

P2/4

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2010.

Ph.D. (BOTANY)

COURSE CODE : 136

Register Number :



Signature of the Invigilator
(with date)

COURSE CODE : 136

Time : 2 Hours

Max : 400 Marks

Instructions to Candidates :

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

1. Most significant family in the angiosperms is

(A) Asteraceae	(B) Ranunculaceae
(C) Arecaceae	(D) Poaceae
2. The cohesive force between water molecules in phloem results in

(A) ascent of sap	(B) transpiration
(C) respiration	(D) plasmolysis
3. In natural system we consider

(A) flower only	(B) all of the relevant characters
(C) phylogeny only	(D) all habit characters
4. Cremocarp is the fruit of the family

(A) Apiaceae	(B) Rubiaceae
(C) Rutaceae	(D) Myrtaceae
5. The botanical name of the "Day Jasmine"

(A) <i>Jasminum grandiflorum</i>	(B) <i>Cestrum elegans</i>
(C) <i>Cestrum diurnum</i>	(D) <i>Jasminum ritchiei</i>
6. According to Sachs, water rises in stem due to the force of

(A) capillarity	(B) transpiration pull
(C) imbibition	(D) diffusion
7. Vivipary has been observed in the species of

(A) <i>Ephedra</i>	(B) <i>Taxus</i>	(C) <i>Gnetum</i>	(D) <i>Ginkgo</i>
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8. One seeded winged nut, enclosed by woody bracteoles to form a dry cone like fruit is seen in the family

(A) Combretaceae	(B) Casuarinaceae
(C) Caryophyllaceae	(D) Myrtaceae
9. Bud dormancy induction is by

(A) IAA	(B) IBA	(C) ABA	(D) GA ₃
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10. Flowers in polygamodioecious, regular, hypogynous with annular disc are present in

(A) Meliaceae	(B) Magnoliaceae
(C) Fabaceae	(D) Cactaceae
11. In angiosperms, triple fusion is required for the formation of

(A) pericarp	(B) embryo	(C) nucellus	(D) endosperm
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12. From which plant the decoction of the bark is given in uterin disorders?

(A) <i>Saraca indica</i>	(B) <i>Salix indica</i>
(C) <i>Polyalthia</i>	(D) <i>Annona</i>
13. Cassie perfume is obtained from

(A) <i>Cassia tora</i>	(B) <i>Acacia farnesiana</i>
(C) <i>Cassia auriculata</i>	(D) <i>Cassia fistula</i>
14. Which of the following is a pseudocereal?

(A) <i>Echinochloa frumentacea</i>	(B) <i>Coix lacryma</i>
(C) <i>Secale cereale</i>	(D) <i>Fagopyrum esculentum</i>
15. Potato is native of

(A) Peru	(B) Brazil	(C) Panama	(D) Mexico
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16. The male gametophyte is

(A) Micropyle	(B) Nucellus
(C) Embryosac	(D) Pollen Grain
17. Example for crustose lichen is

(A) Litmus	(B) Usnea
(C) Dracaena	(D) Mycoplasmas
18. The stele found in *Psilotum* is a

(A) Dictyostele	(B) Siphonostele
(C) Protostele	(D) Solenostele

19. Double fertilization was discovered by
(A) P. Maheshwari (B) Karl Schnarf
(C) S. G. Nawaschin (D) M.S. Swaminathan
20. Absence of magnesium in plants initially results in
(A) necrosis (B) chlorosis (C) curling (D) dwarfing
21. Root cap is differentiated from
(A) Calyptragen (B) Lateral meristem
(C) Periblem (D) Dermatogen
22. Tunica of SAM divides in how many planes
(A) One (B) Two (C) Three (D) Many
23. The epidermis of stem is contributed by
(A) Calytrogen (B) Dermatogen
(C) Plerome (D) Periblem
24. In Quiescent zone mitochondria and DNA content are
(A) High (B) Low (C) Very high (D) Balanced
25. The Tunica corpus theory was proposed by
(A) Nageli (B) Haberlandt
(C) Schmidt (D) Hanstein
26. Which part of the world has a richest biodiversity?
(A) Dry deciduous forests (B) Grasslands
(C) Savannahs (D) Tropical rain forest.
27. The Ozone depletion is caused due to
(A) Chlorides (B) Sulphates (C) CFC's (D) NO₂
28. Which is not an example of stable ecosystem?
(A) Tropical rain forest (B) Mountain
(C) Deciduous Forests (D) Oceans

