3 (Sem–3/CBCS) BOT HC 1

2021

(Held in 2022)

BOTANY

(Honours)

Paper : BOT–HC–3016

(Morphology and Anatomy of Angiosperms)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following as directed : 1×7=7

   (a) When the stamens are united by both filaments and anthers to form a compact body, the condition is termed as _____. *(Fill in the blank)*

   (b) The main constituent of cork cell is

   (i) lignin

   (ii) cutin

   (iii) suberin

   (iv) cellulose *(Choose the correct one)*

(c) Custard apple is an example of

(i) etaerio of follicles

(ii) etaerio of berries

(iii) etaerio of drupes

(iv) etaerio of achenes

(Choose the correct one)

(d) What is dendrochronology ?

(e) Name the characteristic inflorescence found in the family Lamiaceae.

(f) Mention the botanical name of a plant where hypanthium is found.

(g) Give definition of laticifers.

2. Explain the following : ***(any four)*** 2×4=8

(a) Characteristic features of primitive stamen

(b) Structure of circinotropous ovule

(c) Heartwood and sapwood

(d) Difference between Tunica-corpus theory and Histogen theory

(e) Cyathium inflorescence

(f) Importance of plant anatomy in forensic investigation

3. Answer ***any three*** of the following : 5×3=15

(a) Give an illustrated account of the morphological nature of the carpel.

(b) Discuss different types of adhesion of stamen with neat diagram. Explain the evolutionary trends in stamen. 3+2=5

(c) Distinguish between protoxylem and metaxylem.

(d) With the help of suitable diagram, write an explanatory note on different types of stomata found in dicot leaves.

(e) Give a brief account of the epidermal tissue system and epidermal outgrowths.

(f) Describe the role of anatomy in classification of plants.

4. Answer the following questions : 10×3=30

(a) What is phyllode theory? Give a detailed account of phyllode theory and explain the significance of the theory. 2+8=10

Or

Give a detailed account of the importance of morphology in classification of angiosperms. 10

(b) What is cambium ? Give an illustrated account of origin, histological structure and function of cambium with the help of diagrammatic sketch.

1+(2+4+2+1)=10

Or

How are meristematic tissues classified on the basis of the position in the plant body ? Give a detailed account of the Korper-Kappe theory of root meristem citing neat and labelled diagram.

6+4=10

(c) How would you differentiate between simple and complex tissues ? Give an illustrated account of complex tissues with the help of suitable labelled diagrams. 2+8=10

Or

Give a comparative account of the anatomy of dorsiventral and isobilateral leaf. Explain the structure and adaptive anatomical features of xerophytic leaves citing neat and labelled diagram.

4+6=10

Total number of printed pages–4

3 (Sem–3/CBCS) BOT HC 2

2021

(Held in 2022)

BOTANY

(Honours)

Paper : BOT–HC–3026

(Economic Botany)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions/Choose the correct one : 1×7=7

   (i) Write the scientific name of the plant from which the 'saffron of commerce' is obtained.

   (ii) Which part of the jute plant is used as fibre ?

   (iii) What do you understand by domestication ?

Contd.

(iv) Clove is obtained from

(a) flower buds

(b) inflorescence

(c) leaf

(d) stem apex

(v) Name a drug yielding plant where drug is obtained from bark.

(vi) What type of soil is suitable for cotton cultivation ?

(vii) 'Fennel' belongs to the family

(a) Apiaceae

(b) Asteraceae

(c) Apocynaceae

(d) Acanthaceae

2. Answer the following questions very briefly : 2×4=8

(i) Write the scientific name of cotton plant. From which part of the plant the cotton fibers are obtained ?

(ii) How does the evolution of new crop/ varieties take place ?

(iii) Mention the importance of legumes to the ecosystem.

(iv) Write the health hazards caused by tobacco.

3. Answer the following questions briefly : ***(any three)*** 5×3=15

(i) Describe the morphology and processing of sugarcane.

(ii) Importance of germplasm diversity.

(iii) Describe briefly the process of milling of rice.

(iv) Write briefly on the origin and uses of chickpea and pigeon pea.

(v) Mention the importance of centres of origin with reference to Vavilov's work.

4. Answer ***any three*** of the following : 10×3=30

(a) Write an essay on the timber yielding plants studied by you. 10

(b) Write the names of two varieties of coffee grown in India. What are the different ways by which Indian coffee is processed ? Describe the method of processing of Arabica coffee. 3+2+5=10

(c) What is 'Orange Fannings' ? Give an account of the steps involved in the processing of tea. 2+8=10

(d) Write a note on the classification of fatty oils. Describe the methods of extraction of fatty oils. Mention the name and uses of two vegetable oil yielding plants. 4+4+2=10

(e) Write the botanical name of rubber plant. Mention the family to which it belongs. What is tapping ? Describe the processing of rubber. Mention various uses of rubber. 1+1+3+3+2=10

(f) What are the habit-forming drugs ? Write briefly about some habit-forming drugs mentioning the scientific names of the plants from which the drugs are obtained. 2+8=10

Total number of printed pages–4

3 (Sem–3/CBCS) BOT HC 3

2021

(Held in 2022)

BOTANY

(Honours)

Paper : BOT–HC–3036

(Genetics)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions as directed : 1×7=7

   (a) Holandric genes on the differential segment of Y-chromosome are inherited only by —

   (i) males

   (ii) females

   (iii) both parents

   (iv) None of the above.

   (Choose the correct answer)

Contd.

(b) Linked genes do not obey Mendel's _____ law. *(Fill in the blank)*

(c) How does expressivity differ from penetrance ?

(d) The change in the sequence and position of genes (position effect) is the result of —

(i) duplication

(ii) translocation

(iii) inversion

(iv) deletion.

(Choose the correct answer)

(e) mtDNA shows —

(i) maternal inheritance

(ii) nuclear inheritance

(iii) paternal inheritance

(iv) None of the above.

(Choose the correct answer)

(f) What do you understand by the word 'Muton' ?

(g) Define autosomes.

2. Answer the following questions briefly : 2×4=8

(a) How can you determine that a pedigree is autosomal dominant ?

(b) State the significance of linkage.

(c) What is allopolyploidy ? Cite example.

(d) Write the full form of EMS and DMS.

3. Answer ***any three*** of the following questions : 5×3=15

(a) What is the difference between incomplete dominance and co-dominance ? Cite examples.

(b) Write a short note on Role of Transposons in Mutation.

(c) 'It is said that inversion suppresses crossing over' — Explain.

(d) Write a short note on Hardy-Weinberg law.

(e) Write briefly on euploidy.

4. Answer the following questions : 10×3=30

(a) What is polygenic inheritance ? Explain with a suitable example. 2+8=10

OR

Explain different types of DNA repair mechanisms. What would be the consequences if DNA repair mechanisms were not there ? 6+4=10

(b) What are sex chromosomes ? Explain sex-linked inheritance with the help of example. 2+8=10

OR

What do you understand by extra-chromosomal inheritance ? Discuss about chloroplast inheritance in Four o'clock plant. 2+8=10

(c) Write a note on the CIB method of detection of mutation. 10

OR

What are chemical mutagens ? Write in brief about base analogues and deamination. 2+8=10