

B.Sc. Semester III (Honours) Examination, 2018-19**BOTANY****Course ID : 31311****Course Code : SHBOT-301C-5(T)****Course Title: Morphology and Anatomy of Angiosperms****Time: 1 Hour 15 Minutes****Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* of the following: 1×5=5
- (a) What is phyllode?
 - (b) What is gynostemium?
 - (c) Name the type of fruits found in the following plants:
 - (i) *Cucurbita maxima* (Red pumpkin)
 - (ii) *Lycopersicon esculentum* (Tomato)
 - (d) What is Bars of Sanio?
 - (e) What is plasmodesmata?
 - (f) What do you mean by quiescent centre?
 - (g) What is heart wood?
 - (h) Write the function of P-protein.
2. Answer *any two* of the following: 5×2=10
- (a) Describe different types of aestivation with proper diagram and examples of each type.
 - (b) What is phyllotaxy? Describe different types of phyllotaxy with sketches and examples. 2+3=5
 - (c) Describe different type of mechanical tissues found in plants.
 - (d) What is periderm? How does it develop in plants? 2+3=5
3. Answer *any one* of the following: 10×1=10
- (a) What is shoot apex? Describe with sketches different theories regarding the organisation of shoot apex of angiospermic plants. 2+8=10
 - (b) What is secondary growth? Describe with suitable sketches the secondary growth in dicot stem. 2+2+6=10
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*SH-III/Botany/302C-6(T)/19***B.Sc. Semester III (Honours) Examination, 2018-19****BOTANY****Course ID : 31312****Course Code : SHBOT-302C-6(T)**

Course Title: Economic Botany and Pharmacognosy

Time: 1 Hour 15 Minutes**Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer *any five* of the following: 1×5=5
- Name two important active constituents of *Strychnos*.
 - What is the morphological nature of cotton fibre?
 - Mention the useful part of clove.
 - What are the sowing and harvesting seasons of 'Aus' rice?
 - Mention the scientific name of Titapat.
 - State the morphological nature of coconut kernel.
 - Mention the scientific name and family of soybean.
 - Mention two timber yielding plants.
2. Answer *any two* of the following: 5×2=10
- Discuss briefly the cultivation of tea.
 - Mention the extraction procedure of Jute. Give two economic importances of Jute. 3+2=5
 - Give the importance of Legumes. State two examples (Scientific name) of fodder legumes. 3+2=5
 - Briefly describe the scientific name, family and economic importance of 'Saffron'. 1+1+3=5
3. Answer *any one* of the following: 10×1=10
- What is the morphological nature of useful part of sugarcane? Briefly describe the processing of sugar from sugarcane. State its economic importance. 2+6+2=10
 - Give diagnostic features of the roots of *Rauwolfia serpentina*. Mention the active principle and mention their therapeutic uses. 4+4+2=10
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B.Sc. Semester III (Honours) Examination, 2018-19**BOTANY****Course ID : 31313****Course Code : SHBOT-303C-7(T)**

Course Title: Genetics

Time: 1 Hour 15 Minutes**Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* questions from the following: 1×5=5
- (a) 'Linked gene does not follow mendelian inheritance'.—Why?
 - (b) Distinguish between double monosomy and nullisomy.
 - (c) How interference differs from coincidence?
 - (d) What is the function of transposase.
 - (e) State the 'Hardy-Weinberg' principle.
 - (f) What is sex linked trait?
 - (g) Distinguish monocistronic and polycistronic gene.
 - (h) What do you mean by genetic drift?
2. Answer *any two* questions from the following: 5×2=10
- (a) What is codominance? With suitable example, explain dominant epistasis type of gene interaction. 1+4=5
 - (b) What is extra chromosomal inheritance? Explain it with the help of a suitable example. 1+4=5
 - (c) How does UV-ray differ from a base analogue as mutagen? Briefly explain the mechanism of DNA repair by photoreactivation. 2+3=5
 - (d) Explain complete linkage and incomplete linkage with suitable examples.
3. Answer *any one* from the following questions: 10×1=10
- (a) What is translocation heterozygote? Explain the meiotic behaviour of translocation heterozygote with suitable sketches and their consequences. 2+6+2=10
 - (b) Distinguish the basic mechanism of action of ionising and non-ionising radiation in mutation. Describe how intercalating and alkylating agent induce mutation with suitable sketches. 2+4+4=10
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B.Sc. Semester III (Honours) Examination, 2018-19**BOTANY****Course ID : 31314****Course Code : SHBOT-304GE-3(T)****Course Title: Genetics and Plant Breeding****Time: 1 Hour 15 Minutes****Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।

