Sem 5 Botany TYBSc NOV 2022

(3 Hours) [Total Marks : 100]

N.B.: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Answer any **Two** of the following:- 20

A) Describe the structure and functions of the nuclear envelope and nucleolus.
B) Give a detailed account of the type of Giant chromosome studied by you.
C) Explain in detail the formation of peptide bonds during elongation of the protein chain.
D) Describe the process of termination of translation in both prokaryotes and eukaryotes.

Q.2 Answer any **Two** of the following:- 20

A) Define Osmosis. State its significance in transport of water in plants.
B) What are the various factors which contribute to water potential? Explain each in detail.
C) Describe the process of phloem loading and unloading.
D) State the significance of any two micronutrients in plants.

Q.3 Answer any **Two** of the following:- 20

A) What is bioremediation? Discuss the factors affecting bioremediation.
B) With respect to phytoremediation explain the following terms
i) Phytoextraction ii) Rhizofiltration
C) What is plant succession? Explain two stages of a Hydrosere. Give examples of at least two plants of each stage.
D) What are the causes of succession? Distinguish between primary and secondary succession.

Q.4 Answer any **Two** of the following:- 20

A) How are Orchids cultivated by micropropagation? Explain.
B) What is protoplast fusion? Explain Chemofusion with an example.
C) What are synthetic seeds? Give the methods of their synthesis by encapsulation.
D) What is suspension culture? How is it used in the production of the secondary metabolite Shikonin?

Q.5 Answer any **Four** of the following:- 20

a) Role of Vacuoles in pH and ionic homeostasis
b) Universality of the genetic code
c) Ecesis
d) Plasmolysis
e) Direct and indirect somatic embryogenesis
f) Factors affecting transpiration

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15/11/2022 Sem 5 TYBSc Botany Nov 20

Time: 3 Hours. **Max.Marks:100**

Instructions: 1.All questions are compulsory.
2. Draw neat and labeled diagram wherever necessary.
3.All questions carry equal marks.
4. Internal choices are indicated.

Q1. Attempt any **two** of the following questions: **(20)**
a) Describe the structure of *Lepidocarpon.*
b) Describe the male reproductive organ of *Lyginopteris* (Crossotheca).
c) Describe the reproductive structures of *Pentoxylon.*
d) Write a detail note on Birbal Sahni Institute of Paleobotany.

Q2. Attempt any **two** of the following questions: **(20)**
a) Give the morphological peculiarities and systematic position of family-Capparidaceae.
b) Give the classification, distinguishing characters, floral formula & any three plants of economic importance of family Graminae.
c) What is adhesion of stamens? Describe the different types citing suitable examples.
d) Give an outline of Bentham & Hooker's system of classification.

Q3. Attempt any **two** of the following questions: **(20)**
a) What is anomalous secondary growth? Describe the same in the stem of Dracena
b) Describe the anomalous secondary growth in the stem of *Salvadora* .
c) Describe any three types of stomata studied by you.
d) What is root-stem transition? Explain any two types.

Q4. Attempt any **two** of the following questions: **(20)**
a) Explain various Exine stratifications in angiospermic pollen.
b) Discuss the role of palynology in coal and oil exploration.
c) Describe NPC system of classification for angiospermic pollen grain.
d) What are the various factors affecting growth of pollen tube?

Q5. Write short notes on any **four of** the following: **(20)**
a) Diagrammatic representation of Secondary growth in *Bignonia* stem
b) Excrescences of pollen grains.
c) Male flower of Cucurbitaceae.
d) Give any two types of aestivation
e) T.S. of Pentoxylon stem
f) Economic importance of Umbelliferae

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Sem 5 BSc Nov 2022

Time: 3Hours **Marks: 100**

Q1 **A.** ATTEMPT ***ANY TWO*** 12

a. Discuss the various component parts of a fermentation process.
b. How would you screen organic acid producers from soil samples?
c. Explain gradient plate technique for the isolation of analogue resistant mutants.
d. Write in detail various key criteria used during preservation of industrial important strains.

