

# GU-RET 2016

GAUHATI UNIVERSITY RESEARCH ELIGIBILITY TEST

## BOTANY

Booklet Series : **Ⓒ**

Invigilator's Name and Signature
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BOOKLET NO.

OMR SHEET NO.

ROLL NO.

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TIME : 2 HOURS 20 MINUTES

TOTAL MARKS : 80

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Number of Pages in this Booklet : 13

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### Instructions for Candidates

1. Write your Roll No. and OMR Sheet No. in the boxes provided above.
2. This paper consists of two sections : **Section B** with 50 (fifty) multiple choice questions (MCQ) and **Section C** with 8 (eight) descriptive questions. Each MCQ has 4 (four) answers, out of which **ONLY** one is correct. You have to darken the circle (on the OMR Sheet) for the correct answer corresponding to the question given in this booklet.

Example : (A) (B) **(C)** (D)

where **Ⓒ** is the correct answer. No marks will be given for markings made in this booklet. The descriptive questions in **Section C**, **MUST** be answered in the space provided in this booklet. **No extra pages will be provided in any case.**

3. Use a **BLACK** ball point pen in your OMR Sheet.
4. Read the instructions given inside this booklet before attempting to answer any questions.
5. **DO NOT** write your name, roll no, phone no, or anything, or put any marks anywhere in this booklet, otherwise your candidature will be disqualified.
6. If you are found to resort to any kind of unfair means such as carrying extra material other than pen, pencil, watch, eraser, and scale, or copying from somebody or from external material, your candidature will be disqualified.
7. Mobile phones, calculators, log tables or any other tables, wearable smart devices such as smart Android watches or objects of similar nature **CAN NOT** be used inside the examination hall.
8. At the end of the examination, you have to return this booklet and the OMR Sheet back to the invigilator.
9. There is no negative mark for incorrect answer.

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**Section B (50 Marks)**

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1. GPS stands for
  - (A) Global Positioning System
  - (B) Geological Positioning System
  - (C) Geographical Positioning System
  - (D) None of the above
2. Formation of an embryo directly from an unfertilized egg is called
  - (A) agamospermy
  - (B) adventive embryony
  - (C) diplospory
  - (D) parthenogenesis
3. The speciation in which a population splits into two geographically isolated populations having dissimilar selection pressure and genetic drift is known as
  - (A) sympatric speciation
  - (B) parapatric speciation
  - (C) peripatric speciation
  - (D) allopatric speciation
4. Which of the following is not a heteropolysaccharide?
  - (A) Chitin
  - (B) Agar-agar
  - (C) Heparin
  - (D) Vegetative gum
5. .... is an unsaturated fatty acid
  - (A) Lauric acid
  - (B) Palmitic acid
  - (C) Linoleic acid
  - (D) Myristic acid
6. Initiation codon in eukaryotes is
  - (A) GAU
  - (B) AGU
  - (C) AUG
  - (D) UAG
7. Periderm is produced by
  - (A) Vascular cambium
  - (B) Fascicular cambium
  - (C) Phellogen
  - (D) Intrafascicular cambium
8. Biodiversity Act of India was passed by the Parliament in the year
  - (A) 1992
  - (B) 1996
  - (C) 2000
  - (D) 2002
9. Which ecosystem type has the highest annual net primary productivity?
  - (A) Tropical deciduous forest
  - (B) Temperate evergreen forest
  - (C) Temperate deciduous forest
  - (D) Tropical rain forest
10. Opening and closing of stomata are examples of
  - (A) endogenous rhythms
  - (B) exogenous rhythms
  - (C) circadian rhythms
  - (D) None of these
11. The spatial patterns of an ecosystem are
  - (A) Zonation
  - (B) Stratification
  - (C) Succession
  - (D) All of these
12. The major forest type found in India is
  - (A) Subtropical deciduous
  - (B) Tropical moist deciduous
  - (C) Tropical deciduous
  - (D) Temperate deciduous

