

High Order Thinking Skills (HOTS) Question

Q.1. What are waxes and how they are differ from paraffin waxes ?

Ans. Waxes are the fatty acid esters of long chain monohydric alcohols like cetyl, ceryl or mericyl. However, paraffin wax is obtained from petroleum. Plant waxes occur in cuticle whereas animals have cutaneous glands which are known to secrete wax.

Q. 2. What are the unique features of metabolic pathway ?

Ans. The metabolic pathway has following unique features :

- (i) The interlinked metabolic traffic is very smooth and without a single mishap under healthy conditions.
- (ii) Every chemical reaction of the metabolic pathway is a catalysed reaction.
- (iii) The catalysts which hastens the rate of a given metabolic conversion are proteins. The protein which possess catalytic power are called enzymes.

Q. 3. Describe the role of DNA in the life of an organism.

Ans. Role of DNA in the life of an organism:

- (i) DNA is known as the master molecule of the organism. It is the vehicle of the heredity and store house of all informations required for the growth, differentiation etc.
- (ii) This information in deoxyribose nucleic acid is contained in the form of blue print.
- (iii) It gives message to the cell for duplication and transcription. This message is used for protein synthesis by the cells.

Q. 4. Define and explain the "Living State".

Ans. Living State: The living state is a non-equilibrium steady-state to be able to perform work.

- (i) The living process is a constant effort to prevent falling into equilibrium and is achieved by energy input.
- (ii) The metabolism provides a mechanism for the production of energy.
- (iii) The living state and metabolism are synonymous, without metabolism there cannot exist a living state.
- (iv) A living organism works continuously so it cannot afford to reach equilibrium because a system at equilibrium cannot perform the work.