This question paper contains **3** printed pages]

Roll No. | | | | | | | | | | |

S. No. of Question Paper : **5684**

Unique Paper Code : **2493012004**

Name of the Paper : **Biochemical Mechanisms and Responses in Plants**

Name of the Course : **B.Sc. (Hons.) Biochemistry (NEP)**

Semester : **IV**

Duration : **2 Hours** Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are *six* questions.

Attempt any *four* questions.

All questions carry equal marks.

Question No. **1** is compulsory.

1. (*a*) Indicate whether True *or* False with appropriate justification (any *six*) :

(*i*) Meristem cultures are infected with viruses.

(*ii*) Plant respiration is completely inhibited by cyanide and azide.

(*iii*) Low fluence responses are non-photoreversible.

(*iv*) Migration of bacteria towards roots of the host plant is a chemotactic response.

(*v*) In plants, the control of glycolysis comes from the "bottom up".

(*vi*) Atmospheric nitrogen is directly accessible to the living organisms.

(*vii*) Stomata remain closed during daytime in CAM plants.

P.T.O.

(*b*) Discuss the contribution of the following scientists :

(*i*) Robert Hill

(*ii*) Guha and Maheshwari

(*iii*) Hatch and Slack. 12,3

2. Differentiate between the following :

(*a*) Form I and Form II of RUBISCO

(*b*) Primary and secondary cell wall

(*c*) C_3 and C_4 plants

(*d*) Nitrite and Nitrate reductase

(*e*) NADP-Malic and NAD-Malic enzyme pathway. 15

3. (*a*) Give a brief account of the biological role of the following plant hormones :

(*i*) Auxin

(*ii*) Gibberellin

(*iii*) Ethylene.

(*b*) Write down a short note on cereal seed storage proteins. 9,6

4. (*a*) Elaborate the steps involved in formation of symbiotic relationship between *Rhizobium* and legume plant.

(*b*) Explain how RubisCO is regulated by Mg^{2+}, activase and CO_2.

(*c*) Differentiate between hydrolysable and condensed Tannins. Maintain plant sources of tannins and also their biological roles. 6,4,5

5. (*a*) Photorespiration is a wasteful process. Explain.

(*b*) What are the different classes of Alkaloids ? Provide *one* example of alkaloid having the following activity :

(*i*) Antimalarial

(*ii*) Analgesic

(*iii*) Anticancer.

(*c*) Under what conditions these alternative pathways become active in plants ? Explain the mechanism of plant respiration adopted by plants growing under water-logged condition. 5,6,4

6. Write short notes on the following :

(*a*) Protoplast culture

(*b*) Cell suspension

(*c*) Somatic embryogenesis. 5,5,5