

Hall Ticket Number

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Q.B. No.

100957
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Booklet Code :

A

Marks : 100

**JL-415-BOT**

Time : 120 Minutes

Paper-III

Signature of the Candidate

Signature of the Invigilator

**INSTRUCTIONS TO THE CANDIDATE**

**(Read the Instructions carefully before Answering)**

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Answer Sheet for marking the responses and the required data.
2. The candidate should ensure that the **Booklet Code printed on OMR Answer Sheet and Booklet Code supplied are same.**
3. **Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check for (i) The same booklet code (A/B/C/D) on each page. (ii) Serial Number of the questions (1-100), (iii) The number of pages and (iv) Correct Printing.** In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Calculator, Watches and Mathematical/Log Tables are not permitted into the examination hall.
5. **There will be 1/4 negative mark for every wrong answer.** However, if the response to the question is left blank without answering, there will be no penalty of negative mark for that question.
6. Record your answer on the OMR answer sheet by using Blue/Black ball point pen to darken the appropriate circles of (1), (2), (3) or (4) corresponding to the concerned question number in the OMR answer sheet. Darkening of more than one circle against any question automatically gets invalidated and will be treated as wrong answer.
7. Change of an answer is **NOT** allowed.
8. Rough work should be done only in the space provided in the Question Paper Booklet.
9. **Return the OMR Answer Sheet and Question Paper Booklet to the invigilator before leaving the examination hall.** Failure to return the OMR sheet and Question Paper Booklet is liable for criminal action.

This Booklet consists of 13 Pages for 100 Questions +2 pages of Rough Work  
+1 Title Page i.e. Total 16 pages

1. "Father of Phycology" is :
 

(1) MOP Iyengar	(2) Theophrastus
(3) Linnaeus	(4) F.E. Fritsch
2. Choose the *correct* pair :
 

A. Diatoms — Kieselguhr	
B. Agar-Agar — <i>Chondrus</i> species	
C. Algal bloom — <i>Microcystis</i> species	
D. Carrageenan — <i>Ecklonia</i> species	
(1) A, C, D	(2) A, B, C
(3) A, B, D	(4) A, B, C, D
3. Which of the following is a azotodesmic algal-fungal symbiont ?
 

(1) <i>Labaria</i>	(2) <i>Rhizobium</i>
(3) <i>Cladonia</i>	(4) <i>Frankia</i>
4. Arrange the following viruses in their order of descending sizes :
 

A. Polio	B. Influenza
C. Herpis	D. Pox Virus
(1) C, A, B, D	(2) D, C, B, A
(3) D, A, B, C	(4) B, C, A, D
5. Study the following statements and choose the *correct* combination :
 

A. In most of the fungi cell wall is made of Chitin.	
B. Facultative parasites mainly grow as saprophytes and becomes parasitic when susceptible host is available.	
C. Dimorphic fungi exhibits mycelial growth and yeast like cellular growth.	
D. Dolipore septum is the characteristic feature of Myxomycotina.	
(1) A, B, D	(2) B, C, D
(3) A, B, C	(4) A, B, C, D
6. Conidia are formed on 'Synnemata' in :
 

(1) Blastomycetes	(2) Hyphomycetes
(3) Coelomycetes	(4) Gasteromycetes
7. Plasmids of bacteria has :
 

(1) <i>ss</i> -DNA	(2) <i>ds</i> -DNA
(3) <i>ss</i> -RNA	(4) <i>ds</i> -RNA
8. Study the following statements and choose the *correct* combination :
 

A. In gram positive bacterial cell wall, Teichoic acid is present and it is absent in gram negative bacteria.	
B. Bacterial capsule protects pathogenic bacteria from phagocytosis.	
C. Pili are flagellar apparatus in bacteria.	
D. Gram positive bacteria are less sensitive to penicillin than gram negative bacteria.	
(1) A, B, C, D	(2) B, C, D
(3) B, C	(4) A, B
9. Zoospores with single whiplash flagellum on posterior side is seen in :
 

