

Code No.

J – 2268

**Entrance Examination for Admission to the P.G. Courses in the Teaching
Departments, 2020**

CSS

BOTANY/GENETICS AND PLANT BREEDING

--

General Instructions

1. The Question Paper is having two Parts — Part 'A' Objective type (60%) & Part 'B' Descriptive type (40%).
2. Objective type questions which carry 1 mark each are to be (✓) 'tick marked' in the response sheets against the appropriate answers provided.
3. 8 questions are to be answered out of 12 questions carrying 5 marks each in Part 'B'.
4. **Negative marking** : 0.25 marks will be deducted for each wrong answer in Part 'A'.

Time : 2 Hours

Max. Marks : 100

To be filled in by the Candidate

Register Number	in Figures								
	in words								

--

PART – A
(Objective Type)

Choose appropriate answer from the options in the questions. **One mark each.**

(60 × 1 = 60 marks)

1. Which among the following is an example of intrallelic interaction?
 - a) Incomplete dominance
 - b) Complementary gene interaction
 - c) Epistasis
 - d) Duplicate gene interaction

DO NOT WRITE HERE

-
2. A haemophilic man marries a carrier female, what is the percentage of offsprings with haemophilia?
- a) 100 b) 75
c) 50 d) 25
3. Which among the following is required for DNA unwinding during replication?
- a) DNA ligase b) Primase
c) Helicase d) Deformylase

4. An example of a derivative database
- a) GenBank
 - b) PDB
 - c) PROSITE
 - d) NCBI
5. A probe is
- a) Double stranded radiolabelled oligonucleotide strand
 - b) Single stranded radiolabelled oligonucleotide strand
 - c) Single stranded non-labeled oligonucleotide
 - d) Double stranded no-radiolabelled oligonucleotide
6. The most probable number of gametes that can be produced by a plant with genotype AaBBCCc is
- a) 2
 - b) 4
 - c) 6
 - d) 8
7. The correct sequence of reactions during PCR is
- a) Denaturation, renaturation, annealing and polymerization
 - b) Denaturation, annealing and polymerization
 - c) Polymerisation, denaturation and renaturation
 - d) Denaturation, polymerization and depolymerisation
8. Plant hormone responsible for stomatal closure
- a) Auxin
 - b) Cytokinin
 - c) Gibberellin
 - d) Abscissic acid
9. A plasmid is
- a) Double stranded DNA
 - b) Self-replicating and extrachromosomal DNA
 - c) Circular DNA
 - d) All of these

10. A gymnosperm with vessels
- a) *Gnetum*
 - b) *Cycas*
 - c) *Pinus*
 - d) Both (b) and (c)
11. The word 'open' while describing a vascular bundle means
- a) Without bundle sheath
 - b) Open to secondary thickening
 - c) Without cambium
 - d) None of these
12. The condition where filaments and anthers of all stamens of a flower fuse together is known as
- a) Monadelphous
 - b) Polyadelphous
 - c) Synandrous
 - d) Syngenesious
13. An example of a follicle type fruit is
- a) Pea
 - b) Calotropis
 - c) Mustard
 - d) Catheranthus
14. An inflorescence that does not belongs to Racemose type
- a) Spike
 - b) Catkin
 - c) Corymb
 - d) Dichasial cyme
15. The world's largest Botanic Garden – "The Royal Botanic Garden" is situated in
- a) USA
 - b) England
 - c) Australia
 - d) Japan
16. *Cuminum cimum* belongs to the family
- a) Mimosaceae
 - b) Apiaceae
 - c) Asteraceae
 - d) Rubiaceae

