

2017 (A)

Time - 2hrs

Full marks -35

The figures in the right-hand margin indicate marks
Answer all questions serially and continuously from
Groups A and B as per instructions and any two
from group-C.

Illustrate your answer with labelled diagrams and
examples wherever necessary.

GROUP-A

Answer all questions.

Q.1. Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5]

- (a) A degenerative process when functional activities of an organism slow down is called ____.
- (i) seismonasty (ii) nutation
(iii) abscission (iv) senescence
- (b) The root nodules seen in the leguminous plants have a red pigment called ____.
- (i) hemoglobin (ii) leghemoglobin
(iii) phycocyanin (iv) chromoplast
- (c) Decomposers are generally ____.
- (i) green plants (ii) phytoplanktons
(iii) insects (iv) microorganisms
- (d) In curd making, ____ is useful in coagulation of milk protein.
- (i) Penicillium (ii) Lactobacillus
(iii) Saccharomyces (iv) Aspergillus
- (e) Kranz anatomy is seen in ____ plants.
- (i) CAM (ii) submerged
(iii) C₃ (iv) C₄

2. Correct the statements of each bit, if required, by changing the underlined word/words only: [1×4 =4]

- (a) When sucrose is dissolved in water, its water potential decreases.
- (b) An unorganized mass of cells formed during tissue culture is called explant.
- (c) In C₄ plants, the first stable product of carbon dioxide fixation in mesophyll cells is 3-PGA.
- (d) Griffith coined the term 'gene' for Mendelian factor.

GROUP-B

Q.3. Write notes on any four of the following, each with 2 to 3 important points : 2×4=8

- (a) Alcoholic fermentation
(b) Hybridization
(c) Viviparous germination
(d) Micropropagation
(e) Law of segregation
(f) Split genes
(g) Ecosystem
(h) Biofertilizers

Q.4. Differentiate between any two of the following, each with 2 to 3 important points : 3×2=6

- (a) Micronutrients and Macronutrients
(b) Cybrid and Hybrid
(c) Parasite and Saprophyte
(d) Phototropism and Geotropism

GROUP-C

Answer any two of the following questions :

6 x 2 = 12

- Q.5. Describe the reaction steps of Krebs cycle.
- Q.6. Discuss the transpirational pull and cohesion-tension theory of ascent of sap.
- Q.7. Give an account of the physiological effects of auxins in plants.
- Q.8. Describe transcription in prokaryotic organisms.

2016 (A)

Time - 2hrs

Full marks -35

Answer all questions serially and continuously from Groups A and B as per instructions and any two from group-C.

Illustrate your answer with labelled diagrams and examples wherever necessary.

GROUP-A

Answer all questions.

Q.1. Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5]

- (a) If a cell is placed in _____ solution, then the solvent enters into the cell by endosmosis.
- (i) hypertonic (ii) isotonic
(iii) hypotonic (iv) isothermic
- (b) Primary consumers are always _____.
- (i) producers (ii) carnivores
(iii) herbivores (iv) omnivores
- (c) The process of physical removal of anthers is called _____.
- (i) emasculation (ii) mass selection
(iii) introduction (iv) mutation
- (d) Yeast and *Acetobacter* are both involved in the production of _____ from carbohydrates.
- (i) penicillin (ii) citrate
(iii) methane (iv) vinegar
- (e) The hormone secreted from the aleurone layer of maize seed during germination is _____.
- (i) florigen (ii) gibberellic acid
(iii) ethylene (iv) abscisic acid

2. Correct the statements of each bit, if required, by changing the underlined word/words only: [1×4=4]

- (a) During cellular respiration, glycolysis takes place in mitochondria.
- (b) The pioneer community in hydrosere is submerged plants.
- (c) In a cross between red and white flowered plants, F₁ hybrids are pink. This is called quantitative dominance.
- (d) Ginger plant is an example of whole plant senescence.

GROUP-B

Q.3. Write notes on any four of the following, each with 2 to 3 important points : 2×4=8

- (a) Symbiotic nitrogen fixation
(b) Respiratory quotient
(c) Adaptations of submerged hydrophytes
(d) Central dogma
(e) *Bacillus thuringiensis*
(f) Thigmonasty
(g) Seed dormancy
(h) Oxidative decarboxylation

Q.4. Differentiate between any two of the following, each with 2 to 3 important points : 3×2=6

- (a) Diffusion and Imbibition
(b) Monohybrid cross and Dihybrid cross
(c) Apoplast and Symplast
(d) Vernalization and Photoperiodism

GROUP-C

Answer any two of the following questions : 6 × 2 = 12

- Q.5. Give an account of C₃ cycle.
Q.6. Describe recombinant DNA technology.
Q.7. Discuss the mechanism of stomatal movement.
Q.8. Describe Griffith's experiments of transformation.

(d) S...

2015 (A)

Time - 2hrs

Full marks -35

Answer all questions serially and continuously from Groups A and B as per instructions and any two from group-C.