(1) Chytridiomycetes	(2) Hypochytridiomycetes
(3) Oomycetes	(4) Trichomycetes
10. Parasexuality was first noticed in the species of :
 

(1) <i>Aspergillus nidulans</i>	(2) <i>Penicillium notatum</i>
(3) <i>Rhizopus oryzae</i>	(4) <i>Mucor mucedo</i>

11. The multidisciplinary integral approach for taxonomical studies is called :
- |                    |                        |
|--------------------|------------------------|
| (1) Alpha taxonomy | (2) Omega taxonomy     |
| (3) Chemo taxonomy | (4) Numerical taxonomy |
12. *Chloroxylon swietenia* belongs to the family :
- |                  |                    |
|------------------|--------------------|
| (1) Magnoliaceae | (2) Malvaceae      |
| (3) Rutaceae     | (4) Asclepiadaceae |
13. Choose the *correct* pair(s) :
- A. Tepals — Amaranthaceae  
 B. Polyadelphous — Rutaceae  
 C. Dumbel stigma — Magnoliaceae  
 D. Translator — Asclepiadaceae
- |                |             |
|----------------|-------------|
| (1) A, B, C, D | (2) A, B, C |
| (3) A, B, D    | (4) B, C, D |
14. The fruit is Carcerulus in :
- |                   |                 |
|-------------------|-----------------|
| (1) Amaranthaceae | (2) Lamiaceae   |
| (3) Apocyanaceae  | (4) Magnoliacac |
15. The oldest established Herbarium is housed in :
- |             |              |
|-------------|--------------|
| (1) Kolkata | (2) London   |
| (3) Paris   | (4) New York |
16. "Principle of priority" is :
- |   |
|---|
| (1) Principle 6 of ICBN   |
| (2) Earliest published name to be retained for a taxa if species has more than one name |
| (3) Name of the taxon should possess classification                                     |
| (4) Tautonyms are valid in the naming taxa  |

17. A duplicate of holotype is known as :

- |             |              |
|-------------|--------------|
| (1) Isotype | (2) Paratype |
| (3) Syntype | (4) Neotype  |

18. Match the following :

- |                      |                          |
|----------------------|--------------------------|
| A. Polyadelphous     | 1. <i>Ocimum</i> sp.     |
| B. Obdiplostemonous  | 2. <i>Malva</i> sp.      |
| C. Monadelphous      | 3. <i>Cyanodon</i> sp.   |
| D. Didynamous        | 4. <i>Murraya</i> sp.    |
| E. Versatile stamens | 5. <i>Calotropis</i> sp. |
|                      | 6. <i>Citrus</i> sp.     |

- (1) A—4, B—6, C—2, D—3, E—1  
(2) A—5, B—4, C—2, D—1, E—3  
(3) A—6, B—4, C—2, D—1, E—3  
(4) A—6, B—2, C—4, D—1, E—5

19. Angiosperm phylogeny group (APG) was first published in the year :

- |          |          |
|----------|----------|
| (1) 1992 | (2) 1996 |
| (3) 1998 | (4) 2000 |

20. With reference to seed dormancy, match the following :

- |                          |                                   |
|--------------------------|-----------------------------------|
| A. <i>Amaranthus</i> sp. | 1. Hard seed coat                 |
| B. <i>Crotalaria</i> sp. | 2. Seed coat impermeable to water |
| C. <i>Orchis</i> sp.     | 3. Seed coat impermeable to air   |
| D. <i>Xanthium</i> sp.   | 4. Immature embryos               |