13. Which must be preserved in an ecosystem, if the system is to be maintained?
- Producers and carnivores
  - Producers and decomposers
  - Carnivores and decomposers
  - Herbivores and carnivores
14. Nitrifying bacteria
- converts free nitrogen to nitrogen compounds
  - converts proteins to ammonia
  - reduces nitrates to free nitrogen
  - oxidizes ammonia to nitrates
15. Haploid plantlets can be produced by
- Pollen culture
  - Cotyledon culture
  - Embryo culture
  - Meristem culture
16. Sun loving plants are
- Halophytes
  - Heliophytes
  - Sciophytes
  - Euryhaline
17. The transmission electron microscope has the greatest resolving power because it uses an electron beam to view the sample instead of a light beam. Why?
- electrons have longer wavelengths than light waves
  - electrons do not penetrate the samples
  - light waves are less visible
  - electrons have shorter wavelengths than light waves
18. How is the enzyme activity affected if a chemical compound binds to the allosteric site of the enzyme?
- Inhibit the enzyme competitively
  - Lower the activation energy
  - No effect on enzyme activity
  - Reduce enzyme reaction rate
19. What do the pentose phosphate pathway, the Entner-Doudoroff pathway, and the glycolytic pathway have in common?
- Are anabolic pathway
  - Occur in all species of bacteria
  - Oxidize glucose to pyruvate
  - Are fermentation pathways
20. What term refers to a genetic segment containing genes encoding for proteins involved in a specific biochemical reaction?
- Operon
  - Anticodon
  - Codon
  - Transfer RNA
21. *Bunchy top of Banana* is caused by
- Banana virus I
  - Exobasidium vexans*
  - Pseudomonas syringae*
  - Pseudomonas sp.*
22. The antibiotic streptomycin inhibits bacterial growth by binding to a protein in the 30S subunit of the ribosome indicating that it has
- inhibited DNA synthesis
  - inhibited transcription
  - inhibited transduction
  - inhibited translation
23. Which of the following antibodies would most likely be found in body secretions such as tears, milk, saliva, and mucous?
- IgA
  - IgD
  - IgE
  - IgM and IgA
24. 'Trichopel', a biocontrol product commercially available in market, is made up of
- Trichoderma harzianum* and *T. viride*
  - Trichoderma harzianum* and *Fusarium oxysporum*
  - Bacillus subtilis* and *T. viride*
  - Fusarium oxysporum* and *Bacillus subtilis*

25. Reindeer Moss is
- Lecanora conizaeoides*
  - Cladonia rangiferina*
  - Cetraria islandica*
  - Labaria pulmonaria*
26. Pollination drop in *Cycas* is
- water drops
  - nucellus secretions
  - pollen clusters
  - None of the above
27. The mesophyll tissue in *Pinus* is called
- armed parenchyma
  - chlorenchyma
  - transfusion tissue
  - spongy parenchyma
28. The fused bracts of male flowers of *Gnetum* are comparable to
- bracts of angiosperms
  - parianth of angiosperms
  - bracteoles of angiosperms
  - leaves of angiosperm
29. Vascular bundles in dicot stems are
- open, collateral, and exarch
  - closed, collateral, and endarch
  - closed, collateral, and exarch
  - open, collateral, and endarch
30. Which of the following is diploid in Moss plant?
- Spores
  - Leaves
  - Spore mother cells
  - Gametes
31. A specialized organ of the sporophyte for attachment to the gametophyte is known as
- Stalk
  - Foot
  - Apophysis
  - Root
32. Polystelic condition is observed in
- Rachis of Pteris
  - Stem of Selaginella
  - Stem of *Oryopteris*
  - Roots of *Dryopteris*
33. Tautonym is an informal taxonomic designation used for plants referring to
- the same name of genus and species
  - the same name of species and subspecies
  - trinomial nomenclature
  - the name of the author for the species
34. Which of the following represents the type of vegetation of a place experiencing a temperature range of 5 – 20°C and rainfall 150 – 300 cm?
- Temperate deciduous
  - Temperate evergreen
  - Taiga
  - Grasslands
35. Bacteria secretes toxin at high population density to check the population size. The regulation of gene expression in response to the fluctuations in cell density is called as
- Quorum sensing
  - Population control
  - Allelopathy
  - Interspecific competition
36. In a salt tolerant plant the excess salt is transported to vacuole by:
- $\text{Na}^- \text{H}^+$  Antiporter
  - $\text{Na}^+ \text{K}^+$  Pump
  - $\text{Na}^- \text{Cl}^-$  Symporter
  - $\text{Na}^- \text{H}^+$  Pump
37. In a genetic test 9:7 ratio in F1 generation represents
- Co-dominance
  - Epistasis
  - Incomplete dominance
  - Complete dominance