17. What is the morphology of the useful part of Cabbage
- a) Endosperm
 - b) Flower
 - c) Leaves
 - d) Seed
18. A helical virus
- a) Papilloma virus
 - b) Vaccinia virus
 - c) Tobacco Mosaic virus
 - d) Herpes virus
19. Transduction was discovered by
- a) Frederic Griffith
 - b) Jacob and Monod
 - c) Lederberg and Tatum
 - d) Zinder and Lederberg
20. A parasitic alga
- a) *Cephaleuros*
 - b) *Chlorella*
 - c) *Tetraspora*
 - d) *Vaucheria*
21. Which is not a method of asexual reproduction in *Chlamydomonas*?
- a) Zoospores
 - b) Aplanospores
 - c) Hyphospores
 - d) Gonidia
22. Component of peptidoglycan in a bacterial cell wall
- a) Cellulose
 - b) N-acetyl glucosamine
 - c) Pectin
 - d) Starch
23. 'Green mould' is
- a) *Rhizopus*
 - b) *Penicillium*
 - c) *Puccinia*
 - d) Yeast

24. Citrus canker is caused by
- a) *Phytoplasma*
 - b) *Xanthomonas*
 - c) *Pyricularia*
 - d) *None of the above*
25. An example of a foliose lichen
- a) *Graphis*
 - b) *Usnea*
 - c) *Parmelia*
 - d) *Cladonia*
26. A fungal group that reproduce solely by asexual methods
- a) Ascomycetes
 - b) Zygomycetes
 - c) Basidiomycetes
 - d) Deuteromycetes
27. The most primitive type of life cycle in algae
- a) Haplontic
 - b) Diplontic
 - c) Diplo-haplontic
 - d) Haplo-biontic
28. Source of Agar-agar is
- a) *Sargassum*
 - b) *Gracillaria*
 - c) *Gelidium*
 - d) Both (b) and (c)
29. Chemically cystolith is
- a) Calcium carbonate
 - b) Calcium oxalate
 - c) Silica
 - d) Starch
30. The plant pigment xanthophyll is
- a) Green coloured
 - b) Yellow coloured
 - c) Purple coloured
 - d) Red coloured

31. Which of the following is not a polymer of glucose?
- a) Cellulose
 - b) Starch
 - c) Inulin
 - d) Amylose
32. Unstained living components of a cell can be visualized through
- a) Dark field microscope
 - b) Fluorescence microscope
 - c) Phase contrast microscope
 - d) Electron microscope
33. A gram positive bacterium
- a) *E.coli*
 - b) *Lactobacillus*
 - c) *Pseudomonas*
 - d) *Klebsiella*
34. Type of stomata where the subsidiary cells are indistinguishable
- a) Anamocytic
 - b) Anisocytic
 - c) Diacytic
 - d) Paracytic
35. Number of meiotic divisions required for the formation of 100 mature egg or ovum is
- a) 25
 - b) 50
 - c) 100
 - d) 400
36. The cell above the egg cell in the archegonium of bryophytes
- a) Cover cell
 - b) Neck canal cell
 - c) Ventral canal cell
 - d) Neck cell
37. A pteridophyte with haplostele
- a) *Selaginella*
 - b) *Psilotum*
 - c) *Marsilea*
 - d) *Pteris*
38. Amphiphloic siphonostele is found in
- a) *Marsilea*
 - b) *Lycopodium*
 - c) *Selaginella*
 - d) *Psilotum*

39. Peat moss is
- a) *Sphagnum*
 - b) *Riccia*
 - c) *Marchantia*
 - d) *Funaria*
40. Histone present in the linker DNA is
- a) H2A
 - b) H2B
 - c) H1
 - d) H3
41. An amino acid with only one codon is
- a) Phenyl alanine
 - b) Tryptophan
 - c) Leucine
 - d) Proline
42. A typical dihybrid test cross ratio will be
- a) 1 : 1
 - b) 3 : 1
 - c) 1 : 2 : 1
 - d) 1 : 1 : 1 : 1
43. RNA polymerase binds to
- a) Promoter
 - b) Operator
 - c) Repressor
 - d) Activator
44. Crossing over takes place during prophase I of meiosis at
- a) Leptotene
 - b) Zygotene
 - c) Pachytene
 - d) Diplotene
45. Barr eye character in *Drosophila* results from
- a) Deletion
 - b) Duplication
 - c) Translocation
 - d) Inversion
46. Approximate number of base pairs in Z-DNA is
- a) 9
 - b) 10
 - c) 11
 - d) 12