- (1) A—3, B—2, C—1, D—4  
(2) A—1, B—3, C—4, D—2  
(3) A—4, B—3, C—2, D—1  
(4) A—1, B—2, C—4, D—3

21. Which of the following chemical constituents are used in chemotaxonomy ?
- (1) Primary macromolecules
  - (2) Secondary macromolecules
  - (3) Primary micromolecules
  - (4) Secondary micromolecules
22. Study the following statements and choose the *correct* combination :
- A. During pollen-pistil interaction the obturator guides the pollen tube entry into the ovule.
  - B. Obturator originates from placenta, forms a hood like structure over the nucellus.
  - C. Bisporic - 8 nucleate embryo sac is seen in polygonum type.
  - D. The syngamy and triple fusion was discovered by Straussberger.
- (1) A, B, C, D
  - (2) A, B, C
  - (3) A, B, D
  - (4) A, B
23. Chalazogamy is seen in :
- (1) *Mangifera* species
  - (2) *Casuarina* species
  - (3) *Cucurbita* species
  - (4) *Pistacia* species
24. Helobial type of endosperm is seen in :
- (1) *Senecio* species
  - (2) *Peperomia* species
  - (3) *Zea mays*
  - (4) *Aristolochia* species
25. Match of the following :
- |                         |                                    |
|-------------------------|------------------------------------|
| A. Mass Meristem        | 1. Epidermis                       |
| B. Plate Meristem       | 2. Phellogen                       |
| C. Intercalary Meristem | 3. Embryo                          |
| D. Lateral Meristem     | 4. Gynophore of <i>Arachis</i> sp. |
- (1) A-3, B-1, C-4, D-2
  - (2) A-2, B-1, C-2, D-4
  - (3) A-2, B-3, C-1, D-4
  - (4) A-3, B-4, C-2, D-1

26. Opposite decussate phyllotaxy is *not* seen in :
- |                        |                       |
|------------------------|-----------------------|
| (1) <i>Achyranthus</i> | (2) <i>Calotropis</i> |
| (3) <i>Nerium</i> sp.  | (4) <i>Ocimum</i>     |
27. "The waiting meristematic zone" is :
- |                         |                                 |
|-------------------------|---------------------------------|
| (1) Meristem d'attente  | (2) Promeristem receptaculariae |
| (3) Meristem medullaire | (4) Annec initial               |
28. Endomycorrhiza of orchids are different from ectomycorrhizae :
- A. In breaking down of lignin in formation of decaying organic matter
- B. In colonization of roots of higher plants
- C. In production of spores
- D. In the formation of mantle
- The *correct* answer is :
- |                |             |
|----------------|-------------|
| (1) A, B, C, D | (2) A, B, C |
| (3) B, C, D    | (4) A, C, D |
29. Polyploid nuclei are recorded in :
- |                 |                  |
|-----------------|------------------|
| (1) Endothecium | (2) Tapetum      |
| (3) Epidermis   | (4) Middle layer |
30. Choose the *correct* statement :
- A. Root apex assumes sub-apical position due to the presence of root cap
- B. One or more number of initial cells are present in the root apex
- C. Root hairs are unicellular and endogenous
- D. Root apex possesses limited apical meristem
- |                |             |
|----------------|-------------|
| (1) A, B, C, D | (2) A, B, C |
| (3) A, B, D    | (4) B, C, D |