1. Answer the following questions (*any five*): 1×5=5
যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :
- (a) What is Co-dominance? give one example of Co-dominance.
কো-আধিপত্য (Co-dominance) কী? কো-আধিপত্য (Co-dominance)-এর একটি উদাহরণ দাও।
- (b) What is Acclimatization?
Acclimatization কী?
- (c) Name one chemical and one physical mutagen.
একটি রাসায়নিক এবং একটি শারীরিক mutagen-এর নাম লেখো।
- (d) State the significance of interspecific hybridization.
অন্তর্বর্তী সংকরীকরণের ভূমিকা কী?
- (e) Define Mutation breeding.
প্রতিস্থাপন প্রজননের সংজ্ঞা দাও।
- (f) State one similarity between Dominance and Over-dominance.
সার্বভৌমত্ব ও উচ্চতর কর্তৃত্বের মধ্যে একটি সাদৃশ্য দাও।
- (g) What is Paracentric inversion?
প্যারাসেন্ট্রিক বিকৃতি কী?
- (h) Define double monosomy.
দ্বিগুণ মনোসোমির সংজ্ঞা দাও।
2. Answer the following questions (*any two*): 5×2=10
- (a) Write a short note on role of mutation in crop improvement.
ফসলের উন্নতিতে পরিবর্তনের (mutation) ভূমিকা সম্পর্কে একটি সংক্ষিপ্ত টীকা লেখো।
- (b) Discuss different types of aneuploidy with suitable example.
সঠিক উদাহরণসহ বিভিন্ন ধরনের অ্যানুপ্লয়েডি নিয়ে আলোচনা করো।

(c) Differentiate between mass-selection and pure line selection.

ভর এবং বিশুদ্ধ লাইন নির্বাচনের মধ্যে পার্থক্য করো।

(d) Write down the objectives of plant breeding.

উদ্ভিদের প্রজননের গুরুত্বপূর্ণ লক্ষ্যগুলি লেখো।

3. Answer the following question (*any one*):

10×1=10

(a) Discuss the role of tissue culture in crop improvement.

ফসলের উন্নতিতে tissue culture-এর ভূমিকা আলোচনা করো।

(b) What is Law of Dominance? Describe Mendel's monohybrid cross. State the significance of Chi-square test.

Law of Dominance কী? Mendel-এর monohybride cross বর্ণনা করো। Chi-square test-এর ব্যবহার কী?

B.Sc. Semester III (Programme) Examination, 2018-19**BOTANY****Course ID : 31318****Course Code : SPBOT-304C-1C(T)****Course Title: Genetics and Plant Breeding****Time: 1 Hour 15 Minutes****Full Marks: 25***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.**দক্ষিণ প্রান্তস্থ সংখ্যাগুলি প্রশ্নের পূর্ণমানের নির্দেশক।
পরীক্ষার্থীদের যথাসম্ভব নিজের ভাষায় উত্তর দিতে হবে।***1. Answer any five questions:**

1×5=5

যে কোনো পাঁচটি প্রশ্নের উত্তর দাও :

- What is meant by dominant and recessive character?
প্রকট ও প্রচ্ছন্ন বৈশিষ্ট্য বলতে কী বোঝায়?
- What is test cross?
টেস্ট ক্রস কী?
- What is multiple allele? Give example.
মাল্টিপল অ্যালিল কী? উদাহরণ দাও।
- What is the significance of crossing over?
ক্রসিং ওভারের গুরুত্ব কী?
- What is frame shift mutation?
ফ্রেম সিফট মিউটেশন কাকে বলে?
- What is emasculation?
পুং বন্ধ্যাকরণ কী?
- What is hybridisation?
সংকরায়ন কাকে বলে?
- What is clone?
ক্লোন কাকে বলে?

2. Answer any two questions:

5×2=10

যে কোনো দুটি প্রশ্নের উত্তর দাও :

- What is incomplete dominance? Describe with suitable example.
'অসম্পূর্ণ' প্রকটতা কী? উদাহরণ সহযোগে বোঝাও।
- Describe different methods of sex determination in plants with examples.
উদ্ভিদের যৌনতা নির্ধারণের বিভিন্ন পদ্ধতিগুলি উদাহরণ সহযোগে আলোচনা করো।

(c) Write the advantages and disadvantages of self and cross pollination.

স্বপরাগ সংযোগ ও ইতর পরাগ সংযোগের সুবিধা ও অসুবিধাগুলি লেখো।

(d) What is heterosis? Write its applications.

2+3=5

হেটেরোসিস কী? এর ব্যবহারগুলি লেখো।

3. Answer any one question:

10×1=10

যে কোনো একটি প্রশ্নের উত্তর দাও :

(a) Describe Mendel's dihybrid cross. What is the conclusion of this experiment? 8+2=10

মেন্ডেলের দ্বিসংকর জনন পরীক্ষাটি বর্ণনা করো। এর থেকে কী সিদ্ধান্তে উপনীত হওয়া যায়?

