</td></tr>
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