Q 1 **B.** DO AS DIRECTED ***ANY EIGHT*** 8

a. State one reason why microorganisms are preferred as a source of enzymes.
b. Give one example of a Secondary metabolite.
c. Give the example of a product obtained using microbial transformation.
d. State True or False: Microbial biomass can be used as a source of protein.
e. Define : Primary Screening.
f. Why is test culture used in an overlay medium during screening for antibiotic producers?
g. Name one method employed for Secondary screening of antibiotic producing isolate.
h. Define : Prototroph.
i. Give one significance of "sandwich technique"
j. Define : Analogue.
k. Give one example of Cryoprotective agent.
l. True or false: Lyophilization process is employed for preservation of Microorganism but not for animal cell culture.

Q 2 **A.** ATTEMPT ***ANY TWO*** 12

a. Discuss the simple and complex fermentation media, their advantages and disadvantages.
b. Briefly explain precursors, inhibitors and inducers used in fermentation media.
c. Discuss the development of inocula for bacterial processes with two examples.
d. Diagrammatically represent Steam Injection Flash Cooling method of sterilization of media.

Q 2 **B.** DO AS DIRECTED ***ANY EIGHT*** 8

a. State one difference between HTM and BSM.
b. Name one antifoam agent.
c. Give one example of starchy raw material.
d. Define: Molasses.
e. State True or false : Culture used for inoculation in fermentation media should be in logarithmic phase to get maximum yield of product.
f. In the inducible enzymes fermentation process, why is an inducer added in the penultimate stage of inoculum development?
g. How would you sterilize vitamin solution?
h. State one advantage of spiral heat exchangers.
i. Give an example of protected fermentation.

j. Give one example of : Material used in depth filter.
k. State true or false : Sterilization of exhaust air is not necessary.
l. Explain the significance of scale-up of fermentation.

Q 3 A. ATTEMPT ***ANY TWO*** 12
a. Explain Continuous Fermentation.
b. Write a note on baffles & Stirrer seals in fermenters.
c. Diagrammatically represent Deep-jet fermenter.
d. How would you measure & control changes in temperature during the fermentation process?

Q 3 B. DO AS DIRECTED ***ANY EIGHT*** 8
a. Define Fed Batch Fermentation.
b. State one advantage of Batch fermentation.
c. Define turbidostat.
d. Give an example of an impeller used in fermenter design.
e. Name one fermenter construction material.
f. Give an example of a Pneumatic fermenter.
g. Define - Sparger.
h. State the application of Photobioreactor.
i. Define the term -Offline sensor.
j. State true or false : Diaphragm gauge is used for measuring Dissolved oxygen.
k. Name the device used for measurement of Carbon dioxide in exit gas.
l. Fill in the blank: _____ in fermentation process is regulated by safety valves.

Q 4 A. ATTEMPT ***ANY TWO*** 12
a. Schematically represent- Wine Production.
b. Explain - Malting process involved in Beer production.
c. Explain the process of Vinegar Production by using Trickling generator.
d. Write a Note on - Fungal Amylase Production By SSF method.

Q 4 B. DO AS DIRECTED ***ANY EIGHT*** 8
a. Define - Lees.
b. True or False - Carbonation is the process of purging of Carbon dioxide into Wine.
c. Define - Must
d. True or False - Hops are dried female flowers of the hop plant - Humulus lupulus.
e. What is the defect 'Chill Haze' in beer?
f. True or False - SWL is given steam stripping to remove Sulfur dioxide.
g. What is the advantage of high acidic pH of the medium used for Alcohol fermentation?
h. Name the Starchy raw material used in fermentation medium for Alcohol production.

i. Give an example of the microorganism involved in aerobic fermentation in Vinegar production.
j. Define - Wine Vinegar.
k. Name the microorganism involved in the production of Baker's Yeast.
l. Give an example of - Microbial producers of β-amylase.

Q 5 ATTEMPT *ANY FOUR* 20

a. Discuss penicillin enrichment technique for isolation of auxotrophic mutants.
b. Enlist methods employed for Preservation of Industrial important strain? Discuss in detail storage under Liquid Nitrogen for the same.
c. Give brief account on: Sulphite Waste Liquor and Acid wood Hydrolysates.
d. Differentiate between : Fixed pore and non fixed pore filters.
e. Write a note on steam traps used in fermenter designs.
f. Diagrammatically represent - measurement & control of foam during fermentation process.
g. Write a note on - Lager & Ale Beer
h. Explain in detail - methods for the production of sparkling wines

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