31. 'Synergid polyembryony' is seen in :
- |                          |                              |
|--------------------------|------------------------------|
| (1) <i>Magnifera</i> sp. | (2) <i>Orchis</i> sp.        |
| (3) <i>Allium odorum</i> | (4) <i>Argemone maxicana</i> |
32. In pteridophytes :
- Prothallus is gametophytic stage.
  - Prothallus is unicellular and saprophytic.
  - Development of sporangium from a group of cells is Leptosporangiate type.
  - Heterospory is also seen in fossil pteridophytes.
- Choose the *correct* combination.
- |                |          |
|----------------|----------|
| (1) A, B, C, D | (2) B, C |
| (3) A, C       | (4) A, D |
33. Class Sphenopsida orders are :
- Calamitales
  - Cladoxylales
  - Isoetales
  - Sphenophyllales
- The *correct* combination is :
- |          |             |
|----------|-------------|
| (1) A, B | (2) B, C    |
| (3) A, D | (4) B, C, D |
34. Choose the *correct* pairs :
- |                   |   |                       |
|-------------------|---|-----------------------|
| A. Syndetochaelic | — | Bennittiales          |
| B. Haplochaelic   | — | Coniferales           |
| C. Bisexual cones | — | <i>Gnetum</i> species |
| D. Saccate pollen | — | <i>Pinus</i> species  |
- |             |             |
|-------------|-------------|
| (1) A, B, C | (2) A, B, D |
| (3) A, C, D | (4) B, C, D |
35. Canada balsam used as mounting medium in permanent slide preparation is from :
- |                          |                              |
|--------------------------|------------------------------|
| (1) <i>Abies</i> species | (2) <i>Agathis</i> species   |
| (3) <i>Picea</i> species | (4) <i>Juniperus</i> species |
36. Study the following pairs and choose *correct* answer :
- |                        |   |                    |
|------------------------|---|--------------------|
| A. Perigynium          | — | <i>Anthoceros</i>  |
| B. Dioecious           | — | <i>Polytrichum</i> |
| C. Monoecious          | — | <i>Marchantia</i>  |
| D. Foot, seta, capsule | — | <i>Targionia</i>   |
- |          |             |
|----------|-------------|
| (1) A, B | (2) B, C    |
| (3) B, D | (4) B, C, D |
37. The largest order of the Hepaticopsida is :
- |                     |                     |
|---------------------|---------------------|
| (1) Marchantiales   | (2) Calobryales     |
| (3) Sphacocarpaceae | (4) Jungermanniales |

38. Match the following with reference to ultrastructure of plasma membrane :
- |                       |                        |
|-----------------------|------------------------|
| A. Bimolecular Model  | 1. Singer and Nicolson |
| B. Trilaminar Model   | 2. Danielli and Davson |
| C. Micellar Model     | 3. Robertson           |
| D. Fluid-Mosaic Model | 4. Hillier and Hoffman |
- (1) A-2, B-4, C-3, D-1  
 (2) A-3, B-2, C-4, D-1  
 (3) A-2, B-3, C-4, D-1  
 (4) A-4, B-3, C-2, D-1
39. The longest phase of the cell cycle is :
- |              |               |
|--------------|---------------|
| (1) G1 phase | (2) G2 phase  |
| (3) S phase  | (4) Telophase |
40. 'Amphipathic' lipid molecules of cell membrane are :
- |                   |                   |
|-------------------|-------------------|
| (1) Glycolipids   | (2) Sphingolipids |
| (3) Phospholipids | (4) Sterols       |
41. Study the following statements and choose the *correct* combination :
- A. Cell cycle is limited to growing cells.  
 B. MPF induces the mitosis of the cell cycle.  
 C. P34cdc2 is a kinase  
 D. Cyclins regulates the kinase activity.
- |                |             |
|----------------|-------------|
| (1) A, B, C, D | (2) A, B, D |
| (3) A, C, D    | (4) A, B    |
42. Fenestrated lamellae are associated with :
- |                           |                     |
|---------------------------|---------------------|
| (1) Endoplasmic reticulum | (2) Golgi apparatus |
| (3) Chloroplast           | (4) Ribosomes       |
43. 'Microbodies' are :
- (1) Peroxisomes only  
 (2) Glyoxysomes only  
 (3) Both Peroxisomes and Glyoxysomes  
 (4) Peroxisomes, Glyoxysomes and Ribosomes
44. The term 'Endoplasmic reticulum' is first coined by :
- |                        |                        |
|------------------------|------------------------|
| (1) Watson             | (2) Claude and Fullam  |
| (3) Porter and Kallman | (4) Porter and Machado |
45. Match of the following :
- |                        |                      |
|------------------------|----------------------|
| A. <i>Andrographis</i> | 1. Antiabortifacient |
| B. <i>Asparagus</i>    | 2. Antidiabetic      |
| C. <i>Phyllanthus</i>  | 3. Hepatoprotective  |
| D. <i>Gymnema</i>      | 4. Cures asthma      |
- (1) A-2, B-3, C-1, D-4  
 (2) A-3, B-1, C-4, D-2  
 (3) A-3, B-4, C-1, D-2  
 (4) A-2, B-1, C-4, D-3