(b) What is aneuploidy? Classify aneuploidy. Write the uses of aneuploidy. 2+5+3=10

অ্যানুপ্লয়ডি কাকে বলে? অ্যানুপ্লয়ডির শ্রেণিবিন্যাস করো। এর ব্যবহার লেখো।

B.Sc. Semester III (Honours) Examination, 2018-19

BOTANY

Course ID : 31315

Course Code : SHBOT-305SEC-1(T)

Attempt any one Alternative.

Alternative-I

Course Title: Biofertilizer

Time: 1 Hour

Full Marks: 40

The figures in the margin indicate full marks.

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

Answer any forty from the following questions:

1×40=40

1. Select the odd one with reference to biofertilizers
(a) Bacteria (b) Fungi
(c) Cyanobacteria (d) Viruses
2. Which of the following microbe is most active N₂-fixer in rice field in India?
(a) *Rhizobium* (b) *Rhodospirillum*
(c) *Frankia* (d) *Aulosira*
3. Biofertilizers
(a) increase dependence on chemical fertilizers.
(b) are organisms that enrich the nutrient quality of soil.
(c) include potash, phosphatic and N₂-organic.
(d) are used regularly in the fields to deplete soil nutrients.
4. The paddy fields _____ serve as an important biofertilizers.
(a) *Rhizobium* (b) BGA
(c) *Glomus* (d) *Frankia*
5. Which of the following is not a symbiotic N₂-fixing bacterium?
(a) *Clostridium* (b) *Rhizobium*
(c) *Frankia* (d) *Anabaena*
6. A N₂-fixing microbe associated with *Azolla* in rice fields is
(a) *Frankia* (b) *Tolypothrix*
(c) *Spirulina* (d) *Anabaena*
7. Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition?
(a) *Glomus* (b) *Trichoderma*
(c) *Azotobacter* (d) *Aspergillus*
8. Which one of the following is not a biofertilizer?
(a) Mycorrhiza (b) *Agrobacterium*
(c) *Rhizobium* (d) *Nostoc*

9. An organism used as a biofertilizer for raising soyabean crop is
(a) *Nostoc* (b) *Azotobacter*
(c) *Azospirillum* (d) *Rhizobium*
10. An example of endomycorrhiza is
(a) *Nostoc* (b) *Glomus*
(c) *Agaricus* (d) *Rhizobium*
11. Which of the following material used as carrier to make carrier based inoculants of *Rhizobium*?
(a) Charcoal (b) Paddy straw
(c) Water (d) CaCO_3
12. YEM medium is used to grow
(a) *Nostoc* (b) *Agrobacterium*
(c) *Rhizobium* (d) *Clostridium*
13. Associative N_2 -fixers differ from symbiotic N_2 -fixers
(a) No gene interaction with plant. (b) No morphogenetic changes occur.
(c) Both (a) and (b) is correct (d) Only (b) is correct
14. VAM is
(a) Vesicular-arbuscular mycorrhiza (b) Variable adenine mutation
(c) Variable associative mutualism (d) Vitamins and minerals
15. N_2 -fixation is
(a) Nitrogen to ammonia (b) Nitrogen to nitrates
(c) Nitrogen to amino acid (d) Both (a) and (b)
16. Green manure plants belong to
(a) Compositae (b) Solanaceae
(c) Poaceae (d) Leguminosae
17. Aquatic fern which is an excellent biofertilizer?
(a) *Salvinia* (b) *Azolla*
(c) *Marsilea* (d) *Pteridium*
18. Farmers have reported 50% higher yield of rice by using biofertilizer
(a) *Azolla pinnata* (b) Legume *Rhizobium symbiosis*
(c) Cyanobacteria (d) Mycorrhiza
19. Which one is green manure/biofertilizer?
(a) *Sesbania* (b) Maize
(c) Rice (d) Oat
20. Which are used as green manure?
(a) *Melilotus parvirflora* (b) *Lens esculenta*
(c) *Crotalaria juncea* (d) All of the above

