

M. Sc. ENTRANCE EXAMINATION: BOTANY – 2016  
POST GRADUATE DEPARTMENT OF BOTANY  
Utkal University, Vani Vihar, Bhubaneswar

Please Copy the Following things Correctly On the Answer Sheet  
And Blacken The Corresponding Circle

Booklet No:..... 180 .....

BOOKLET SET -

Full Marks : 100

Time: 1 hour

Name of the Candidate:.....

Answer Sheet No:..... Roll No:.....

Signature of the Candidate.....

Signature of the Invigilator:.....Date: .....

**Instructions to the Candidates**

1. There are 100 questions. Answer all questions.
2. The questions are of equal value.
3. There is no negative mark for giving wrong answers.
4. The questions from 1 – 80 are of multiple choice type in Section – A. Find out the most appropriate answer out of four choices (A), (B), (C) and (D), given for the respective question and indicate choice by blackening the corresponding circle on the answer sheet.
5. The questions from 80-100 in Section – B are assertion and Reason based, each consist of 2 statements, one printed as Assertion (A) and other as Reason (R) while answering these questions you are to find out a correct answer out of the four given options and indicate your choice by blackening the corresponding circle on the answer sheet.
6. All the correct answers should be **blacken in blue/black ball pen only**.
7. Space for rough work is given at the end of this booklet

**Method of Answering the Question:**

In this test, for each question four suggested answers are given, of which only ONE is correct. You are to find out the correct answer and indicate your choice by blackening the corresponding circle on the answer sheet. For example if for question 1 the correct answer is (B) then blacken as shown below

Question 1.     A     B     C     D

Entrance Examination- 2016 (Office Use only)

Total score:..... (in figure)..... (in word)

Signature of the Examiner:.....Date:.....

## SECTION -A

Section A contains 1- 80 Multiple Choice Questions (MCQ). You are to find out a correct answer out of the four given options and indicate your choice by blackening the corresponding circle on the answer sheet.

- Which of the following pyramid for a system can never be inverted?  
(A) Pyramid of biomass  
(B) Pyramid of energy  
(C) Pyramid of number  
(D) All of these
- Conversion of nitrate to ammonia in the nitrogen cycle is called  
(A) Nitrogen fixation (B) Nitrification  
(C) Nitrosification (D) Denitrification
- Which of the following statement is not correct?  
(A) Enzymes act by lowering activation energy  
(B) Enzymes are always a protein  
(C) Enzymes are specific in their action  
(D) Enzymes act in very small amount
- Ozone is present in which layer of atmosphere  
(A) Mesosphere (B) Stratosphere  
(C) Ionosphere (D) Exosphere
- Which radiation is largely absorbed by the ozone layer  
(A) Visible rays (B) UV rays  
(C) X-Rays (D) Gamma rays
- Zone that extends between latitude  $0^{\circ}$  to  $20^{\circ}$  on either side of equator is call as \_\_\_\_\_  
(A) Tropical Zone (B) Sub-tropical zone  
(C) Temperate Zone (D) Arctic Zone
- Which of the following is a Ramsar site in India  
(A) Chilka Lake  
(B) Vakranangal Dam reservoir  
(C) Simlipal  
(D) Eastern Ghats
- Which of the following sensitive plant is used as bioindicator of  $\text{SO}_2$  pollution?  
(A) Tulsi (B) Kadamba  
(C) Potato (D) Lichen
- Guttation is loss of water through \_\_\_\_\_.  
(A) Stomata (B) Hydathods  
(C) Epidermis (D) Bark
- Unit to measure water potential is \_\_\_\_\_.  
(A) Liter (B) Gram  
(C) Mega Pascal (D) Pound
- Which of the following is not a micro-nutrient?  
(A) Mn (B) Cu  
(C) K (D) Mo
- Which of the following microorganism is used in microbial mining  
(A) *Clostridium sp.* (B) *Thiobacillus sp.*  
(C) *Pseudomonas sp.* (D) *Azotobacter sp.*
- Core element in chlorophyll molecule is \_\_\_\_\_.  
(A) Fe (B) Zn  
(C) Mg (D) Mn
- Turmeric belongs to the family \_\_\_\_\_.  
(A) Asteraceae (B) Zingiberaecae  
(C) Orchidaceae (D) Malvaceae
- Phosphorous is a structural element in  
(A) Carbohydrate (B) Cytochrome  
(C) DNA (D) Protein
- Presence of gynostegium is the characteristic feature of the family \_\_\_\_\_.  
(A) Asteraceae (B) Acantahceae  
(C) Apocyanaceae (D) Asclepiadaceae



