Msc Botany

Semester III Internal II

Question bank paper II : Carbon assimilation and crop productivity

I.Multiple choice questions

1. The major transport form of carbohydrates in plants is

a) Glucose

b) Fructose

c) Sucrose

d) Starch

Answer: c

2. Source–sink relationship mainly refers to

a) Photosynthesis and respiration

b) Transpiration and absorption

c) Transport of assimilates

d) Mineral uptake

Answer: c

3. Which tissue is mainly involved in translocation of photosynthates?

a) Xylem

b) Cambium

c) Cortex

d) Phloem

Answer: d

4. Starch is synthesized in plants in

a) Cytoplasm

b) Mitochondria

c) Chloroplast

d) Nucleu

Answer: c

5. The primary enzyme involved in starch synthesis is

a) Amylase

b) Invertase

c) ADP-glucose pyrophosphorylase

d) Phosphorylase

Answer: c

6. Starch is a polymer of

a) Fructose

b) Sucrose

c) Cellulose

d) Glucose

Answer: d

7. Amylose is composed of

a) Branched chains

b) Unbranched α-1,4 glucose units

c) β-1,4 glucose units

d) α-1,6 glucose units

Answer: b

8. Amylopectin differs from amylose because it is

a) Smaller

b) Linear

c) Highly branched

d) Water insoluble

Answer: c

9. Cyclodextrins are derived from

a) Cellulose

b) Glycogen

c) Starch

d) Pectin

Answer: c

10. Fructans are polymers of

a) Glucose

b) Galactose

c) Fructose

d) Mannose

Answer: c

11. Plastid genome is generally

a) Linear DNA

b) Circular DNA

c) RNA

d) Single-stranded DNA

Answer: b

12. Plastids are believed to have evolved from

a) Viruses

b) Fungi

c) Cyanobacteria

d) Algae

Answer: c

13. Genes encoding photosynthetic proteins are present in

a) Only nucleus

b) Only plastids

c) Both nucleus and plastids

d) Only mitochondria

Answer: c

14. Rubisco enzyme is involved in

a) Light reaction

b) Respiration

c) Carbon fixation

d) Photorespiration only

Answer: c

15. Regulation of gene expression during chloroplast development is influenced by

a) Temperature

b) Water

c) Hormones

d) Light

Answer: d

16. Light regulates gene expression mainly through

a) Enzymes

b) Ribosomes

c) Photoreceptors

d) Vacuoles

Answer: c

17. Which pigment acts as a photoreceptor for red light?

a) Chlorophyll

b) Carotene

c) Phytochrome

d) Xanthophyll

Answer: c

18. Chloroplast development from proplastids occurs mainly in

a) Roots

b) Shoots

c) Flowers

d) Fruits

Answer: b

19. Plastid proteins encoded by nuclear genes are synthesized in

a) Chloroplast

b) Cytosol

c) Mitochondria

d) Nucleus

Answer: b

20. Import of nuclear-encoded proteins into chloroplast requires

a) RNA

b) ATP only

c) Enzymes only

d) Transit peptides

Answer: d

II. Fill in the blanks

1. Photosynthesis takes place in the organelle called ____.

Answer: Chloroplast

2. The light-harvesting pigment in photosynthesis is ____.

Answer: Chlorophyll

3. The primary product of the light reaction is ____.

Answer: ATP

4. The Calvin cycle occurs in the ____ of the chloroplast.

Answer: Stroma

5. RuBisCOcatalyzes the fixation of ____.

Answer: Carbon dioxide

6. Starch is a polymer of ____ units.

Answer: Glucose

7. The main storage carbohydrate in plants is ____.

Answer: Starch

8. Source–sink relationship influences ____ distribution in plants.

Answer: Assimilate

9. Starch metabolism occurs mainly in ____.

Answer: Plastids

10. Amylose is a ____ chain polymer.

Answer: Linear

11. Amylopectin is a ____ chain polymer.

Answer: Branched

12. Plastids contain their own ____.

Answer: Genome

13. Plastid genome is usually ____ in shape.

Answer: Circular

14. Plastid genes encode proteins involved in ____.

Answer: Photosynthesis

15. Gene expression in chloroplasts is regulated by ____ signals.

Answer: Light

16. During chloroplast development, proplastids differentiate into ____.

Answer: Chloroplasts

17. Photophosphorylation occurs in the ____ membrane.

Answer: Thylakoid

18. Cyclodextrins are derived from ____.

Answer: Starch

19. Fructans are polymers of ____.

Answer: Fructose

20. The regulation of gene expression includes transcription and ____.

Answer: Translation

III.One word answers

1.source sink relationship

2.Photosynthates

3.starch

4.sucrose

5.fructans

6.cyclodextrins

7.plastome

8.Photoregulation

9.Rubisco

10.Amyloplast