**3 (Sem–6/CBCS) BOT HC 1**

**2023**

**BOTANY**

( Honours Core )

Paper : BOT–HC–6016

***( Plant Metabolism )***

*Full Marks : 60*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. Answer the following questions : 1×7=7

   *(a)* How many ATPs are consumed for synthesis of one hexose sugar in C3 cycle ?

   *(b)* Name the cellular organelle where ATP synthetase works.

   *(c)* MAP kinase are _____ proteins.
   *(Fill in the blank)*

   *(d)* Write *two* roles of uncouplers.

(e) Metallic part of an enzyme is called _____. *(Fill in the blank)*

(f) Name *one* enzyme responsible for transamination reaction.

(g) What is the cellular location of glycolysis ?

2. Answer the following questions in brief : 2×4=8

(a) Discuss briefly about Bayer's conformational model on ATP synthesis.

(b) Distinguish between co-enzyme and co-factors.

(c) Discuss briefly about the process of transamination.

(d) What are the classes of enzymes according to the recent classification of IUB ?

3. Write brief answer on ***any three*** of the following : 5×3=15

(a) Elucidate the role of temperature and $CO_2$ : $O_2$ ratio during photosynthetic $CO_2$ fixation.

(c) Describe the process of gluconeogenesis and its role in mobilisation of lipids during seed germination. What is α-oxidation? 7+3=10

(d) Elucidate with proper diagram the biosynthesis of ATP and $NAOPH_2$ involving PS-I and PS-II. What is the role of metalloproteins in photolysis of water? 7+3=10

(e) With proper representation of chemical reactions describe the TCA cycle. Discuss the energy balance of the process. 7+3=10

(f) Give a detailed account on synthesis and degradation of starch in plant body. 5+5=10