1. Answer the following questions: \(3 \times 2\)
   (a) Which enzyme regulates de novo cholesterol synthesis? Name the class of drugs which competitively inhibit this enzyme.
   (b) Which is the largest and the smallest of the lipoprotein family?
   (c) What is the structural difference between
       (i) cis- and trans-fatty acids
       (ii) saturated and unsaturated fatty acids?

   Or

2. (a) What are ketone bodies? Where are they formed? Explain the reactions leading to their formation. \(1 + \frac{1}{2} + 3\)
   (b) What is alpha oxidation?
   (c) The class of lipoproteins that is beneficial to atherosclerosis is;
       (A) Low density of lipoproteins
       (B) Very low density lipoproteins
       (C) High density lipoproteins
       (D) Chylomicrons.

3. (a) Explain the role of carnitine in fatty acid transport. \(2\)
   (b) What is the cellular carrier of the carboxyl group during fatty acid biosynthesis? \(1\)
   (c) How many cycles of oxidation are required to oxidize stearic acid to Acetyl CoA? \(1\)
   (d) If phosphatidic acid is the group common to the phospholipids, what is the equivalent group common to the sphingolipids? \(1\)
   (e) How are the ketone bodies utilized in the body? \(1\frac{1}{2}\)

   Or

4. (a) How Mevalonate is formed from Acetyl CoA during cholesterol synthesis? \(2\)

   [Turn Over]
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(b) Explain the role of HDL in formation of IDL from VLDL.  
(c) Write short notes on Mixed Hyperlipemia.  

5. (a) How glycogen synthesis is initiated?  
(b) How glycolysis in muscle is regulated by PFK?  
(c) Name one metabolite which is neither an intermediate in glycolysis nor gluconeogenesis but controls both the reactions. 

Outline the controls of both metabolic reactions by the above metabolite.  

Or

6. (a) (i) A steady supply of NADPH is necessary for maintaining the integrity of R.B.C. Justify.  
(ii) Are NADPH and NADH metabolically interchangeable?  
(b) How TCA cycle is regulated in eukaryote?  
(c) What are the advantages of formation of multi-enzyme complexes? Discuss in the light of PDH multi-enzyme complex mentioning all the enzymes present in the assembly.