21. An organism which improves phosphorus uptake is
(a) Actinomycete fungi (b) Rhizobium
(c) Azospirillum (d) Azotobacter
22. Vermicompost is biofertilizer rich in
(a) Phosphorus (b) Calcium
(c) Nitrogen (d) All of these
23. pH of vermiculture is kept at
(a) Neutral (b) Alkaline
(c) Acidic (d) Highly alkaline
24. Leguminous plants are able to fix atmospheric N_2 through symbiotic activity. Which is not correct?
(a) Leghaemoglobin scavenges O_2
(b) Nitrogenase is insensitive to O_2
(c) Nodules act as sites for N_2 -fixation
(d) Nitrogenase catalyses the conversion of N_2 to NH_3
25. They help in increasing soil fertility
(a) Pseudomonas and cereals (b) Bacillus and Penicillium
(c) Salvinia and Marsilea (d) *Nostoc* and legumes
26. Which bacteria secrete phosphatase?
(a) *Frankia* (b) *Clostridium*
(c) *Pseudomonas* (d) *Azotobacter*
27. Frankia induced nodulation occur
(a) *Tephrosia purpurea* (b) *Casuarina*
(c) *Sida cordifolia* (d) *Arachis hypogea*
28. The cyanobacteria are isolated on
(a) Fogg's medium (b) YEM
(c) MS medium (d) Nutrient agar medium
29. Okon's medium is used for mass cultivation of
(a) *Azospirillum* (b) *Rhizobium*
(c) *Azotobacter* (d) *Anabaena*
30. CRYEMA test is used for identification of
(a) *Azospirillum* (b) *Anabaena*
(c) *Rhizobium* (d) *Clostridium*
31. Which one is used for carrier base inoculant preparation of *Azospirillum*?
(a) FYM + charcoal (b) $MgSO_4$
(c) $CaCO_3$ (d) Water

32. *Rhizobium* is a
- (a) Gram positive and aerobic (b) Gram negative and anaerobic
(c) Gram negative and aerobic (d) Gram positive and anaerobic
33. Name one slow growing *Rhizobium*
- (a) *Bradyrhizobium* (b) *Azorhizobium*
(c) *Sinorhizobium* (d) *Mesorhizobium*
34. Name one BGA forms symbiotic association with *Azolla*
- (a) *Nostoc punctiforme* (b) *Anabaena azollae*
(c) *Scytonema hofmanni* (d) *Brachytrichia balani*
35. Some of the ectomycorrhizal fungi produce
- (a) GA (b) ABA
(c) IAA (d) BAP
- Which possibly involved in longevity of roots?
36. Vermicomposting is the operation of composting process of organic materials by involving
- (a) earthworms (b) snake
(c) snail (d) insect
37. During vermicomposting the pit is covered by layer of
- (a) Sandy soil (b) Loamy soil
(c) Clay soil (d) Gravel and rocks
38. Which bacterium is isolated from the stem nodule of *sesbania rostrate*?
- (a) *Acetobacter diazotrophicus* (b) *Rhizobium loti*
(c) *Azorhizobium caulinodans* (d) *Azospirillum brasilense*
39. Name one N₂-fixing bacterium associated with sugarcane crop
- (a) *Acetobacter diazotrophicus* (b) *Bradyrhizobium japonicum*
(c) *Azotobacter vinelandii* (d) *Azospirillum brasilense*
40. Which of the following is the main carbohydrate material present in vesicle and hyphal cells?
- (a) Pectin (b) Clutin
(c) Cellulose (d) Chondroitin
41. VAM belongs to family
- (a) Endogonaceae (b) Mortierellaceae
(c) Entomophthoraceae (d) None of these

42. Rhicadhesin is
 (a) Ca binding protein (b) K binding protein
 (c) Mo binding protein (d) Mn binding protein
43. The enzyme involved in N₂-fixation is
 (a) Aldolase (b) Carboxylase
 (c) Fumarase (d) Nitrogenase
44. Which bacterium fixes N₂ in freeliving condition?
 (a) *Klebsiella* (b) *Rhizobium*
 (c) *Azospirillum* (d) *Azorhizobium*
45. Which fungus forms association with plant roots?
 (a) *Glomus* (b) *Mucor*
 (c) *Ascobolus* (d) *Lycoperdon*

Alternative-II

Course Title: Herbal Technology

Time: 1 Hour

Full Marks: 40

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

Answer all the questions:

1×40=40

- Who proved the importance of 'Flora in the world'?
 (a) Sushruta (b) Charaka
 (c) Aristotle (d) Mendel
- What form of herbal medicine is widely practiced in India?
 (a) Western (b) Greek
 (c) Ayurvedic (d) Homoeopathy
- Which part of the ginger plant is used in health and medicinal product?
 (a) Underground stem (b) Seed
 (c) Flower (d) Root
- What does extraction of a plant's volatile liquid materials yield?
 (a) Fat (b) Essential oils
 (c) Powder (d) None of these
- Which Veda deals with various diseases and their treatment?
 (a) Rig Veda (b) Yajur Veda
 (c) Atharva Veda (d) All of these
- Who did various surgical treatment by the help of natural herbs?
 (a) Charaka (b) Sushruta
 (c) Kabir (d) None of these