46. According to Vavilov, the main geographical centres for cultivated plants are :
- |           |              |
|-----------|--------------|
| (1) Ten   | (2) Fourteen |
| (3) Eight | (4) Eleven   |
47. 'Haematoxylon' dye used in staining nucleus-obtained from the plant, which belongs to :
- |                   |                    |
|-------------------|--------------------|
| (1) Papilionaceae | (2) Caesalpinaceae |
| (3) Asteraceae    | (4) Mimosoideae    |
48. 'Soyabean' is a native of :
- |            |            |
|------------|------------|
| (1) China  | (2) Brazil |
| (3) Canada | (4) USA    |
49. A medicinal plant rich in ascorbic acid, chebulic acid and ellagic acid are present in :
- |                        |                         |
|------------------------|-------------------------|
| (1) <i>Asparagus</i>   | (2) <i>Gymnema</i>      |
| (3) <i>Phyllanthus</i> | (4) <i>Andrographis</i> |
50. 'Sahyadri moutains' are associated with :
- |                             |                           |
|-----------------------------|---------------------------|
| (1) Eastern Ghats           | (2) Western Ghats         |
| (3) Hills of Madhya Pradesh | (4) North Himalayan hills |
51. The number of biosphere reserves in India are :
- |             |              |
|-------------|--------------|
| (1) Twelve  | (2) Fourteen |
| (3) Sixteen | (4) Eighteen |
52. Information about rare plant species growing in Botanical gardens are written in :
- |                |                |
|----------------|----------------|
| (1) Red book   | (2) Blue book  |
| (3) Green book | (4) Black book |
53. "India is a homeland of 167 important cultivated plants and 320 species of their wild relatives", According to :
- |          |           |
|----------|-----------|
| (1) ICAR | (2) CSIR  |
| (3) BSI  | (4) NBPGR |
54. In the 'age pyramid' the young population is more than other post reproductive and reproductive group. The pyramid shape is :
- |                       |                    |
|-----------------------|--------------------|
| (1) Bell shaped       | (2) Urn shaped     |
| (3) Triangular shaped | (4) Spindle shaped |
55. 'Vital Index' of a population is :
- |  |
|--|
| (1) The brith-death ratio                    |
| (2) The death of individuals in a population |
| (3) The realised natality                    |
| (4) Clutch size of the population            |
56. Arrange the process of succession in sequential order :
- |                |             |
|----------------|-------------|
| A. Invasion    | B. Nudation |
| C. Reaction    | D. Climax   |
| E. Competition |             |
- |                   |                   |
|-------------------|-------------------|
| (1) A, C, B, D, E | (2) B, A, E, C, D |
| (3) B, E, A, C, D | (4) A, B, E, C, D |

