Subject : **Botany**
Paper : **Plant Metabolism, Biochemistry, Thermodynamics**
Paper no: **BOT/VI/ CC/ 21**
Semester : **VI**

A. Multiple choice

Tick the correct answer provided in the bracket :-

UNIT : I

1. The function of SSBP's in DNA replication is

   a) To bind the separated strand ( )
   b) To sealed the nick between okazaki fragments ( )
   c) To open the duplex DNA ( )
   d) To synthesis RNA primer ( )

2. The conversion of ammonia into nitrate is called
   a) denitrification ( )
   b) ammonification ( )
   c) nitrification ( )
   d) reductive amination ( )

3. During DNA replication, helicase
   a) adds new nucleotides to the lagging strand ( )
   b) adds new nucleotide to the leading strand ( )
   c) removes super coiling of the helix ( )
   d) unwinds the DNA strand ( )

4. Purine/pyrimidine bases together with pentose sugar form
   a) Nucleotides ( )
   b) Nucleosides ( )
   c) Ribose sugars ( )
   d) Deoxyribose sugars ( )

5. Amylopectin contains
   a) α 1-4 glycosidic bond ( )
   b) β 1,6 glycosidic bond ( )
   c) β 1-4 glycosidic bond ( )
   d) α 1,4 glycosidic and α – 1,6 glycosidic bond ( )

UNIT: II

6. During protein synthesis, the tRNA molecule is acylated with

a) N-formyl methionine ( )
b) N- formyl acetylene ( )
b) Amino acyl synthetase ( )
c) N-formyl aspartate ( )

7. The initiation of polypeptide chain in protein synthesis always require
   a) cysteine ( )
   b) alanine ( )
   c) serine ( )
   d) methionine ( )

8. The non protein part in an enzyme is called
   a) Isoenzyme ( )
   b) Apoenzyme ( )
   c) Allosteric enzyme ( )
   d) Coenzyme ( )

9. The main function of an enzyme is
   a) To bind with the substrate ( )
   b) To lower activation energy ( )
   c) To convert substrate into products ( )
   d) To increase the temperature of the reaction ( )

10. The bond invovled in α-helix structure of proteins are
    a) Peptide bonds and disulphide bonds ( )
    b) peptide bonds only ( )
    c) disulphide bonds and hydrogen bonds ( )
    d) peptide bonds and hydrogen bonds ( )

UNIT – III

11. The hormone which inhibits precocious germination in plants is
    a) IAA
    b) ABA
    c) 2,4-D
    d) NAA

12. Which plant hormone is responsible for mobilizing the endosperm reserves during seed germination
    a) gibberellins
    b) auxins
    c) abscisic acid
    d) cytokinins

13. The first natural cytokinin discovered from the endosperm of maize is
    a) kinetin

b) zeatin
c) BAP
d) NAA

14. Which plant hormone is responsible for the ripening of fruits
    a) auxin
    b) gibberellin
    c) cytokinin
    d) ethylene

15. Which of the following is a precursor for cytokinin biosynthesis
    a) Tryptophan
    b) Methionine
    c) Adenosine monophosphate
    d) Isopentenyl diphosphate

UNIT – IV

16. Non cyclic photophosphorylation results in the production of
    a) NADH ( )
    b) ATP ( )
    c) NADPH ( )
    d) ATP and NADPH ( )

17. Photorespiration usually occurs in
    a) One cell organelle ( )
    b) Two cell organelle ( )
    c) Three cell organelle ( )
    d) Four cell organelle ( )

18. Light is necessary in the process of photosynthesis to
    a) Split carbon dioxide ( )
    b) Produce ATP and a reducing substance ( )
    c) Release energy ( )
    d) Combine carbondioxide and water ( )

19. The photosynthetic pigments are located in
    a) Chloroplast ( )
    b) Grana ( )
    c) Stroma ( )
    d) None of these ( )

20. Name the metal present in chlorophyll ‘a’ and ‘b’
    a) Iron ( )
    b) Copper ( )
    c) Magnesium ( )
    d) Manganese ( )

UNIT – V

21. In thermodynamic system, hot water contained inside an air tight container is an example of –
    a) Isolated System ( )
    b) Closed System ( )
    c) Open System ( )
    d) None of the above ( )

22. Whenever a spontaneous process takes place, it is accompanied by
    a) an increase in the total energy of the universe ( )
    b) an increase in the system only ( )
    c) an increase in the surrounding only ( )
    d) None of the above ( )

23. The amount of heat evolved or absorbed in a reaction at constant pressure is called
    a) Enthalpy ( )
    b) Entropy ( )
    c) Internal energy ( )
    d) Free energy ( )

24. The internal energy of a system minus the amount of energy that cannot be used to perform work is
    a) Enthalpy ( )
    b) Entropy ( )
    c) Internal energy ( )
    d) Free energy ( )

25, The greater the dispersal of the energy or matter in a system,
    a) the lower is its entropy ( )
    b) the lower is its enthalpy ( )
    c) the higher is its entropy ( )
    d) ithe higher is its enthalpy ( )

Fill in the blanks

Unit I

1. The dormant bacteria in the root nodule is called _____
2. An enzyme which synthesis DNA in the lagging strand is_____
3. Many glucose units are joined together by _____bond in cellulose.

Unit II

4. Different variants of the same enzyme having identical functions are called_____
5. Protein synthesis takes place in the _____ of a cell.
6. The enzyme necessary for the formation of peptide bond in protein synthesis is_____

Unit III

7. _____ is a gaseous plant hormone.
8. The hormone responsible for breaking seed dormancy is _____.

9. Plants synthesize auxin from the amino acid _____.

Unit IV

10. _____ is an alternative route for the oxidation of glucose
11. The interior space of the thylakoid is known as _____
12. ATPase transports _____ across a selectively membrane.

Unit V

13. The amount of heat evolved or absorbed in a reaction at constant pressure is called _____
14. The SI unit for internal energy of a system is _____
15. The total of all the possible kinds of energy of a system is called its _____

Key answers :-

Multiple choice questions.

UNIT-I

1. (a) – to bind the separated strand
2. (c)- nitrification
3. (d)- unwinds the DNA strand
4. (b)- nucleosides
5. (d)- α-1,4 glycosidic bond and α-1,6 glycosidic bond

UNIT-II

6. (a)-N formyl methionine
7. (d)-methionine
8. (d)-coenzyme
9. (b)-to lower the activation energy
10. (d)-peptide bonds and hydrogen bonds

UNIT-III

11. b)
12. a)
13. b)
14. d)
15. c)

Unit IV

16. (d) ATP and NADPH
17. (c) Three cell organelle
18. (b) Produce ATP and a reducing substance
19. (b) Grana

20. (c) Magnesium

Unit V

21. ii) Closed System
22. i) an increase in the total energy of the universe
23. i) Enthalpy
24. iv) Free energy
25. iii) the higher is its entropy

Fill in the Blanks

UNIT-I

1. Bacteroids
2. DNA polymerase III
3. B-1,4 glycosidic bond

UNIT-II

4. Isoenzymes
5. Cytoplasm
6. Peptidyl transferase

UNIT-III

7. Ethylene
8. Gibberellin/ Gibberellic acid
9. Tryptophan

UNIT-IV

10. Pentose phosphate pathway
11. Lumen
12. Protons

UNIT-V

13. Enthalpy or Enthalpy change
14. Joule (J).
15. *internal Energy*