7. Organoleptic Evaluation means
 - (a) Morphological Evaluation
 - (b) Anatomical Evaluation
 - (c) Biochemical Evaluation
 - (d) Geographical
8. Drug Adulteration means
 - (a) Chemical analysis of drug
 - (b) Quality analysis of drug
 - (c) Practice of substituting original drug
 - (d) None of these
9. One of the condition of 'Drug Adulteration' is
 - (a) Sophistication
 - (b) Evaporation
 - (c) Sublimation
 - (d) None of these
10. Tulsi belongs to the family
 - (a) Acanthaceae
 - (b) Lamiaceae
 - (c) Verbenaceae
 - (d) Solanaceae
11. Useful part of Ashoka is
 - (a) Leaf
 - (b) Stem bark
 - (c) Fruit
 - (d) Flower
12. Which plant is used as an uterine tonic?
 - (a) Ginger
 - (b) Ashoka
 - (c) Tulsi
 - (d) Neem
13. In Physical Evaluation of drug following content can be measured
 - (a) Detection of alkaloid
 - (b) Detection of moisture content
 - (c) Detection of gums
 - (d) All of these
14. Drug Evaluation means
 - (a) Detection of its chemical constituents
 - (b) Determination of its quality and purity
 - (c) Effectiveness of drug to its
 - (d) None of these
15. The process of preparation of crude drug for market after 'Drying' is
 - (a) Garbling
 - (b) Harvesting
 - (c) Packing
 - (d) Drying
16. The use of essential oil of plants to treat a range of disease is called
 - (a) Naturopathy
 - (b) Aromatherapy
 - (c) Homeopathy
 - (d) Ayurvedy
17. The common name of *Withania somnifera* is
 - (a) Nayantara
 - (b) Ashwagandha
 - (c) Vasaka
 - (d) Tulsi
18. The important constituent of *Withania somnifera* as nervous disorder
 - (a) Withanolides
 - (b) Tropine
 - (c) Anaferine
 - (d) All of these

19. *Catharanthus* belongs to the family
(a) Lamiaceae (b) Apocynaceae
(c) Malvaceae (d) Sonahaceae
20. Which active constituent of *catharanthus* have cardioprotective activity?
(a) Vincristine (b) Ajmalieine
(c) Serpentine (d) None of these
21. Depending upon the natural origin drug are following type
(a) 3 (b) 2
(c) 4 (d) 6
22. The term Pharmacognosy was first used by
(a) Seydler (b) Derosne
(c) Berg (d) None of them
23. The study of the action of drug is known as
(a) Pathology (b) Pharmacology
(c) Pharmacognosy (d) None of these
24. The scientific name of Fenugreek is
(a) *Centella asiatica* (b) *Saraca indica*
(c) *Trigonella foenum-graecum* (d) None of these
25. Clerodendron phlomoides is used as
(a) Cardioprotective agent (b) Antirheumatic agent
(c) Memory booster agent (d) Respiratory problem
26. Chemical Evaluation of crude drug means
(a) determining the active constituents in the drug.
(b) determining the moisture content in the drug.
(c) total ash content in the drug.
(d) All of these
27. Following is the one of the biological testing of herbal drug
(a) Hepatoprotective activity (b) Radioimmuno assays
(c) Fluorescence analysis (d) All of these
28. The Literature of 'Siddha System' is mostly in
(a) Bengali (b) Hindi
(c) Tamil (d) Oriya
29. Which is a factor for preservation of drug?
(a) Temperature (b) Radiation
(c) Water (d) Humidity

30. Common fumigant used for storage of crude drug
(a) Sodium urseate (b) Methyl bromide
(c) Calcium urseate (d) Ascerbic Acid
31. Indian Goose-berry is rich in
(a) Vit. A (b) Vit. C
(c) Vit. E (d) Iodine
32. The scientific name of Nayantara is
(a) *Datura metel* (b) *Vitex negundo*
(c) *Catharanthus roseus* (d) *Aegel manmelog*
33. Indian goose berry plant have
(a) Antioxidant property (b) Antidiabetic property
(c) Antianxiety property (d) All of these
34. Which chemical is responsible for Fenugreek's distinctive sharp smell?
(a) Sotolon (b) Brucine
(c) Serpentine (d) All of these
35. Which plant act as an anti-diabetic drug?
(a) Ginger (b) Ashoka
(c) Fenugreek (d) Both (a) and (b)
36. The useful part of *Clerodendron phlomoldes* for curing rheumatism
(a) Root and leaf (b) Root and bark
(c) Flower bud and leaf (d) Stem and bark
37. Which plant have antibacterial property?
(a) Ginger (b) Tulsi
(c) Ashoka (d) Arjuna
38. In case of micro popagation of medicinal plants which organic supplement is not use?
(a) Yeast extract (b) Coconut milk
(c) Arachis oil (d) Cow dung manure
39. Drying process of crude drug helps
(a) removal of sufficient moisture content. (b) removal of foreign organic part.
(c) removal of different adulterants. (d) All of these
40. *Centella asiatica* belongs to the family
(a) Apiaceae (b) Asteraceae
(c) Rublaceae (d) Malvacea
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SP-III/Botany/304SEC-1(T)/19

B.Sc. Semester III (Programme) Examination, 2018-19

BOTANY

Course ID : 31310

Course Code : SPBOT-304SEC-1(T)

Attempt any one Alternative.