17. The fermentation product of the following is.  
 (A) Lactic acid (B) Ethyl alcohol  
 (C) Butanol (D) All of these
18. Respiration Quotient (R.Q) is more than one in case of \_\_\_\_\_.  
 (A) Glucose (B) Fat  
 (C) Organic acid (D) Protein
19. Photosynthetically Active Radiation (PAR) is between  
 (A) 200 - 400nm (B) 400 - 700nm  
 (C) 600 -700nm (D) 680 - 750nm
20. What is the era of Jurassic period?  
 (A) Cenozoic (B) Mesozoic  
 (C) Paleozoic (D) None of the above
21. Which of the following is the largest botanical garden of the world?  
 (A) Botanical Garden at Pisa, Italy  
 (B) Botanical Garden of Strasbourg, France  
 (C) Royal Botanical Garden, Kew, England  
 (D) New York Botanical Garden, America
22. Photorespiration involves the organelles  
 (A) Chloroplast, Endoplasmic reticulum & Mitochondria  
 (B) Chloroplast, Golgi Bodies & Peroxisome  
 (C) Chloroplast, Peroxisome & Mitochondria  
 (D) Chloroplast, Lysosome & mitochondria
23. Morphine is an important alkaloid obtained from \_\_\_\_\_.  
 (A) *Saraca indica*  
 (B) *Strychnos nux-vomica*  
 (C) *Papaver somniferum*  
 (D) *Rawolfia serpentine*
24. Which of the following bacteria is used in genetic engineering of plants contains  $t_i$  plasmid?  
 (A) *Escherichia coli*  
 (B) *Agrobacterium tumefaciens*  
 (C) *Salmonella typhimurium*  
 (D) *Pseudomonas putida*
25. DNA segments can be cut at specific site by the enzyme is  
 (A) Polymerase  
 (B) Ligase  
 (C) Helicase  
 (D) Restriction endonuclease
26. Which of the following can be gene vector?  
 (A) Plasmid (B) Cosmid  
 (C) Phagemid (D) All of these
27. Southern blotting is used for \_\_\_\_\_.  
 (A) DNA-DNA hybridization  
 (B) RNA- DNA hybridization  
 (C) Somatic hybridization  
 (D) RNA-RNA hybridization
28. Which cell is found towards chalazal end in a normal embryo sac?  
 (A) Egg cell (B) Synergid  
 (C) Antipodal (D) Central cell
29. Which algae is commercially used as single cell protein?  
 (A) *Chlorella vulgaris*  
 (B) *Microcystis auroginosa*  
 (C) *Spirulina platensis*  
 (D) *Scenedesmus dimorphus*
30. Causative agent of late blight of potato is  
 (A) *Xanthomonas oryzae*  
 (B) *Pytophthora infestans*  
 (C) *Alternaria solani*  
 (D) *Puccinia graminis*
31. Agranal bundle sheath chloroplast is found in  
 (A) Mushroom (B) Moss  
 (C) Mango (D) Maize
32. Reserve food material of brown algae is  
 (A) Fucoxanthin (B) Volutin  
 (C) Laminarin (D) Glycogen
33. Sexual reproduction is absent in  
 (A) *Nostoc* (B) *Ulothrix*  
 (C) *Spirogyra* (D) *Chara*