Illustrate your answer with labelled diagrams and examples wherever necessary.

GROUP-A

Answer all questions.

Q.1. Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5

- (a) In chlorophyll molecule, _____ is a component.
(i) magnesium (ii) iron
(iii) sulphur (iv) manganese
- (b) When two organisms live with mutual benefit, it is called _____.
(i) symbiosis (ii) parasitism
(iii) autotrophism (iii) saprophytism
- (c) To form a continuous DNA molecule, the enzyme _____ joins Okazaki fragments.
(i) primase (ii) polymerase
(iii) helicase (iv) ligase
- (d) The example of free-living nitrogen fixer is _____.
(i) Rhizobium (ii) Phosphobacteria
(iii) Azotobacter (iv) Escherichia
- (e) In coconut leaves, _____ type of senescence is seen.
(i) simultaneous (ii) sequential
(iii) whole plant (iv) irregular

2. Correct the statements of each bit, if required, by changing the underlined word/words only :

[1×4 =4

- (a) The term 'gene' was coined by de Vries in the year 1909.
- (b) The first stable product of CO₂ fixation in C₃ plants is PEP.
- (c) In ethyl alcohol production, the unicellular fungus, Penicillium is used.
- (d) The movement of leaves of touch-me-not plant induced by touch is called thermonasty.

GROUP-B

Q.3. Write notes on any four of the following, each with 2 to 3 important points : 2×4=8

- (a) Plasmolysis
(b) Transpiration—a necessary evil
(c) Red drop
(d) Decomposers
(e) Quantitative inheritance
(f) tRNA
(g) Secondary treatment of sewage
(h) Seed germination factors

Q.4. Differentiate between any two of the following, each with 2 to 3 important points : 3×2=6

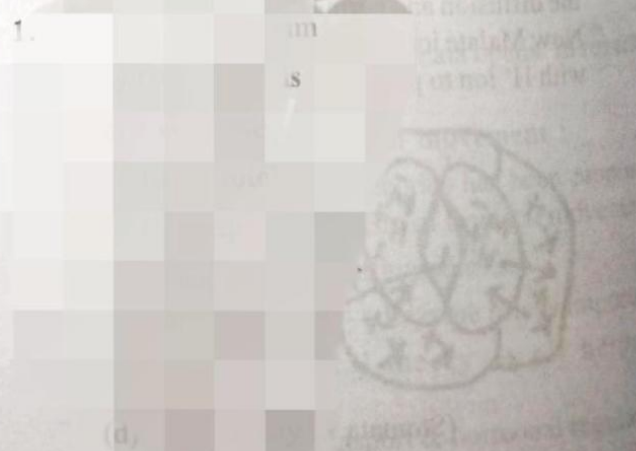
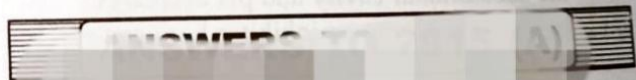
- (a) Diffusion and Imbibition
(b) Food chain and Food web
(c) Phototropism and Geotropism
(d) Hydrosere and Xerosere

GROUP-C

Answer any two of the following questions :

6 x 2 = 12

- Q.5. Give an account of glycolysis.
- Q.6. Describe the process of translation in prokaryotes.
- Q.7. Discuss the cohesion-tension theory of ascent of sap.
- Q.8. Describe the physiological effects of auxin.



2014 (A)

Time - 2hrs

Full marks -35

Answer all questions serially and continuously from Groups A and B as per instructions and any two from group-C.

Illustrate your answer with labelled diagrams and examples wherever necessary.

GROUP-A

Answer all questions.

Q.1. Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5]

- (a) The pressure which develops on the cell wall due to the osmotic entry of water is called _____ pressure.
(i) turgor (ii) wall
(iii) imbibition (iv) diffusion
- (b) The ion _____ is associated with photooxidation of water.
(i) chloride (ii) boron
(iv) molybdenum (iii) copper
- (c) The enzyme which terminally transfers electrons to oxygen in mitochondria is called _____.
(i) NADH dehydrogenase
(ii) cytochrome oxidase
(iii) succinate dehydrogenase
(iv) glucose oxidase
- (d) The first species that establishes itself in a barren habitat due to succession is called _____.
(i) climax (ii) migrant
(iii) colony (iv) pioneer
- (e) Tendrils of climbing plants exhibit _____ type of movement around solid objects.
(i) hydrotropism (ii) geotropism
(iii) thigmotropism (iv) phototropism

2. Correct the statements of each bit, if required, by changing the underlined word/words only : [1×4 =4]

- (a) The requirement of low temperature treatment to accelerate the process of flowering is called photoperiodism.

- (b) The major component of biogas is carbon dioxide.
(c) The initiation codon AUG normally codes for formylated cystine.
(d) Monohybrid cross yields two numbers of genotype.

