Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Microbial Physiology and Metabolism
Subject Code: 4SC03MPM1 **Branch: B.Sc. (Microbiology)**
Semester: 3 **Date: 25/03/2019** **Time: 02:30 To 05:30** **Marks: 70**

Instructions:
(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) Define symport.
b) Define diffusion.
c) Define catabolism.
d) Name of the end products of the light reaction of photosynthesis.
e) Define fermentation.
f) The mechanism of passive diffusion requires metabolic energy. True/False
g) Anoxygenic photosynthesis bacteria oxidize ammonia. True/False
h) ED pathway is found only in anaerobic prokaryotes. True/False
i) TCA cycle functions in amphibolic reaction True/False
j) All the bacteria including E.coli take part in nitrogen fixation. True/False
k) Nitrogen fixation is a process that requires…….
l) Incorporation of atmospheric N_2 to NH_4^+ occurs via the process of…..
m) In aerobic respiration, the terminal electron acceptor is…….
n) In a passive diffusion, solute molecule cross the membrane……

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

a) Discuss the various phase of microbial growth with the aid of diagram. **(7)**
b) Explain how microbes are divided in to groups based on their nutritional requirement. **(7)**

Q-3 **Attempt all questions** **(14)**

a) Differentiate between the following **(7)**
1) Chemostat and Turbidostat
2)Linear and Branched fermentation pathway
b) What is diauxic growth curve? Who coined the term? Explain the mechanism behind the process. **(7)**

Q-4 **Attempt all questions** **(14)**

a) Classify the microorganism based on their p^H requirements. How does variation in p^H affect microorganism? **(7)**
b) "Microbes face difficulty in iron transport". How do they overcome this problem? **(7)**

Q-5		**Attempt all questions**	**(14)**
	a)	What is specific growth rate and generation time? Derive a relationship between them.	**(7)**
	b)	What are the various way of transport of nutrient through the membrane in microbes? Explain their mechanism.	**(7)**
Q-6		**Attempt all questions**	**(14)**
	a)	What is phosphorylation? Which are the main ATP generating pathways in microbes? Explain their mechanisms.	**(7)**
	b)	Write an essay on biological nitrogen fixation.	**(7)**
Q-7		**Attempt all questions**	**(14)**
	a)	Discuss in detail lactate fermentation with the help of glycolysis pathways.	**(7)**
	b)	Describe the light reactions in an oxygenic photosynthesis.	**(7)**
Q-8		**Attempt all questions**	**(14)**
	a)	What is methylotrophy? Discuss the metabolism of methylotrophs.	**(7)**
	b)	Discuss the pentose phosphate pathway.	**(7)**