Alternate-I

Course Title: Biofertilizers

Time: 1 Hour

Full Marks: 40

The figures in the margin indicate full marks.

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

Answer any forty from the following questions:

1×40=40

1. Application of blue green algae in field as biofertilizer called
 - (a) Algalization
 - (b) Collonization
 - (c) Inoculation
 - (d) Fructification
2. Nitrogen fixation site is
 - (a) Hormogone
 - (b) Akinete
 - (c) Nanocyst
 - (d) Heterocyst
3. Fogg's medium is used for growing
 - (a) *Cyanobacteria*
 - (b) *Rhizobium*
 - (c) *Azotobacter*
 - (d) *Azospirillum*
4. Okon's medium is used for mass cultivation of
 - (a) *Rhizobium*
 - (b) *Azospirillum*
 - (c) *Azotobacter*
 - (d) *Anabaena*
5. *Rhizobium* is identified by
 - (a) VP test
 - (b) Indole test
 - (c) CRYEMA test
 - (d) None of these
6. Charcoal is used for making biofertilizer as
 - (a) Sterilizer
 - (b) Carrier
 - (c) Food supplier
 - (d) Remover
7. *Rhizobium* is a
 - (a) Gram negative and aerobic
 - (b) Gram negative and anaerobic
 - (c) Gram positive and anaerobic
 - (d) Gram positive and aerobic
8. Which one is green manure/biofertilizer
 - (a) *Sesbaenia*
 - (b) Maize
 - (c) Rice
 - (d) Oat

9. Some BGA can be used as biofertilizer as they are
(a) photosynthetic (b) surrounded by mucilage
(c) growing everywhere (d) capable of fixing nitrogen
10. Leghaemoglobin is found in
(a) Nodule (b) Heterocyst
(c) Akinete (d) All of these
11. Vermicompost is biofertilizer rich in
(a) Phosphorus (b) Calcium
(c) Nitrogen (d) All of these
12. Worm castings are rich in
(a) Nitrogen (b) Phosphorus
(c) Calcium (d) All of these
13. Which are uses a green manure?
(a) *Melilotus parviflora* (b) *Hibiscus rosasinensis*
(c) *Mangifera indica* (d) *Sida cordifolia*
14. An organism which improves phosphorus uptake is
(a) Actinomycete fungi (b) *Rhizobium*
(c) *Azospirillum* (d) *Azotobacter*
15. Which one of the following is not a biofertilizer?
(a) *Agrobacterium* (b) *Rhizobium*
(c) *Nostoc* (d) *Mycorrhiza*
16. An organism used as a biofertilizer for raising soybean crop is
(a) *Nostoc* (b) *Azotobacter*
(c) *Azospirillum* (d) *Rhizobium*
17. Organic farming related statement is
(a) Bt cotton is used to improve fertility of soil
(b) Compost is used to improve fertility of soil
(c) Compost is eco-friendly
(d) Both (b) and (c) is correct
18. For making carrier based inoculants of *Rhizobium* following material is used:
(a) Paddy straw (b) Charcoal
(c) Water (d) CaCO_3
19. *Rhizobium* is grown on
(a) Nutrient agar medium (b) YEM medium
(c) MS medium (d) Nitsch's medium
20. Select the odd one with reference to biofertilizer.
(a) Bacteria (b) Fungi
(c) Cyanobacteria (d) Viruses

