**UNIT-III**

**ENZYMES, PHOTOSYNTHESIS, METABOLISM & BIOENERGETICS**

1. Which of the following is a non-proteinaceous enzyme?
2. **ribozymes** b) protein c)lipid d)substrates
3. The enzyme which catalyze the reverse of peptide synthesis is

**a) proteases** b) lipases c)hydrolases d)anhydrases

3. The minimum energy required for initiating a chemical reaction is referred as

**a)activation energy** b)catalytic power c)transition state d)acceleration

1. Which of the following is a non proteinaceous compound needed for enzyme activity?
2. **cofactors**  b)enzyme c)harmones d)metal ion
3. Small organic molecules used as cofactors are called

**a)coenzymes**  b)ribozymes c)cofactors d)enzymes

1. Enzymes are

**a)proteins** b)carbohydrate c)RNA d)fats

1. Fat is hydrolyzed by
2. **Lipase** b)trypsin c)pepsin d)amylase
3. Enzymes
4. **Lowers requirement of activation energy**
5. Do not require activation energy
6. Increase requirement of activation energy
7. Do not change requirement of activation energy
8. Enzymes generally have

**a) same pH and temperature optima**

b) same pH but different temperature optima

c)different pH but same temperature optima

d) different pH and different temperature optima

1. The general mechanism is that an enzyme acts by
2. **Reducing the activation energy**
3. Increasing the activation energy

c) decrease the pH

d) increase the pH

1. Blocking of enzyme action by blocking its active site is

**a) competitive inhibition**

b) Allosteric inhibition

c) feedback inhibition

d)non competitive inhibition

1. Enzymes are basically made up of

a)**proteins**  b)fat c)nucleic acids d)vitamins

1. Enzymes are polymers of

a) **Amino acids**

b) Hexose sugar

c) Fatty acids

d) Inorganic phosphate

1. The Conversion of CO2 and H2O into Carbonic acid is catalysed by which one of the following enzymes ?
2. **Carbonic anhydrase**
3. Carboxylase
4. Carbamylase
5. Carbonic deoxygenase
6. The binding of enzyme and substrate on active site is explained through

**a)Lock and key hypothesis**

b) Hide and seek hypothesis

c) Lock and run hypothesis

d) Lock and hide hypothesis

1. Papain is found in

**a) papaya**  b)pepsin c)proteases d)pancreatic amylase

1. The enzyme action depend upon

**a) active site** b)available site c)recognizable site d)detachable site

1. The type of reaction catalyzed by proteases is

**a) hydrolysis** b) stopped flow

c) site-directed mutagenesis d)chymotrypsin

1. The metal required by carbonic anhydrase for activity is
2. **Zinc**  b)magnesium c)manganese d)copper
3. Nucleoside monophosphate kinases function to
4. **transfer the phosphate from NTP to NMP.**
5. transfer the phosphate from NTP to NDP
6. transfer the phosphate from NMP to NDP
7. transfer the phosphate from NTP to water
8. Metal ion catalysis is facilitated by any of several mechanisms, including
9. electrophilic activity, which stabilizes negative charges on an intermediate
10. promoting formation of nucleophiles by affecting adjacent molecules.
11. direct binding to substrate, increasing substrate:enzyme contacts.
12. All of the above
13. Restriction enzymes are

**a)capable of cutting DNA molecule**

b) capable of adding nucleotides to 3’ OH end

c) capable of restricting protein synthesis

d) capable of joining DNA molecules

1. Restriction enzymes capable of making internal cuts in a DNA molecule is called

**a)restriction endonuclease**

b)restriction exonuclease

c)S1 nuclease

d)all the above

1. Restriction enzymes are also called

a)molecular knives b)molecular scissors

c)molecular scalpels d)all the above

1. The sequence recognized by the restriction enzyme to cut DNA is called
2. Recognition siteb) restriction site
3. a only **d)both a and b**
4. The type of restriction enzyme used in rDNA technology is

**a)Type II** b)type I c) Type III d)none of the above

1. Which of the following are required for the activity of typeII restriction enzymes?

**a)Mn2+** b)Cl2+ c)Mg2+ d)Ca2+

1. Enzymes are capable of recognizing and reacting with a special chemical substance called
2. **substrate** b)activator c) co-factor d)co-enzyme
3. The mechanism of enzyme activity is termed as

**a)catalysis** b)hydrolysis c) proteolysis d)all the above

1. A definite charge bearing site of an enzyme on which a chemical substance attaches itself is called
2. **Active site**  b) available site c)catalytic site d)binding site
3. The competitive inhibitor s stop an enzyme from working by