GROUP-B

Q.3. Write notes on any four of the following, each with 2 to 3 important points : 2×4=8

- (a) Osmotic potential
(b) Ecological pyramids
(c) Ecosystem services
(d) Mendel's principle of dominance
(e) Photorespiration
(f) Emasculation
(g) *Bacillus thuringiensis*
(h) Stratification

Q.4. Differentiate between any two of the following, each with 2 to 3 important points : 3×2=6

- (a) Epigeal germination and Hypogeal germination
(b) Hybrids and Cybrids
(c) Producers and Consumers
(d) Apoplast and Symplast

GROUP-C

Answer any two of the following questions :

6 x 2 = 12

- Q.5. Describe the techniques of recombinant DNA formation.
Q.6. Give an account of Griffith's experiments on transformation.
Q.7. Explain C₃ pathway.
Q.8. Describe the mechanism of stomatal movement.

2013 (A)

Time - 2hrs

Full marks -35

Answer all questions serially and continuously from Groups A and B as per instructions and any two from group-C.

Illustrate your answer with labelled diagrams and examples wherever necessary.

GROUP-A

Answer all questions.

Q.1.(a) Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5]

- (i) The shrinkage of protoplasm when dipped in hypertonic solution is called ____.
(1) diffusion (2) imbibition (3) plasmolysis (4) exosmosis
- (ii) Along with magnesium, compounds of ____ are the important components of middle lamella.
(1) potassium (2) manganese (3) calcium (4) boron
- (iii) The first stable product in C₃ cycle is ____.
(1) PGA (2) PEP (3) OAA (4) RUBP
- (iv) Sunken stomata are seen in ____.
(1) hydrophytes (2) xerophytes
(3) parasites (4) symbionts
- (v) The removal of seed coat to break dormancy is called ____.
(1) scarification (2) stratification
(3) germination (4) inheritance

(b) Correct the statements of each bit, if required, by changing the underlined word/words only: [1×4=4]

- (i) In stationary phase of the sigmoid growth curve, the rate of growth is maximum.
- (ii) Bamboo is a monocarpic plant.
- (iii) An amorphous mass of parenchyma cells developed by tissue culture is called embryo.
- (iv) RNA does not have guanine as nitrogenous base.

GROUP-B

Q.2. Write notes on any four of the following, each with 2 to 3 important points : 2×4=8

- (a) Diffusion pressure deficit
(b) Root pressure theory
(c) Respiratory quotient
(d) Cleistogamy
(e) Phototropism
(f) Abscission
(g) Vivipary
(h) Decomposer

Q.3. Differentiate between any two of the following, each with 2 to 3 important points : 3×2=6

- (a) Food chain and Food web
(b) Tapetum and Endothecium
(c) Backcross and Testcross
(d) Mass selection and Pure line selection

GROUP-C

Answer any two of the following questions : 6 x 2 = 12

- Q.4. Describe the mechanism of germination.
- Q.5. Give an account of the process of transcription in prokaryotes.
- Q.6. Describe the respiratory electron transport system.
- Q.7. Explain Mendel's dihybrid cross with a checkerboard.

2012 (A)

Time - 2hrs

Full marks -35

GROUP-A

Answer all questions.

Q.1.(a) Fill in the blanks choosing the appropriate terms given under each bit : [1×5=5]

- (i) If a living cell is placed in ____ solution, water enters into the cell by osmosis.
(1) isotonic (2) hypertonic (3) hypotonic (4) highly saline
- (ii) The root nodules formed by leguminous plants have a red pigment called ____.
(1) haemoglobin (2) phycocyanin
(3) leghaemoglobin (4) anthocyanin
- (iii) When two organisms live together, helping each other, the association is called ____.
(1) parasitism (2) autoecism
(3) mutualism (4) saprophytism
- (iv) Man is ____.
(1) herbivorous (2) carnivorous
(3) omnivorous (4) producer
- (v) The motile asexual reproductive unit is called ____.
(1) zoospore (2) aplanospore
(3) zygospore (4) microspore

(b) Correct the statements of each bit, if required, by changing the underlined word/words : [1×5=5]

- (i) CCC is the initiation codon.
- (ii) Pasteurization process means complete elimination of organism.
- (iii) In a dichogamous flower, when anther matures earlier than the ovule, the process is called protogyny.
- (iv) Endothecium is the nutritive tissue of microspores in angiosperms.
- (v) RUBISCO has both carboxylase and oxygenase activity.

GROUP-B

Q.2. Write notes on any five of the following, each with 3 to 5 important points : 2×5=10

- (a) Imbibition
(b) Apoplast-symplast
(c) Red drop
(d) Pyramid of energy
(e) Food chain
(f) Multiple allelism
(g) Scarification
(h) Growth curve

GROUP-C

Answer any two questions 7½ x 2 = 15

- Q.3. Describe the C₃ pathway of CO₂ fixation during photosynthesis.
- Q.4. Explain opening and closing of stomata on the basis of potassium ion theory.
- Q.5. Describe Griffith and Avery's experiment on transformation.
- Q.6. Give an account of double fertilization in angiosperms.

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