

(3 hours)

Total Marks: 70

N.B.: All questions are compulsory

1. Answer the following

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| a) Draw the structure of GMP | 1 |
| b) Enlist the components of ETC | 1 |
| c) Name the shuttle which transports reducing equivalent from cytosol to mitochondrial matrix | 1 |
| d) Give the net ATP yield after oxidation of palmitic acid | 1 |
| e) Name the stop codon | 1 |
| f) Name two drugs which inhibits HMG CoA reductase | 2 |
| g) Give two roles of Pentose phosphate pathway | 2 |
| h) Name two drugs inhibiting protein synthesis | 2 |
| i) Calculate total ATPs formed when two molecules of acetyl CoA are consumed in TCA cycle | 2 |
| j) Name two drugs inhibiting DNA replication | 2 |
| | |
| 2. a) Give the names and structures of the substrate and product for the following enzymatic reactions (any 2) | 4 |
| i) pyruvate dehydrogenase complex | |
| ii) Xanthine oxidase | |
| iii) β - Ketoacyl ACP reductase | |
| b) Write structures of given substrate and product with name of the enzyme catalysing the reaction (any 2) | 4 |
| i) oxaloacetate to phosphoenolpyruvate | |
| ii) adenylosuccinate to AMP | |
| iii) Acetoacetyl CoA to HMG CoA | |
| c) Draw schematic representation of DNA replication in prokaryotic cell | 3 |
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| 3. a) Describe <i>de novo</i> synthesis of CTP | 4 |
| b) Discuss post transcriptional modification in eukaryotes | 4 |
| c) Give the significance of telomeres and telomerase inhibitors | 3 |
| | |
| 4. a) Distinguish between oxidative and substrate level phosphorylation | 4 |
| b) Differentiate between prokaryotic and eukaryotic translation | 4 |
| c) Explain Sanger dideoxy method for DNA sequencing | 3 |
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| 5. a) Write a note on glycogenolysis | 4 |
| b) Explain the energy generation phase of glycolysis | 4 |
| c) Differentiate biosynthesis and β - oxidation of fatty acid | 3 |
| | |
| 6. a) Write a note on Salvage pathway and give it significance | 3 |
| b) Compare biosynthesis with chemical synthesis of peptides | 3 |
| c) Give steps for synthesis of mevalonate | 3 |
| d) Describe role of proteases and peptidases | 2 |