57. Gross primary production is equal to :
- (1) Net Primary Production + Photosynthesis
  - (2) Net Primary Production - Respiration
  - (3) Net Primary Production + Respiration
  - (4) Net Primary Production - Photosynthesis
58. 'Inverted pyramid' is seen in the pyramid of :
- (1) Numbers of pond ecosystem
  - (2) Numbers of grassland ecosystem
  - (3) Biomass of forest ecosystem
  - (4) Biomass of pond ecosystem
59. In Telangana state — 'Dry Savannah Forests' present in the districts of :
- |                             |                           |
|-----------------------------|---------------------------|
| (1) Nizamabad — Adilabad    | (2) Medak — Mahboob Nagar |
| (3) MahaboobNagar — Khammam | (4) Rangareddy — Medak    |
60. GWP is :
- |                              |                              |
|------------------------------|------------------------------|
| (1) Global Warming Product   | (2) Global Warming Potential |
| (3) Global Warming Procedure | (4) Global Warming Process   |
61. Ozone hole is formed in the :
- |                  |                  |
|------------------|------------------|
| (1) Stratosphere | (2) Troposphere  |
| (3) Ionosphere   | (4) Thermosphere |
62. Match the following :
- |  |                       |
|--|-----------------------|
| A. Species restricted to a specific geographic region  | 1. Flagship species   |
| B. Species introduced from one region to another geographic region                             | 2. Threatened species |
| C. Species pron to extinction through anthropogenic activities                                 | 3. Endemic species    |
| D. A vulnerable species represent an environmental cause also helps in protection of ecosystem | 4. Exotic species     |
- (1) A—4, B—3, C—2, D—1
  - (2) A—4, B—2, C—1, D—3
  - (3) A—3, B—2, C—1, D—4
  - (4) A—3, B—4, C—2, D—1
63. Which of the following has least potential on global warming :
- |                    |                   |
|--------------------|-------------------|
| (1) Methane        | (2) Nitrous oxide |
| (3) Carbon-dioxide | (4) CFC-12        |
64.  $K_m$  value of enzyme in substrate concentration at :
- |                           |                           |
|---------------------------|---------------------------|
| (1) $\frac{1}{4} V_{max}$ | (2) $\frac{1}{2} V_{max}$ |
| (3) $2 V_{max}$           | (4) $4 V_{max}$           |

65. Enzymes enhance the rate of reaction by :
- (1) Forming reactant-product complex
  - (2) Increase the activation energy
  - (3) Lowering the activation energy
  - (4) Charging equilibrium of reaction
66. Study the following statements and choose the *correct* combination :
- A. The term water potential was proposed by Slater and Taylor
  - B. The quantum change in water potential an account of matric forces has always negative value
  - C. Water potential = Osmotic potential - Pressure Potential
  - D. Osmotic potential is also called solute potential
- (1) A, B, C, D
  - (2) A, B, C
  - (3) A, B, D
  - (4) B, C, D
67. In photorespiration the catalase enzyme which splits  $2\text{H}_2\text{O}_2$  to  $\text{H}_2\text{O} + \text{O}_2$  is present in :
- (1) Peroxisome
  - (2) Mitochondria
  - (3) Chloroplast
  - (4) Glyoxysomes
68. NADP - ME type of  $\text{C}_4$  plant is :
- (1) *Saccharum*
  - (2) *Amaranthus*
  - (3) *Chloris*
  - (4) *Panicum*
69. Study the following statements and choose the *correct* combination :
- A. In HMP pathway the intermediate compounds are five carbon compounds.
  - B. HMP pathway is also called as pentose phosphate pathway.
  - C. First stable compound in HMP pathway is phosphogluconic acid.
  - D. HMP pathway is also called as indirect oxidation pathway.
- (1) A, B, C, D
  - (2) A, B, C
  - (3) B, C, D
  - (4) A, C, D
70. In seedlings the stored fats are converted to disaccharide by the process :
- (1) Glyoxylate cycle
  - (2) HMP pathway
  - (3) Gluconeogenesis
  - (4) Krebs cycle
71. One of the following is a short day plant :
- (1) Tomato
  - (2) Tobacco
  - (3) Radish
  - (4) Lily
72. The hormone used in synchronous fruit ripening in pineapple is :
- (1) Brassinosteroid
  - (2) Zeatin
  - (3) GA3
  - (4) Ethylene
73. 'Richmond-Lang' effect is due to the application of :
- (1) Abscisic acid
  - (2) Ethylene
  - (3) Cytokinin
  - (4) Gibberlic acid
74. The present cultivated wheat variety *Triticum vulgare* is :
- (1) Diploid
  - (2) Tetraploid
  - (3) Hexaploid
  - (4) Polyploid

