BEL 312: Carbohydrates and Lipids in Biotechnology (2-1-0)
Major Test , Second Semester 2006 – 07

Max. Marks: 40 **Time: Two hours**

1. Write down the chemical structures of the following polysaccharides indicating the monosaccharide units and chemical bonds involved: Also briefly illustrate their industrial application(s)

   (a) Dextran (b) Alginate (c) Xanthan

   (6)

2. Distinguish between the structural features of food storage polysaccharides and fibrous polysaccharides illustrating with suitable examples.

   (4)

3. Briefly discuss the role of oligosaccharides as functional foods. Illustrate the role of enzymes in the production of such oligosaccharides.

   (6)

4. Give examples of the following classes of lipids indicating their chemical structure(s) and biological functions:

   (a) Phosphatidyl Choline (b) Prostaglandin (c) Steroid hormone

   (6)

5. Discuss the role of (a) domains, (b) cholesterol and (c) protein – lipid interactions in defining the fluidity of biological membranes.

   (6)

6. Outline the bioprocess technology for the production of microbial lipid indicating associated microbial culture, medium composition, operational parameters, yield and productivity.

   (4)

7. Write brief notes on:

   (a) Role of micelles in biology (3)
   (b) Bioprocess strategy for the synthesis of a MLM type lipid (3)
   (c) Enzymes associated with the hydrolysis of cellulose to glucose (2)