**a) blocking the active site of the enzyme**

b)changing the shape of an enzyme

c)merging with the substrate instead

d)combining with the product of the reaction

1. The enzymes are sensitive to

a)changes in Ph

b)changes in temperatrure

c)**both a and b**

d) none of these

33. Zn +2 is an inorganic activator for enzyme

1. **Carbonic anhydrase b)**Phosphatase

c ) Chymotrypsin d) Maltase

34.\_\_\_\_\_\_\_\_ occurs when the inhibitory chemical, which does not have to resemble the substrate, binds to the enzyme other than at the active site

1. **Non competitive inhibition**
2. Competitive inhibition
3. Uncatalysed reaction
4. All the above

35.The minimum amount of energy required for a process to occur is called

1. **activation energy**
2. minimal energy theory
3. process energy
4. kinetic energy

36.During light phase of photosynthesis \_\_\_\_\_\_ is oxidized and \_\_\_\_\_\_ is reduced.

A. CO2 and Water B. Water and CO2

**C. Water and NADP** D. NADPH2 and CO2

37. During dark phase of photosynthesis \_\_\_\_\_\_ is oxidized and \_\_\_\_\_\_ is reduced

A. CO2 and Water B. Water and CO2

C. Water and NADP **D. NADPH2 and CO2**

38. The visible product of photosynthesis is \_\_\_\_\_\_.

A. Glucose B. Cellulose

**C. Starch** D. Fructose

39. Which is sensitive to longer wavelength of light?

A.  Photolysis **B. PSI**

C. PSII D. Photophosphorylation

40. Calvins cycle involves

A.  Oxidative phosphorylation B. Oxidative carboxylation

C. **Reductive carboxylation D.** Reductive phophorylation

41. In C3 pathway, the first stable compound is

A.  PGAL B. OAA

C. **PGA** D.RUDP

42. The source of  oxygen evolved during photosynthesis is

**A.  H2O** B. CO2

C. chl-a D. Glucose

43. In C4 plants, synthesis of glucose occurs in

A.  Spongy cells B. **Bundle sheath cells**

**C.** Mesophyll cells D. Palisade cells

44. Which one occurs during both cyclic and non-cyclic photophosphorylation

**A.  Formation of ATP** B.Release of O2

C. Formation of NADPH2 D. Involvement of both PSI and PSII

45. Which of the following element is needed for chlorophyll biosynthesis?

A.  Copper **B.** **Magnesium**

C. Calcium  D. Chlorine

46. ATP synthesis during light reaction is

**A.  Photophosphorylation**  B.Photolysis

C. Oxidative phosphorylation D. Phosphorylation

47. The rate of photosynthesis is maximum in

A.  Blue light  B. **Red light**

C.Green light  D. Violet light

48. How many Calvin’s cycle form one glucose molecule

A.  2  **B. 6**

C. 4 D. 8

49. PGA is the first stable compound formed in

**A.  C3 pathway** B.Mesophyll

C. C4 pathway  D. Both (B) and (C)

50. Which of the following connect the primary and secondary processes of photosynthesis?

A.  NADPH2 **B. ATP and NADPH2**

C. ATP D. Ferridoxins

51. C4 cycle was discovered by

A. Hill B. Calvin

**C. Hatch and slack** D.Blackman

52. Calvin cycle occurs in

**A. Chloroplast** B. Cytoplasm

C. Mitochondria D. Glyoxysomes

53. Carbon dioxide is fixed in

A. Light reaction  **B. Dark reaction**

C.Aerobic respiration D. Anaerobic respiration  
54. In pigment system II, active chlorophyll is

**A. P680 B.** P700

C. P673 D. P720

55. Photosynthetic pigments in chloroplast are embedded in membrane of

**A. Thylakoids**  B. Photoglobin

C. Matrix   D. Envelopeof chloroplast

56. Pigment acting as a reaction centre during photosynthesis is

A. Carotene B. Phytochrome

**C. P700** D. Cytochrome

57. The universal energy currency for all cells is

A. ADP **B. ATP**

C. NAD+ D. Enzyme

58. The energy available to do work in a system is called

A. Activation energy **B. Free energy**

C. Enthalpy D. Heat

59. An endergonic reaction

A. Proceeds spontaneously B. Does not require activation energy

C. Overall releases energy **D. Overall requires energy**

60. The [metabolic pathway](https://en.wikipedia.org/wiki/Metabolic_pathway) that converts [glucose](https://en.wikipedia.org/wiki/Glucose) into [pyruvate](https://en.wikipedia.org/wiki/Pyruvate) is called

**A. Glycolysis**  B. Gluconeogenesis

C. Glycogenesis D. Glycogenolysis