47. When X/A ratio is 0.75, what will be the sex of *Drosophila* according to genic balance theory
- a) Female
 - b) Male
 - c) Metamale
 - d) Intersex
48. What will be sequence of mRNA formed from a DNA of sequence 3'AATTGGCCTAT5'
- a) 5 'UUAACCGGAUA3'
 - b) 5 'TTAACCGGATA3'
 - c) 3 'UUAACCGGAUA5'
 - d) 3 'TTAACCGGATA5'
49. The commercial product 'Chilgoza seeds' are obtained from
- a) *Pinus*
 - b) *Gnetum*
 - c) *Cycas*
 - d) *Cupressus*
50. During water absorption, the flow of water from root epidermis to endodermis takes place by
- a) Apoplastic pathway
 - b) Symplastic pathway
 - c) Transmembrane pathway
 - d) All the above
51. The microelement necessary for the evolution of oxygen during photosynthesis
- a) Manganese
 - b) Copper
 - c) Zinc
 - d) Boron
52. Antibodies that function as enzymes
- a) Apoenzymes
 - b) Co enzymes
 - c) Abzymes
 - d) Synzymes
53. RUBISCO acts as an oxygenase enzyme is
- a) Glyoxylate cycle
 - b) Photorespiration
 - c) Respiration
 - d) Calvin cycle

54. Which is not a search engine?
- a) Google
 - b) Yahoo
 - c) Bing
 - d) DOS
55. Which of the following is not a measure of central tendency?
- a) Mean
 - b) Standard deviation
 - c) Median
 - d) Mode
56. The study of individual organisms in relation to their environment is
- a) Autecology
 - b) Synecology
 - c) Ethology
 - d) Demography
57. The evolutionary history of an organism is called
- a) Ontogeny
 - b) Phylogeny
 - c) Eugenics
 - d) Euthenics
58. The art of clipping shrubs into ornamental shapes
- a) Arches
 - b) Topiary
 - c) Pergola
 - d) Trophy
59. Seminal method of propagation is by
- a) Seed
 - b) Stem cuttings
 - c) Bulbs
 - d) Rhizomes
60. A biological mutagen
- a) Bacteria
 - b) Fungi
 - c) Mycoplasma
 - d) Virus

ANSWER SHEET — PART — A

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E
14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E

21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
25	A	B	C	D	E
26	A	B	C	D	E
27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E
40	A	B	C	D	E

41	A	B	C	D	E
42	A	B	C	D	E
43	A	B	C	D	E
44	A	B	C	D	E
45	A	B	C	D	E
46	A	B	C	D	E
47	A	B	C	D	E
48	A	B	C	D	E
49	A	B	C	D	E
50	A	B	C	D	E
51	A	B	C	D	E
52	A	B	C	D	E
53	A	B	C	D	E
54	A	B	C	D	E
55	A	B	C	D	E
56	A	B	C	D	E
57	A	B	C	D	E
58	A	B	C	D	E
59	A	B	C	D	E
60	A	B	C	D	E

BOTANY/GENETICS AND PLANT BREEDING

PART – B (Descriptive Type)

Answer **any eight** questions.

(8 × 5 = 40 Marks)

1. If the average molecular mass an aminoacid is 200 daltons, about how many nucleotide will be present in an mRNA coding sequence specifying a single polypeptide with a molecular mass of 30000 daltons?
2. Describe in detail the ultrastructure of a bacterial cell.
3. Describe the floral morphology of Papilionaceae and write its economic importance.
4. Give a detailed account on the *lac* operon.
5. What is recombinant DNA technology? Explain various steps involved.
6. Give an account on methods of reproduction in algae.
7. Explain the economic importance of fungi.
8. You have visited a biodiversity rich area as part of your study tour. Prepare a report highlighting the lower forms of plants you have seen there.
9. Describe the process of carbon fixation by green plants.
10. Suppose you are going to face severe water shortage in the coming summer season. As an environmentalist, highlight the causes and remedial measures for this issue.
11. Describe different types of steles in Pteridophytes.
12. Gregor Johann Mendel is considered as the father of Genetics. Put your arguments supporting the birth of Genetics through Mendel.

