

Core Course III (CC) Microbial Metabolism

Unit – I

Nutrition and growth of microorganisms: Nutritional types of microorganisms, nutritional requirements. Factors influencing the growth of microorganisms – temperature, pH, Osmotic pressure, moisture, radiations and different chemicals, Physiology of growth – Significance of various phases of growth. Growth measurements – batch, continuous and synchronous.

Unit – II

Bacterial enzymes – classification, properties, coenzymes and cofactors, isozymes.

Unit – III

Metabolism of carbohydrates : Anabolism – phototsynthesis – exygenic – anoxygenic, synthesis of carbohydrate – catabolism of glucose – Embden Mayer – Hoff – Parnas pathway – Pentose pathway, Kreb's cycle (TCA) – electron transport system and ATP production.

Unit – IV

Metabolism of protein – metabolic pathways of nitrogen utilization, synthesis of amino acids, peptides, proteins.

Unit – V

Anaerobic Respiration – Nitrate, sulphate & Methane respiration – Fermentations – alcohol, mixed acid, lactic acid fermentation - Anabolic and catabolic processes of lipids.

Reference:

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- Gerhart, G., (1986). Bacterial Metabolism, Springer Verlag.
- Hall D.C., and Rao K.K. (1995). Phototsynthesis – Cambridge University Press.
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- Mathews C.K., and Holde K.E.V(1996). Biochemistry – The Benjamin/Cummings Publishing company, Inc., New York.
- Murray R.K. Granner M.D., Mayes P.A. and Rodwell V.W (1990) Biochemistry – Prentice Hall International Inc., London.
- Salle,A.J. (1996). Fundamental principles of Bacteriology(7th edition).Tata McGraw-Hill publishing company limited, New Delhi.
- Stryer L.(1995). Biochemistry (4th edn.) W.H.Freeman and company, New York.
- Zubey C.L. Parson W.W., and Vance D.E.(1994) Principles of Biochemistry – Wim.C. Brown Publishers, Oxford, England.