38. If a gene product in species A is 90% similar to gene product of species B, such genes are called as
- (A) Perilogous  
(B) Paralogous  
(C) Allologous  
(D) Orthologous
39. Which one of the following processes doesn't take place in cell nucleus?
- (A) Replication  
(B) Repair  
(C) Transcription  
(D) Translation
40. Which of the following is a non-protein amino acid?
- (A)  $\beta$ -alanine  
(B) Histidine  
(C) Lysine  
(D) Aspartic acid
41. Enzyme ..... is used in making cheese
- (A) Catalase  
(B) Rennin  
(C)  $\alpha$ -Amylase  
(D) Protease
42. Central Drug Research Institute (CDRI), India is located at
- (A) Mumbai  
(B) Hyderabad  
(C) Chandigarh  
(D) Lucknow
43. *Anthoceros* harbours a kind of cyanobacterium named
- (A) Anabaena  
(B) Nostoc  
(C) Lyngbya  
(D) Calothrix
44. For the selection of a lectotype from the original material on which a taxon was based, the first choice of the lectotype must be
- (A) isotype if exists  
(B) syntype if exists  
(C) paratype if exists  
(D) neotype
45. .... are known as 'Biological Scissor'
- (A) Exonucleases  
(B) Endonucleases  
(C) Restriction endonucleases  
(D) All of them
46. Heterospory is exhibited by
- (A) Lycopodium  
(B) Marsilea  
(C) Equisetum  
(D) Ophioglossum
47. Haematoxylin is obtained from which part of *Haematoxylon* spp.?
- (A) sap wood  
(B) secondary xylem  
(C) secondary phloem  
(D) heart wood
48. Heteromorphic incompatibility occurs in
- (A) *Rosa indica*  
(B) *Primula vulgaris*  
(C) *Mirabilis jalapa*  
(D) *Dillenia indica*
49. Inflorescence of *Colocasia esculanta* is
- (A) spike  
(B) spikelet  
(C) catkin  
(D) spadix
50. Fruits of pomegranate is known as
- (A) amphisarca  
(B) balusta  
(C) caryopsis  
(D) cypsela

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**Section C (30 Marks)**

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**Answer any 5 (five) from the following**

1. Name three endemic plants of North-East India and write their importance. (Marks : 6)
2. "Soil microbes are always in the state of dynamic equilibrium". Justify this statement giving suitable examples. (Marks : 6)
3. Role of Herbaria in taxonomic studies. (Marks : 6)
4. Write briefly on application of Oligonucleotide Signature Sequence in plant Systematics and diversity. (Marks : 6)
5. What is the role of homeostasis in natural ecosystem? (Marks : 6)
6. Discuss the role of Phytochrome in Growth and development of plants. (Marks : 6)
7. Define operon concept with suitable examples. (Marks : 6)
8. Compare fruiting bodies of Ascomycetes and Basidiomycetes. (Marks : 6)



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Space for Answers (Section C) : for Questions 1 to 8 (5 pages)

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Space for Answers (Section C) : for Questions 1 to 8 (5 pages)

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GU-RREF 2019

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Space for Answers (Section C) : for Questions 1 to 8 (5 pages)

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GU-RRET 2018

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Space for Answers (Section C) : for Questions 1 to 8 (5 pages)

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GU-RRET 2019

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Space for Answers (Section C) : for Questions 1 to 8 (5 pages)

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