UG/II/BOT/H/IV/18 (New)

2018

BOTANY

[Honours]

PAPER – IV

Full Marks : 90

Time : 4 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

[NEW SYLLABUS]

GROUP – A

1. Answer any *ten* of the following : 2 × 10

   (*a*) Why is the hydrophilic end of the phospholipids attracted to water ? 2

(*b*) What is CO_2 compensation point ? 2

(*c*) What is VAM ? Give example. 2

(*d*) Distinguish between simple pit and bordered pit. 2

(*e*) What are mushrooms ? Name two edible mushroom studied by you. 2

(*f*) Under what circumstances RQ of plant tissue may become zero and infinity ? 2

(*g*) What is meant by triple responses of ethylene ? 2

(*h*) What is critical day length in flowering ? 2

(*i*) Differentiate between a tracheid and a vessel. 2

(*j*) Name a cyanotoxin and the scientific name of its producer. 2

(*k*) Give the scientific name of a bacteria used for commercial production of amylase. Write one use of amylase. 1 + 1

(*l*) Why is glucose called a reducing sugar ? 2

(*m*) Mention one application for each of penicillin and tetracycline. 2

(*n*) What is Spawn ? Mention one beneficial role of mycorrhizae. 1 + 1

(*o*) What is potable water ? 2

GROUP – B

2. Answer any *five* of the following : 8 × 5

(*a*) What is meant by pasteurization of milk ? Name two bacteria in the milk which survive pasteurization. What information does the phosphatase test reveal about milk ? 2 + 2 + 4

(*b*) Give reasons (answer any *four* questions) : 2 × 4

(*i*) Green sulphur bacteria never produces O_2 during photosynthesis.

(*ii*) Prunning makes the hedge plants dense.

(*iii*) An increase in the CO_2 content of water result in an increase in its hydrogen ion concentration.

(*iv*) At high attitude plants show stunted growth.

(*v*) Apple, a temperate plant when planted in tropical condition fails to produce fruits.

(*vi*) Photosynthesis is called a redox reaction.

(*c*) Define phloem loading and unloading. What are the differences between mass flow and pressure flow hypothesis ? 2 + 2 + 4

(*d*) Distinguish between : 2 × 4

(*i*) Leaf trace and leaf gap

(*ii*) Fascicular and interfascicular cambium

(*iii*) Heartwood and Sap wood

(*iv*) Bast fibre and wood fibre

(*v*) Hydathodes and Lenticels

(*vi*) Haplochelic and syndetochelic stomata.

(*e*) Discuss how the citric acid cycle components provide important biosynthetic intermediates.

Give the significance of the oxidative pentose phosphate pathway. 5 + 3

(*f*) Schematically present the pathway where Rubisco Catalyzes the fixation of O_2. 8

(*g*) Discuss how PSI and PSII co-operate in producing NADPH and ATP in the light reaction of photosynthesis. 8

(*h*) What are natural and synthetic plant growth regulators ? Give examples. Discuss the physiological role of cytokinin in cell division and senescence. 2 + 2 + 4

GROUP – C

3. Answer any *two* of the following : 15 × 2

(*a*) What is Stele ? Describe with neat sketches the different types of stele found in plants. 3+12

(*b*) (*I*) Define the following terms : 2 × 5

(*i*) Rancidity

(*ii*) Epimerization

(*iii*) Mutarotation

(*iv*) Stereoisomerism

(*v*) Optical isomerism.

(*II*) Which hormones are responsible for the following phenomenon : 1 × 5

(*i*) Bolting

(*ii*) Richmond-Lang effect

(*iii*) Apical dominance

(*iv*) Climacteric ripening

(*v*) Parthenocarpy.

(*c*) What is oxidative anabolism ? Which part of the cells are involved in aerobic and anaerobic respiration ? Name two Bacteria other than *E. coli* causing faecal pollution of water. What is presumptive colifrom test ? What do you mean by bacteriostatic, bactericidal and bacteriolytic antibiotic ? What is innate immunity ? Why is this immunity also known as non-specific immunity ?

2 + 2 + 2 + 3 + 3 + 2 + 1

(*d*) Write down the biochemical events of nitrogen fixation in symbiotic plants. What is the role of leghaemoglobin in nitrogen fixation ? What do you mean by nodulin genes ? Briefly write about the role of nitrate reductase in nitrate assimilation. 6 + 3 + 2 + 4
