Seat No. : _____

MC-119

March-2019

B.Sc., Sem.-V

302 : Microbiology
(Bacterial Metabolism)

Time : 2:30 Hours] **[Max. Marks : 70**

Instructions : (1) **All** questions are compulsory and carries equal marks.
(2) Mention correct question number against the answer.

1. (A) Explain the feedback mechanisms operative in regulation of biosynthetic pathways. **14**

OR

(i) Describe electron transport chain in heterotrophs. Explain role of its components. **7**

(ii) Write a note on anaerobic respiration. **7**

(B) Answer in one or **two** lines : (Any **four**) **4**

(i) Define Vmax.

(ii) What is precursor activation ?

(iii) Write an example of energy rich thioester bond.

(iv) Write one reaction of substrate level phosphorylation.

(v) Define proton motive force.

(vi) Define fermentation.

2. (A) Explain pentose phosphate pathway and write its significance. **14**

OR

(i) Describe catabolism of fatty acids through β-oxidation. **7**

(ii) Explain stickland reaction and write its significance. **7**

(B) Answer in **one** or **two** lines : (Any **four**) **4**

(i) Draw structural formula of glucose.

(ii) Write ATP yield by glycolysis under aerobic condition,

(iii) Name the chemoheterotroph that catabolize glucose via ED pathway,

(iv) Write two major functions of tricarboxylic acid cycle.

(v) Name two unique enzymes of glyoxalate bypass,

(vi) Write an example of transamination reaction.

3. (A) Explain nitrification and mechanism ATP generation in nitrifying bacteria. **14**

OR

(i) Explain role of cyclic photophosphorylation in ATP generation. **7**

(ii) Explain biochemical steps involved in reductive TCA cycle. Write its significance. **7**

(B) Answer in **one** or **two** lines : (Any **three**) **3**

(i) Which bacterium is responsible for acid mine drainage ?

(ii) What is reverse electron transport chain ?

(iii) Write full name of NADP.

(iv) What are antenna pigments ?

(v) What are carboxysomes ?

4. (A) Explain anaplerotic reactions Write their role in biosynthesis. **14**

OR

(i) Explain assimilation of molecular nitrogen. And write its importance. **7**

(ii) Describe use of radioisotopes and pulse labelling techniques in elucidation of biosynthetic pathways. **7**

(B) Answer in **one** or **two** lines : (Any **three**) **3**

(i) What is the function of enzyme nitrogenase complex ?

(ii) Name the initiator tRNA for protein synthesis in prokaryotes.

(iii) What is a fatty acid ?

(iv) What is bactoprenol ?

(v) What is transpeptidation ?