34. Fungi causing hair loss are  
 (A) Keratophilous (B) Pyrophilous  
 (C) Coprophilous (D) None
35. Association of algae and fungi in lichen is an example of  
 (A) Helotism (B) Parasitism  
 (C) Symbiosis (D) Protocooperation
36. White rust fungus is  
 (A) *Rhizopus* (B) *Albugo*  
 (A) *Pythium* (D) *Ustilago*
37. Heteromorphic alternation of generation is noticed in  
 (A) Bryophyte (B) Gymnosperm  
 (C) Angiosperm (D) None
38. The bryophyte to indicate lime in soil is  
 (A) *Bryum* (B) *Tortella*  
 (C) *Riccia* (D) *Marchantia*
39. Middle sterile part of moss capsule is  
 (A) Calyptra (B) Operculum  
 (C) Annulus (D) Columella
40. Embryo development in *Funaria* is  
 (A) Meroblastic (B) Coeloblastic  
 (C) Holoblastic (D) Metablastic
41. Tallest moss in the world is  
 (A) *Dawsonia* (B) *Pogonatum*  
 (C) *Funaria* (D) *Anthoceros*
42. Nutrition in fern prothallus is  
 (A) Parasitic (B) Saprophytic  
 (C) Photosynthetic (D) Epiphytic
43. Meiosis occurs in fern before the formation of  
 (A) Gametes (B) Protonema  
 (C) Spores (D) Prothallus
44. Dioecious prothallus is found in  
 (A) *Pteridium* (B) *Marsilea*  
 (C) *Osmunda* (D) *Lycopodium*
45. Little club or spike moss refers to  
 (A) *Selaginella* (B) *Dryopteris*  
 (C) *Equisetum* (D) *Lycopodium*
46. A living fossil is  
 (A) *Rhynia* (B) *Ginkgo*  
 (C) *Gnetum* (D) *Pinus*
47. Coralloid roots of *Cycas* are  
 (A) Apogeotropic (B) Aerial  
 (C) Phototropic (D) Positively Geotropic
48. Canada balsam used as mounting material comes from  
 (A) *Cycas* (B) *Abies*  
 (C) *Pinus* (D) *Gnetum*
49. System of classification proposed by Linnaeus is  
 (A) Artificial (B) Natural  
 (C) Phylogenetic (D) Modern
50. F factor in bacteria is present in  
 (A) Genophore (B) Mesosome  
 (C) Plasmid (D) Membrane
51. A group of plants with similar characteristics of any rank is known as  
 (A) Family (B) Genus  
 (C) Taxon (D) Species
52. Mycorrhiza is an example of  
 (A) Decomposers (B) Ectoparasitism  
 (C) Endoparasitism (D) Symbiotic relationship
53. The substrate for photorespiration is  
 (A) Glyoxylate (B) Aspartate  
 (C) Glycolate (D) Glutamate
54. In photosynthesis, release of oxygen is due to  
 (A) Photolysis (B) Red drop  
 (C) Photophosphorylation (D) Carboxylation
55. Ascent of soil water and nutrient to plants is due to  
 (A) Transpiration (B) Cohesion  
 (C) Adhesion (D) All of the above
56. As compared to anaerobic respiration, the energy released during aerobic respiration is  
 (A) 8 times (B) 12 times  
 (C) 18 times (D) 36 times



57. Mycoplasma (PPL0)  
 (A) Lacks cell wall  
 (B) Lacks cDNA  
 (C) Lacks cell membrane  
 (D) Possess mitochondria
58. When green algae is illuminated, motile aerobic bacteria accumulate near them. The reason is  
 (A) Light (B) Oxygen  
 (C) Algae (D) CO<sub>2</sub>
59. Hormone found in liquid endosperm of coconut is  
 (A) Gibberellin (B) Auxin  
 (C) Ethylene (D) Cytokinin
60. Phytotron is a device by which  
 (A) Mutations are produced in plants  
 (B) Plants are grown with controlled nutrients  
 (C) Electrons are bombarded  
 (D) Controlled plant growth chamber
61. LSD stands for  
 (A) Lactic acid Diethylamide  
 (B) Lysergic acid Diethylamide  
 (C) Lysine Diethylamide  
 (D) Lysergic acid Dimethylamide
62. Cell 'A' with Osmotic Pressure (O.P.) =10 atm and Turgor pressure (T.P.) =6 atm is in contact with cell 'B' having O.P.=13 atm and T.P.-12 atm. The flow of water will be  
 (A) From A to B (B) Equal flow  
 (C) From B to A (D) No flow
63. Which of the following is major source of water for plants  
 (A) Capillary water  
 (B) Hygroscopic water  
 (C) Gravitational water  
 (D) Rain water
64. If a cell is kept in a hypotonic solution, then  
 (A) Exosmosis & T.P. decreases  
 (B) Endosmosis & T.P. increases  
 (C) Exosmosis & W.P. decreases  
 (D) Endosmosis & O.P. increases
65. How many turns of Calvin Cycle yields 1 molecule of glucose  
 (A) 4 (B) 6  
 (C) 8 (D) 2
66. How many ATP & NADPH<sub>2</sub> are required to produce 1 molecule of glucose through C cycle  
 (A) 12 ATP, 12 NADPH + H<sup>+</sup>  
 (B) 12 ATP, 18 NADPH + H<sup>+</sup>  
 (C) 18 ATP, 6 NADPH + H<sup>+</sup>  
 (D) 18ATP, 12 NADPH+ H<sup>+</sup>
67. A cotton fibre absorbs water through  
 (A) Diffusion (B) Osmosis  
 (C) Capillary force (D) Imbibition
68. The rosette habit of the cabbage plant can be changed drastically by the application of  
 (A) IAA (B) GA<sub>3</sub>  
 (C) IBA (D) ABA
69. Which of the following fungus is associated with the discovery of gibberellins?  
 (A) *Puccinia graminis*  
 (B) *Albugo candida*  
 (C) *Gibberella fujikourii*  
 (D) *Fusarium longipes*
70. Chaperones and chaperonins are  
 (A) Stress proteins (B) Lipoproteins  
 (C) Phospholipids (D) Spingolipids
71. At what stage of meiosis, the centromere splits so that chromatids of the same chromosome are completely separated from one another?  
 (A) Metaphase I (B) Anaphase I  
 (C) Anaphase II (D) Telophase II
72. In a plant, the dominant gene A is responsible for petal color in the presence of another gene which complements the expression of A. Which among the following genotypes shall produce white flowers?  
 (A) AAbb (B) AaBb  
 (C) AABb (D) AABB

