Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Zoology

Academic Year: 2018-2019

Surprise Test- II for B.Sc. III

INDEX

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)
DEPARTMENT OF ZOOLOGY

Surprise Test II **B.Sc. Part III** **Date** 25/01/2019 **Marks- 10**

Q. Attempt any one of the following

1. What is glycolysis? Explain glycolysis in detail.
2. Explain milk products and by-products.

B.Sc III (Zoology) Date-25/01/2019

Attendance Surprise Test - 2 (2)

S. No.	Name of student	Sign
1)	Akshata P. Sutar.	Sutar
2)	Nilesh M. Rajput	Rajput
3)	Manjula B. Naik	Naik
4)	Patil Snehal Sarjerao	Patil
5)	Chougule Amna Dhondiba	
6)	Pooja S Ekal	Ekal
7)	Patil Rutuja Rajendra	Rutuja
8)	Prakul M. Chokakkar	Prakul
9)	Gaikwad Nivedita Babaso	Ngaikwad
10.	Singh Vaishi Rajesh.	Vaishi Singh
11.	Patil Trupti Tanaji	Trupti
12.	Abhishek. C. Shirke	
13.	Supriya Aamte	Supriya
14)	Shivani Kiran Mane.	Shivani
15.	Suraj. Kapase	Suraj
16.	Patel Rujay Desai	Rujay
17.	Parag A. Golandaj	Parag
18.	Nisha Kamble	
19.	Vinay Madhukar attaltkar.	Vinay
20.	Nilam Kamble	Nilam Kamble
21.	Sanap Pooja	Sanap
22.	Patil Pooja	Pooja
23	Godad Monica.	Godad

Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

Vivekanand College, Kolhapur
Department of Zoology
B.Sc. III
Surprise test I Mark list

Total Marks- 10

S.N.	Name of Students	Marks obtained
1	Atyalkar Vinay M.	06
2	Chokakkar Prafull Madan	09
3	Desa Rafel Rujay	09
4	Gaikwad Nivedita Babasaheb	10
5	Godad Monika Anton	10
6	Golandaj Paravej A.	07
7	Hange Omkar Atul	Ab
8	Kamble Nilam Chandrakant	07
9	Kamble Nisha Dinkar	07
10	Kapse Suraj V.	08
11	Mane Shivani Kiran	08
12	Naik Manjula Bhimrao	09
13	Patil Trupti Tanaji	08
14	Pawar Aniket Anil	Ab
15	Rajput Nilesh Mansing	08
16	Sayyad Yasmeen Ismail	Ab
17	Shirke Abhishek Chandrakant	10
18	Singh Varsha	10
19	Sutar Akshata Parsharam	09
20	Patil Rutuja Rajendra	10
21	Patil Pooja Ravindra	06
22	Ekal pooja Suresh	08
23	Chougule Aruna Dhondiba	10
24	Patil Snehal Sarjerao	10
25	Amate Supriya	07
26	Sanap Pooja	06

Head,
Department of Zoology
Vivekanand College,
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॥ ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार ॥
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's 48345
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

09/10

Signature of Supervisor

Suppliment No. :

Roll No. : 8760

Class : B.Sc. III

Subject :

Test / Tutorial No. :

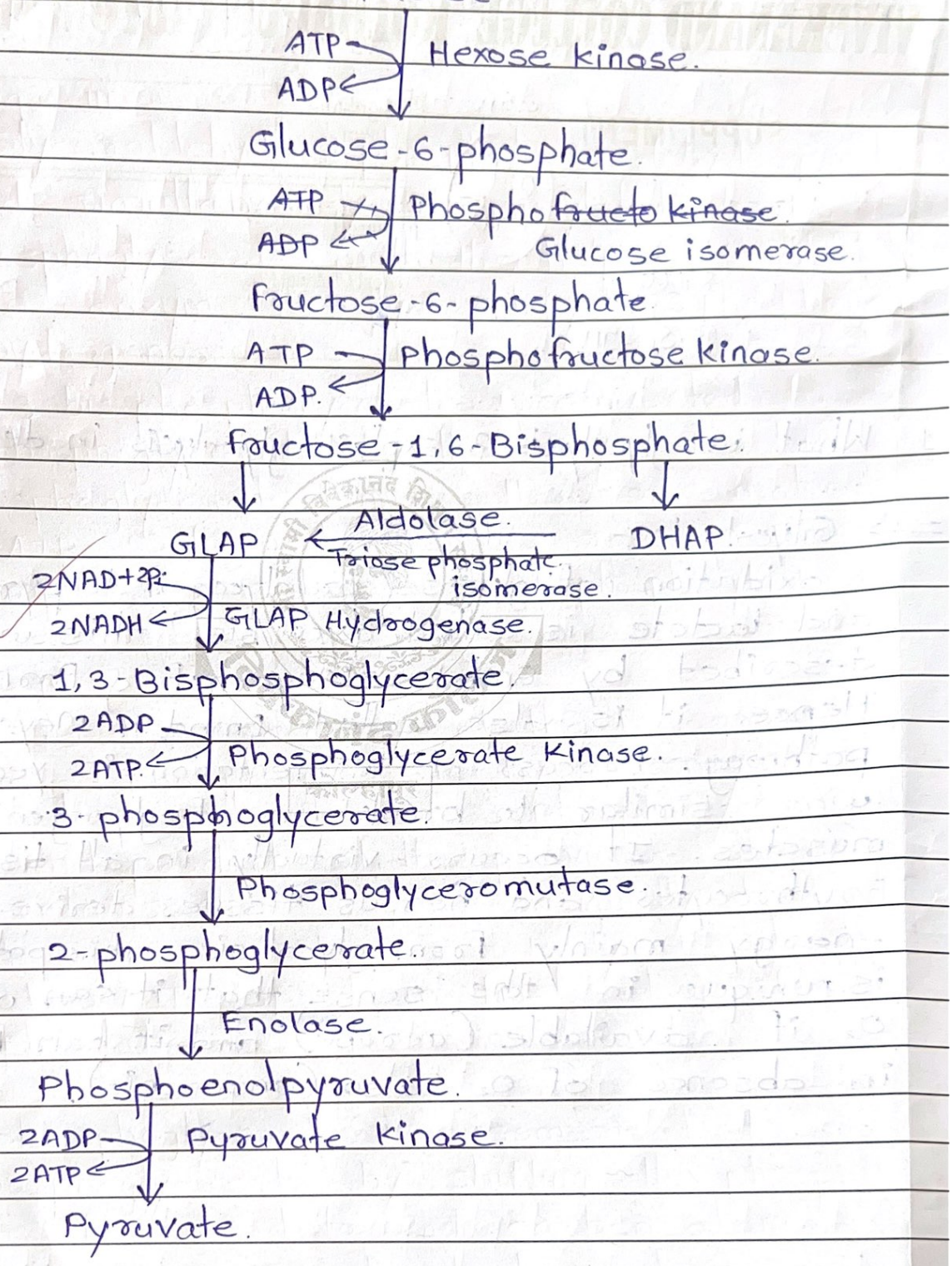
Div. :