29. The rate of photosynthesis is maximum in
 (A) blue light (B) red light
 (C) far-red light (D) green light
30. Which of the following is Y-linked?
 (A) Hypertrichosis (B) Hepatitis
 (C) Syphilis (D) Phenylketonuria
31. Plasmids are extra chromosomal genetic material in
 (A) mitochondria (B) chloroplast
 (C) bacteria (D) viruses.
32. Which of the following helps in photosynthesis?
 (A) zinc (B) copper (C) magnesium (D) molybdenum
33. True roots are developed from
 (A) Plumule (B) Radicle
 (C) Apical meristem (D) Calyptragen
34. Ex situ biological conservation is in
 (A) botanical gardens (B) pond
 (C) forest (D) biosphere reserves
35. The development of fruit without fertilization is called
 (A) apospory (B) parthenocarpy
 (C) apomixis (D) amphimixis
36. A taxon with reference to classification of living organism can be defined as
 (A) a group of similar species
 (B) a group of organism based on chromosome numbers
 (C) a group of any one rank of organisms
 (D) a group of similar organisms
37. An international code of botanical nomenclature comes into being in the year
 (A) 1930 (B) 1830 (C) 1913 (D) 1813

38. Mark the most famous Indian taxonomist
 (A) H. Collette (B) Fr.H. Santapau
 (C) P. Maheswari (D) M.B. Raizada
39. The gynoecium of Brassicaceae differs from Malvaceae in
 (A) position of ovary (B) types of ovules
 (C) cohesion characters (D) all of these characters
40. Amylase is an enzyme for which the substrate is
 (A) protein (B) lipids (C) starch (D) fats
41. Water available to plant is
 (A) Run off water (B) Capillary water
 (C) Hygroscopic water (D) Gravitational water
42. Temperate evergreen forests are found in
 (A) Western Ghats (B) Aravali ranges
 (C) Himalayan ranges (D) Assam
43. The ultraviolet radiations are able to penetrate in a sea upto a depth of
 (A) 40 meters (B) 200 meters
 (C) 5 meters (D) 400 meters
44. Mark the correct sequence of events occurring during ecological succession
 (A) nudation-ecesis-aggrgation-migration
 (B) nudation-migration-ecesis-aggregation
 (C) migration-ecesis-aggregation-nudation
 (D) nudation-ecesis-miigration-aggregation
45. The asymbiotic nitrogen fixers are
 (A) Rhizobium (B) BGA (C) Azatobacer (D) Mycorrhiza
46. Now a days. biological reserves are commonly destroyed by
 (A) pollution (B) population
 (C) rains (D) none of the above

47. Forest research Institute is situated at
(A) Nainital (B) Kolkatta (C) Madras (D) Dehradun
48. Best method to conserve genetic materials of wild life is
(A) cold storage (B) tissue culture
(C) seed storage (D) growing in natural habitats.
49. Biological diversity day is
(A) 5 June (B) 21 March
(C) 14 January (D) 29 December
50. Which of the following is not required for the growth by all bacteria?
(A) Carbon (B) Nitrogen (C) Oxygen (D) Sulfur
51. Positive stains include
(A) Gram stains (B) Differential stain
(C) Simple stain (D) All of the above
52. The optimum growth temperature for _____ is 40°C to 70°C.
(A) Extreme thermophiles (B) Mesophiles
(C) Psychrophiles (D) Thermophiles
53. Which bacteria live with or without oxygen?
(A) Aerobic (B) Anaerobic
(C) Facultatively anaerobic (D) Microaerophilic
54. The leaves of *Mimosa pudica* close when touched. This response is called
(A) Thigmonasty (B) Seismonasty
(C) Nyctinasty (D) Thermonasty
55. Which of the following is narrow- spectrum agent?
(A) Chloramphenicol (B) Gentamicin
(C) Streptomycin (D) Tetracycline

56. Which of the following is an example of a DNA virus?
- (A) Ebola virus (B) Herpes simplex virus
(C) Influenza virus (D) HIV virus
57. Which of the following produces a neurotoxin?
- (A) *Clostridium tetani* (B) *Corynebacterium diphtheriae*
(C) *Streptococcus pyogenes* (D) *Yersinia pestis*
58. Which of the following is responsible for allergies?
- (A) Ig A (B) Ig D (C) Ig E (D) Ig M
59. Which of the following stimulates antibody production?
- (A) Antigen (B) B Cells (C) T_H Cells (D) T_C Cells
60. Vaccination for _____ depends on the use of a toxoids
- (A) Measels (B) Pertusis (C) Polio (D) Tetanus
61. Which of the following is not found in DNA?
- (A) Adenine (B) Cytosine (C) Guanine (D) Uracil
62. Which of the following is not the result of transcription?
- (A) mRNA (B) DNA (C) rRNA (D) tRNA
63. Anticodons are found in the:
- (A) Gene (B) mRNA (C) rRNA (D) tRNA
64. Plants having similar genotypes produced by plant breeding are called
- (A) genomes (B) clones (C) haploids (D) diploids
65. Which of the following requires the assistance of a virus?
- (A) Conjugation (B) Transformation
(C) Transduction (D) All of the above
66. Virus belonging to the class Deoxybinala are characterized by
- (A) RNA and helical symmetry (B) RNA and cubic symmetry
(C) DNA and cubic symmetry (D) DNA and duel symmetry