21. Plants having mycorrhizal association show
- (a) resistance to root borne pathogens (b) N₂-fixation
(c) tolerance to salinity and drought (d) More than one option is correct
22. Which of the following microbe is most active N₂-fixer in rice field in India?
- (a) *Rhizobium* (b) *Rhodospirillum*
(c) *Frankia* (d) *Aulosira*
23. Biofertilizers
- (a) increase dependance on chemical fertilizers.
(b) are organisms that enrich the nutrient quality of soil.
(c) include pottash, phosphatic and N₂-organic.
(d) are used regularly in the fields to deplete soil nutrients.
24. The paddy fields _____ as an important biofertilizers.
- (a) *Rhizobium* (b) BGA
(c) *Glomus* (d) *Frankia*
25. *Clostridium* is a
- (a) Symbiotic N₂-fixers (b) Non symbiotic N₂-fixers
(c) Associative N₂-fixers (d) None of these
26. A N₂-fixing microbe associated with Azolla in rice fields is
- (a) *Anabaena* (b) *Spirulina*
(c) *Tolypothrix* (d) *Frankia*
27. Which one form symbiotic association with root of plant?
- (a) *Trichoderma* (b) *Glomus*
(c) *Azotobacter* (d) *Aspergillus*
28. No gene interaction and morphogenetic changes occur
- (a) in case of associative N₂-fixer (b) in case of symbiotic N₂-fixers
(c) in case of commensalism (d) in case of non-symbiotic N₂-fixers
29. VAM stands for
- (a) Vesicular Arbuscular Mycorrhiza (b) Variable Adenine Mutation
(c) Variable Associative Mutualism (d) Vitamins And Minerals
30. N₂-fixation is
- (a) Nitrogen to ammonia (b) Nitrogen to nitrates
(c) Nitrogen to amino acid (d) Both (a) and (b)
31. Green manure plants belong to
- (a) Compositae (b) Solanaceae
(c) Poaceae (d) Leguminosae

32. Aquatic fern which is an excellent biofertilizer
(a) *Salvinia* (b) *Azolla*
(c) *Marsilea* (d) *Pteridium*
33. VAM is important for
(a) Breaking dormancy (b) Phosphate mutation
(c) Water uptake (d) Retarding flowering
34. pH of vermiculture is kept at
(a) Alkaline (b) Acidic
(c) Neutral (d) Highly alkaline
35. Leguminous plants able to fix atmospheric N_2 through symbiotic activity which is not correct:
(a) Leghaemoglobin Scavenger
(b) Nitrogenase is insensitive to O_2
(c) Nodules act as sites for N_2 -fixation
(d) Nitrogenase catalyzes the conversion of N_2 to NH_3
36. They help in increasing soil fertility
(a) *Pseudomonas* and *cereals* (b) *Bacillus* and *Penicillium*
(c) *Salvinia* and *Marsilea* (d) *Nostoc* and *legumes*
37. Association of roots of higher plants and fungi is
(a) Mycorrhiza (b) Lichen
(c) Fern (d) Moss
38. Which bacteria secrete phosphatase?
(a) *Frankia* (b) *Clostridium*
(c) *Azotobacter* (d) *Pseudomonas*
39. Which one is biofertilizer?
(a) VAM (b) DCMU
(c) CAM (d) CMU
40. Starter culture means
(a) Broth culture containing bacteria used for mass multiplication
(b) culture which is used for nodulation
(c) Inoculation of culture for making carrier base inoculant
(d) culture used for identification
41. Which one is correct statement?
(a) Biofertilizer is difficult to storage, difficulty in application.
(b) Biofertilizer is eco-friendly.
(c) Biofertilizer is more expensive.
(d) Both (a) and (b) is correct

42. Which one is incorrect about fertilizer?
- (a) It is nutrient specific (b) It is water insoluble
(c) It is readily absorbed by the plant (d) It is compact and easy to transport
43. Find out the correct sentence about manure.
- (i) Manure contains large quantities of organic matter
(ii) It increases the water holding capacity of sandy soil
(iii) It helps in draining out of excess of water from clayey soil
(iv) It excessive use pollutes environment
- (a) (i) and (iii) (b) (i) and (ii)
(c) (ii) and (iii) (d) (iii) and (iv)
44. Which one is not available in fertilizers?
- (a) Nitrogen (b) Phosphorus
(c) Iron (d) Potassium

Alternate-II**Course Title: Herbal Technology**

Answer all the questions:

1×40=40

1. Which active constituent of *Catharanthus* have cardio protective activity?
- (a) Vincristine (b) Ajmalicine
(c) Serpentine (d) All of these
2. Depending upon the natural origin drugs are following type:
- (a) 3 (b) 2
(c) 4 (d) None of these
3. The term Pharmacognosy was first used by
- (a) Seydlar (b) Derosne
(c) Berg (d) None of these
4. The study of the action of drug is known as
- (a) Pathology (b) Pharmacology
(c) Pharmacognosy (d) All of these
5. The scientific name of Fenugreek is
- (a) *Centella asiatica* (b) *Saraca indica*
(c) *Trigonella-foenum-graecum* (d) All of these
6. *Clerodendron phlomoidis* is used as
- (a) Cardioprotective agent (b) Anti rheumatic agent
(c) Memory boostee agent (d) All of these