3.1. What is glycolysis ? Explain glycolysis in detail.

⟹ Glycolysis :-

oxidation of glucose or glycogen to pyruvate and lactate is called glycolysis. this was described by Embden, Meyerhof & Parnas. Hence, it is also called Embden Meyerhof pathway. Process of fermentation in yeast cells was similar to breakdown of glycogen in muscles. It occurs virtually in all tissues. Erythrocytes and nerous tissues derive its energy mainly from glycolysis. this pathway is unique in the sense that it can utilise O_2 if available (aerobic) and it can function in absence of O_2 also (anaerobic).

* steps of glycolysis pathway :-



→ stage-I

This is a preparatory stage. Before the glucose molecule can be split, the glucose molecule is converted to almost fructose 1,6 biphosphate by donation of $2PO_4$ groups from ATP.

1). First glucose is phosphorylated to glucose-6-phosphate: the enzyme is hexokinase, which splits ATP into ADP and the Pi is added on to the glucose. the energy released by hydrolysis of ATP is utilised for the forward reaction. Hexokinase is the key glycolytic enzyme and the reaction is irreversible.

2). Glucose-6-phosphate is isomerised to fructose-6-phosphate by phosphohexose isomerase.

3). Fructose-6-phosphate is further phosphorylated to fructose 1,6-biphosphate. The enzyme is phosphofructokinase, it is an important key enzyme and the reaction is irreversible.

→ stage II

splitting of fructose-1,6-biphosphate into two molecules of triose-phosphates, an aldotriose glyceraldehyde-3-phosphate and one ketotriose, Dihydroxy acetone-phosphate.

4). Fructose-1,6-biphosphate is cleaved into two 3 carbon atoms; one glyceraldehyde-3-phosphate (GLAP) and another molecule of dihydroxyacetone phosphate (DHAP). The enzyme

is aldolase. Dihydroxyacetone phosphate is isomerised to glyceraldehyde-3-phosphate by the enzyme phosphotriose isomerase.

→ stage III

5). Glyceraldehyde-3-phosphate is dehydrogenated and simultaneously phosphorylated to 1,3-bis-phosphoglycerate with the help of NAD^+. the enzyme is glyceraldehyde-3-phosphate dehydrogenase.

6). 1,3-bis-phosphoglycerate is converted to 3-phosphoglycerate by the enzyme 1,3-bis phosphoglycerate kinase. Here one molecule of ATP is formed and this reaction is an example for substrate level phosphorylation.

→ stage-IV

It is the recovery of the PO_4 group from 3-phosphoglycerate. by the enzyme The two molecules of 3-phosphoglycerate, the end product of the previous stage, still retains the PO_4 group originally derived from ATP in stage I. Body wants back the two ATP spent in first stage for two phosphorylation.

7). 3phosphoglycerate is isomerised to 2-phosphoglycerate by shifting the phosphate groups from 3rd to 2nd carbon atom. The enzyme is phosphoglucomutase.

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8). ~~2-phosphoglycerate is isomerised to 2-phospho-~~

8). 2-phosphoglycerate is converted to phosphoenol pyruvate by the enzyme enolase. one water molecule is removed. A high energy phosphate bond is produced. This enzyme requires Mg^{++} and inhibited by fluoride.

9). Phosphoenol pyruvate is dephosphorylated to pyruvate, by pyruvate kinase. one molecule of ATP is generated. This step is irreversible.

10). In anaerobic condition pyruvate is reduced to lactate by lactate dehydrogenase. In anaero-bic conditions pyruvate enters citric acid cycle for complete oxidation. the lactate from anaerobic cycle enters cori's cycle.

* Energy yield per glucose molecule oxidation.

stage-I

1) Hexokinase/Glucokinase reaction (for phosphorylation). -1 ATP

2) Phosphofructo kinase-1 (for phosphorylation). -1 ATP.

stage-III

3) Glyceraldehyde-3-p dehydrogenase. (oxidation of 2NADH). +6 ATP

4) Phosphoglycerate kinase (substrate level phosphorylation). +2 ATP

stage-IV

5) Pyruvate kinase (substrate level phosphorylation) +2 ATP

Net gain = 10 - 2
= 8 ATP