67. Which one of the following statements is not true of Bryophyta?
 - (A) They lack tracheids and sieve tubes
 - (B) They are photosynthetic
 - (C) Their zygote undergoes meiosis and then produces the sporophyte
 - (D) Their spores germinate, producing gametophytes.
68. Well developed archegonium with neck consisting of 4-6 rows of neck cell characterizes
 - (A) Gymnosperms only
 - (B) Gymnosperms and flowering plants
 - (C) Pteridophytes and Gymnosperms
 - (D) Bryophytes and Pteridophytes
69. Which of the following pteridophyte shows climbing habit?
 - (A) *Cyathea*
 - (B) *Actinopteris*
 - (C) *Lygodium*
 - (D) *Botrychium*
70. Heterospory is the production of
 - (A) Sexual and asexual spores
 - (B) Large and small spores
 - (C) Haploid and diploid spores
 - (D) Diploid and tetraploid spores
71. In which of the following groups would you place a plant which produces spores, has vascular tissues and lacking seeds?
 - (A) Algae
 - (B) Bryophytes
 - (C) Pteridophytes
 - (D) Gymnosperms
72. A stele without a central pith is called a
 - (A) Protostele
 - (B) Dictyostele
 - (C) Siphonostele
 - (D) Solenostele
73. According to stelar theory the stele comprises of
 - (A) Xylem and phloem only
 - (B) Xylem, phloem and pericycle
 - (C) Xylem, phloem and pith
 - (D) All of these
74. For speciation, which one of the following is important?
 - (A) Tropical
 - (B) Reproductive
 - (C) Seasonal
 - (D) Behavioural

75. Borthwick and Hendricks coined the term
 (A) Cytochrome (B) Phytochrome
 (C) Cryptochrome (D) Chromatophore
76. DNA strands are antiparallel because of
 (A) phospho-diester bonds (B) hydrogen bonds
 (C) phosphate bonds (D) sulphide bonds
77. When a change in the number of chromosomes involves the entire genome, the phenomenon is called
 (A) euploidy (B) hyperploidy (C) aneuploidy (D) hypoploidy
78. The genes which are not switched off and remain always functional
 (A) smart genes (B) structural genes
 (C) promoter genes (D) house keeping genes
79. Which phenomenon obeys the first law of Thermodynamics?
 (A) Respiration (B) Photosynthesis
 (C) Transpiration (D) Translocation
80. In hilly terrains, the common method of cultivation is
 (A) ridge terracing (B) canal terracing
 (C) levelling (D) bench terracing
81. Field capacity refers to holding of
 (A) hygroscopic water
 (B) capillary water and hygroscopic water
 (C) capillary water
 (D) gravitational water
82. Terpenes are also known as
 (A) isoprenoids (B) flavonoids (C) steroids (D) phenols
83. Conversion of glycolate to glyoxylate occurs in
 (A) mitochondrion (B) peroxisome
 (C) chloroplast (D) golgi complex

84. Radioactivity can be detected by using
(A) LM counter (B) GG counter (C) GZ counter (D) GM counter
85. The circular depressions on the abaxial side of a lichen are called
(A) Isidia (B) Cyphellae (C) Gemmae (D) Cephalodia
86. In glowing tobacco, which gene was transferred to produce the glowing effect?
(A) luciferin (B) luciferase (C) amylase (D) invertase
87. Cybrid refers to
(A) somatic hybrid (B) isolated protoplasts of a cell
(C) anucleate protoplasts (D) isolated zygotic nucleus
88. Northern blotting technique is used for the analysis of
(A) Proteins (B) DNA (C) RNA (D) Sugars
89. Adventitious root formation is promoted during
(A) drought stress (B) waterlogging stress
(C) cold stress (D) thermal stress
90. Okazaki fragments are formed in the
(A) leading strand (B) lagging strand
(C) coiled strands (D) uncoiled strands
91. The alluvial soil is transported by
(A) water (B) air (C) glaciers (D) gravity
92. Which of the following antibiotics blocks the synthesis of bacterial cell wall?
(A) Streptomycin (B) Tetracycline
(C) Penicillin (D) Erythromycin

93. The shape of rabies virus is
(A) Bullet shaped (B) Tadpole like
(C) Brick shaped (D) Lcosahedral
94. LSD is extracted from
(A) *Macor mucedo* (B) *Amanita sp.*
(C) *Claviceps purpurea* (D) *Aspergillus sp.*
95. The Earth Summit was held at
(A) New Delhi (B) Belgrade
(C) New York (D) Rio-de-Janeiro
96. The total amount of DNA present in a haploid genome of an organism is called as its
(A) S-value (B) C-value (C) T- value (D) P-value
97. The enzyme that fixes atmospheric CO₂ in C₄ plants is
(A) RUBISCO (B) Carboxy dismutase
(C) Aldolase (D) PEP-C
98. Black rust of wheat is caused by
(A) *Ustilago* (B) *Mucor*
(C) *Pythium* (D) *Puccinia*
99. During cell cycle, the replication of DNA occurs in
(A) G1 phase (B) G2 phase (C) S phase (D) M phase
100. Which ecosystem has the highest primary productivity?
(A) River ecosystem (B) Pond ecosystem
(C) Lake ecosystem (D) Forest ecosystem