AS–1418

B.Sc. Part—II (Semester—III) Examination

INDUSTRIAL MICROBIOLOGY

(Industrial Fermentation, Metabolism and Bio-Instrumentation)

Time : Three Hours] [Maximum Marks : 80

Note :—(1) **All** questions are compulsory.

(2) Draw well labelled diagram wherever necessary.

1. (A) Fill in the blanks :

(i) Hops are used as fermentation medium components in production of _____.

(ii) Hexokinase enzyme adds _____ group to hexose sugars.

(iii) Production of Fungal amylase using wheat bran utilizes _____ species.

(iv) Vitamin B_2 is also known as _____. 2

(B) Choose correct alternative :

(i) Method used for concentration of product is :

(a) Evaporation (b) Formulation

(c) Filtration (d) Distillation

(ii) Another name of Kreb cycle is :

(a) TCA (b) ETC

(c) EMP (d) ED

(iii) Bacterial amylase is an example of :

(a) Vitamin (b) Enzyme

(c) Coenzyme (d) Apoenzyme

(iv) Glucose metabolism release energy as :

(a) ATP (b) ADP

(c) AMP (d) GTP 2

(C) Answer the following in **one** sentence :

(i) Metabolism.

(ii) What is biofertilizer ?

(iii) Dehydrogenase.

(iv) Define fermentation. 4

2. (a) Explain in brief classification of enzyme. 4
   (b) What is an oxidative phosphorylation ? Explain in brief. 4
   (c) Give diagrammatic sketch of Krebs cycle reactions. 4

OR

   (d) Define – Isoenzymes and allosteric enzyme. 4
   (e) Give the diagrammatic sketch of EMP pathway reactions. 4
   (f) Discuss in brief Enzyme Commission Number. 4

3. (a) Describe in detail Fungal biomass production. 4
   (b) What is insecticide ? Explain in brief bacterial insecticide. 4
   (c) Define Biofertilizer. Explain in detail production of biofertilizer. 4

OR

   (d) Explain in detail Fungal insecticide. 4
   (e) Describe the role of yeast in biomass production. 4
   (f) Describe in detail mycorrhizal biofertilizer. 4

4. Describe in detail alcohol fermentation from waste sulphite liquor. 12

OR

   Describe in detail industrial production of wine. Add a note on its composition. 12

5. (a) Explain in detail solid and liquid separation by different methods. 4
   (b) What is Formulation ? Explain in detail process of formulation. 4
   (c) Explain the process of pretreatment for fermented product. 4

OR

   (d) Describe in detail concentration of fermented product. 4
   (e) How will you purify the fermented product ? 4
   (f) Explain the process of sedimentation for fermented product. 4

6. Describe in detail industrial production of penicillin and give its application. 12

OR

   Explain in detail industrial production of Hepatitis Vaccine. 12

7. (a) State the principle of paper chromatography. Explain in detail paper chromatography. 4
   (b) Explain in detail applications of radioactive isotopes. 4
   (c) Describe the principle, working and applications of gel electrophoresis. 4

OR

   (d) State Beer Lambert's Law. Explain working and applications of UV-Visible spectrophotometers. 4
   (e) Explain in detail paper electrophoresis. 4
   (f) Explain in detail thin layer chromatography. 4