73. Degeneracy of genetic code means:

- (A) A given amino acid is always coded by the same triplet
- (B) A given triplet may code for different amino acid
- (C) Some triplets do not code for any amino acid
- (D) Some amino acids are coded for by more than one triplet

74. If the nucleotide sequence of a given length of the transcribing strand of DNA is ATCCGTCGAC which of the following will be the sequence of the corresponding messenger RNA product?

- (A) TAGGCAGCTG
- (B) ATCCGTCGAC
- (C) UAGGCAGCUG
- (D) TUGGCUGCTG

75. Which one of the following techniques uses restriction endonucleases?

- (A) SSR                      (B) RFLP
- (C) RAPD                    (D) ISSR

76. TATA BOX is associated with:

- (A) Transcription
- (B) Translation
- (C) Reverse Transcription
- (D) DNA replication

77. Which one of the following is not a chromosomal aberration?

- (A) Translocation      (B) Transduction
- (C) Deletion            (D) Inversion

78. If a DNA strand has a nitrogenous base sequence CCCGAT, what is the sequence of the complementary RNA strand?

- (A) GGGCTA            (B) GGGCUA
- (C) GGGCAU            (D) GGGCUU

79. A plant which has been regenerated following protoplast fusion and contains a combination of cytoplasm of both parents but the nucleus of only parent is called

- (A) Cybrid                (B) Sexual hybrid
- (C) Somatic hybrid      (D) Chimaera

80. Nucleosome is composed of 4 pairs of proteins namely

- (A) H2A, H2B, H3, H4
- (B) H1, H2, H3A, H3B
- (C) H1, H3, H4A, H4B
- (D) H2A, H2B, H4A, H4B



## SECTION - B

Section B contains 81-100 questions, each consist of 2 statements, one printed as Assertion (A) and other as Reason (R) while answering these questions you are to find out a correct answer out of the four given options and indicate your choice by blackening the corresponding circle on the answer sheet.

- (A) If both A & R true and R is the correct explanation of A  
 (B) If both A & R true and R is n't the correct explanation of A  
 (C) If A is true and R is false  
 (D) If A & R are false

81. A - Oxygen is Hill's oxidant  
 R - Oxygen during photosynthesis is liberated from CO<sub>2</sub>
82. A - DCMU inhibits non-cyclic photophosphorylation  
 R - It checks the flow of electrons from water to NADP
83. A - Viruses are obligate parasites  
 R - Virus which attacks bacteria is bacteriophage
84. A - Transduction is transfer of DNA from one bacterium to another with the help of bacteriophage  
 R - Bacteria are eukaryotes
85. A - Antibiotics are two types on the basis of action  
 R - Bacteriostatic antibiotics prepared from fungal wall
86. A - Most of the mycelial bacteria reproduce by conidia  
 R - Conidia are present on conidiophores
87. A - If a plant has 42 chromosomes then its pollen grains have 21 chromosomes  
 R - Gametes are produced by meiosis
88. A - Adenine can't pair with cytosine.  
 R - Because this type of pairing is n't genetically fixed
89. A - Lysosomes are suicidal bags  
 R - Peroxisome helps in photorespiration
90. A - Proteins are polyamides  
 R - Nucleic acids are polymer of nucleotides
91. A - Sago is obtained from stem pith of *Cycas revoluta*  
 R - *Cycas revolute* is a living fossil
92. A - *Cuscuta* is a total obligate stem parasite  
 R - Obligate parasite obtain their entire food supply from host

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(B) If both A & R true and R is n't the correct explanation of A      (D) If A & R are false

93. A - Pitcher is an insectivorous plant  
R - Insectivorous plant consume insects for nitrogen
94. A - Occurrence of two different types of leaves on the same plant is called heterophylly  
R - Heterophylly is observed in mango plant
95. A - Acetyl Co A links between glycolysis and Krebs' cycle  
R - Acetyl Co A is involved in aerobic respiration
96. A - C<sub>4</sub> plants are insensitive to photorespiration  
R - Kranz anatomy helps to prevent photorespiration
97. A - Guard cells in stomata contain chloroplast  
R - Guard cells are autotrophic in nature
98. A - Totipotency is observed in plant cell  
R - IBA is a type of cytokinin
99. A - Protoplast is plant cell without cell wall  
R - Lister form bacteria are cell wall deficient form
100. A - Movement of ions is termed as flux  
R - The movement of ions into the cell is known as influx

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