7. Chemical Evaluation of crude drug means
- (a) Determining the active constituents in the drug
 - (b) Determining the moisture content in the drug
 - (c) Total ash content in the drug
 - (d) All of the above
8. Following is the one of the biological testing of herbal drug:
- (a) Hepatoprotective activity
 - (b) Radiomuno Assays
 - (c) Fluorescence analysis
 - (d) None of these
9. The literature of Siddha system is mostly in
- (a) Bengali
 - (b) Hindi
 - (c) Tamil
 - (d) All of these
10. Which is a factor for preservation of drug?
- (a) Temperature
 - (b) Radiation
 - (c) Water
 - (d) Moisture
11. Common fumigant used for storage of crude drug—
- (a) Methyl bromide
 - (b) Sodium arsenate
 - (c) Calcium arsenate
 - (d) NaCl
12. The scientific name of 'Nayantara' is
- (a) *Datura metal*
 - (b) *Catharanthus roseus*
 - (c) *Saraca indica*
 - (d) None of these
13. Indian Gooseberry is rich in
- (a) Vit- A
 - (b) Vit- C
 - (c) Vit- E
 - (d) Iodine
14. Indian Gooseberry plant have
- (a) Antioxidant property
 - (b) Antidiabetic property
 - (c) Antianxiety property
 - (d) All of these
15. Which chemical is responsible for Fenugreek's distinctive sharp smell?
- (a) Sotolon
 - (b) Brucine
 - (c) Serpentine
 - (d) All of these
16. Which plant act as an anti-diabetic drug?
- (a) Fenugreek
 - (b) Ashoka
 - (c) Ginger
 - (d) Tulsi
17. The useful part of *Clerodendron phlomoidis* for curing rheumatism—
- (a) Root and leaf
 - (b) Root and bark
 - (c) Flower and leaf
 - (d) All of these

18. Which plant have antibacterial property?
(a) Ginger (b) Tulsi
(c) Ashoka (d) All of these
19. In case of micropropagation of medicinal plants which organic supplements is not used?
(a) Yeast extract (b) Coconut milk
(c) Arachis oil (d) All of these
20. Drying process of a crude drug helps
(a) removal of sufficient moisture content (b) removal of foreign organic part
(c) removal of different adulterants (d) None of these
21. Crude drug could be readily stored in
(a) Airtight container (b) Wooden box
(c) Paper bags (d) All of these
22. *Centella asiatica* belongs to the family
(a) Apiaceae (b) Asteraceae
(c) Rubiaceae (d) None of these
23. Who proved the importance of 'flora' in the world?
(a) Sushruta (b) Charaka
(c) Aristotle (d) Both (a) and (c)
24. What form of herbal medicine is widely practiced in India?
(a) Greek (b) Chinese
(c) Ayurvedic (d) Homoeopathic
25. Which part of the Ginger plant is used in health and medicinal product?
(a) Underground stem (b) Seed
(c) Flower (d) Leaf
26. Which Veda deals with various diseases and their treatment?
(a) Rigveda (b) Yajur Veda
(c) Atharva Veda (d) All of these
27. Who did various surgical treatments by the help of natural herbs?
(a) Charaka (b) Sushruta
(c) Kabir (d) All of these
28. Organoleptic evaluation means
(a) Morphological evaluation (b) Biochemical evaluation
(c) Anatomical evaluation (d) None of these
29. Drug adulteration mean
(a) chemical analysis of drugs (b) practice of substituting original drugs
(c) quality analysis (d) Both (a) and (c)

30. One of the condition of 'Drug adulteration' is
(a) Sophistication (b) Evaporation
(c) Sublimation (d) None of these
31. Tulsi plant belongs to the family
(a) Acanthaceae (b) Lamiaceae
(c) Verbenaceae (d) Malvaceae
32. Useful part of Ashoka is
(a) Leaf (b) Stem bark
(c) Fruit (d) Flower
33. Which plant is used as an uterine tonic?
(a) Ginger (b) Ashoka
(c) Tulsi (d) Neem
34. In physical evaluation of drug following content can be measured:
(a) Detection of alkaloid (b) Detection of moisture content
(c) Detection of gums and mucilages (d) All of these
35. Drug evaluation means
(a) Determination of its quality and purity
(b) Determination of its chemical constituents
(c) Effectiveness of drug to the patients
(d) None of the above
36. The process of preparation of crude drug for market after 'Drying' is
(a) Garbling (b) Harvesting
(c) Packing (d) Drying
37. The use of essential oil of plants to treat a range of diseases is called
(a) Naturopathy (b) Aromatherapy
(c) Homoeopathy (d) None of these
38. The common name of *Withania somnifera* is
(a) Nayantara (b) Ashwagandha
(c) Vasaka (d) Tulsi
39. The important constituent of *Withania somnifera* as nervous disorder—
(a) Withanolides (b) Tropina
(c) Anaferine (d) Kalmegh
40. *Catharanthus* belongs to the family
(a) Lamiaceae (b) Apocynaceae
(c) Malvaceae (d) Solanaceae
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