75. Study the following statements and choose the *correct* combination :
- A. In the chloroplast, the extra nuclear DNA is present in stroma region  
 B. DNA present in the chloroplast is commonly called as Ct DNA/CP DNA  
 C. CP DNA is comparatively bigger size than mt DNA.  
 D. The plastid inheritance is uniparental i.e. paternal inheritance.
- (1) A, B, C (2) A, B, D  
 (3) B, C, D (4) A, B, C, D
76. The first protective coat used for carrot synthetic seeds is :
- (1) Carragenin (2) Sodium alginate  
 (3) Polyoxyethylene (4) Gelrite TM
77. Study the following statements and choose the *correct* combination :
- A. Gene transformation takes place during somatic hybridization and helps in formation of transgenic plants.  
 B. In somatic hybridization disease resistant hybrids can be created.  
 C. Somatic hybrids are balanced and viable.  
 D. Somatic hybridization between two diploid results in the formation of an amphidiploid.
- (1) A, B, C, D (2) A, B, C  
 (3) A, C, D (4) A, B, D
78. The scientist, who produced a whole plant from a single cell under vitro condition :
- (1) White (2) Steward  
 (3) Habelandf (4) Nobecourt
79. 'The exact copy of the parental cell' arising from the tissue culture from plant is known as :
- (1) Hybrid (2) Cybrid  
 (3) Explant (4) Clone
80. Balbiani rings are seen in :
- (1) Polytene chromosome (2) Lampbrush chromosome  
 (3) B-chromosome (4) Homologous chromosome
81. Study the following statements and choose the *correct* combination :
- A. B-chromosomes are extra chromosomes present in some plants other than 'A' chromosomes.  
 B. A-chromosomes are generally smaller than B-chromosomes.  
 C. The A-chromosomes are sex-chromosomes and are autosomes of an organism.  
 D. B-chromosomes are known to help in the formation of nucleolus.
- (1) A, B, C, D (2) A, B, C  
 (3) A, B, D (4) A, C, D

82. Choose the *correct* pairs :
- |    |                       |   |  |
|----|-----------------------|---|--|
| A. | Transposable elements | — | Certain DNA sequences which move from one place to other   |
| B. | Transposon term       | — | Coined by Hedges and Jacob                                 |
| C. | Insertion sequences   | — | Can insert at specific sites in bacterial chromosomes      |
| D. | Retro-elements        | — | Nucleic acid sequences propagated by reverse transcription |
- (1) A, B, C, D (2) A, B, C  
(3) A, B, D (4) B, C, D
83. 'Raphanobrassica' is a classical example of :
- |     |               |     |               |
|-----|---------------|-----|---------------|
| (1) | Autopolyploid | (2) | Allopolyploid |
| (3) | Hexaploid     | (4) | Amphidiploid  |
84. 'Albino leaves' in plants is :
- |     |                        |     |                    |
|-----|------------------------|-----|--------------------|
| (1) | Morphological mutation | (2) | Resistant mutation |
| (3) | Biochemical mutation   | (4) | Lethal mutation    |
85. Study the following statements and choose the *correct* combination :
- |    |   |
|----|---|
| A. | Operon model was proposed by Jacob and Monod.   |
| B. | Operon model explains the induction and repression of enzyme synthesis.                   |
| C. | Operator gene is controlled by number of structural genes.                                |
| D. | Lac-operon is an example for non-inducible system and regulations at transcription level. |
- |     |            |     |         |
|-----|------------|-----|---------|
| (1) | A, B, C, D | (2) | A, B, C |
| (3) | A, C, D    | (4) | A, B, D |
86. Bacterial genetic recombination discovered by Griffith was in :
- |     |                   |     |                      |
|-----|-------------------|-----|----------------------|
| (1) | <i>Salmonella</i> | (2) | <i>Streptococcus</i> |
| (3) | <i>E.coli</i>     | (4) | <i>Xanthomonas</i>   |
87. To establish 'DNA is the genetic material', Hershey and Chase utilised the radioactive molecules of :
- |     |         |     |            |
|-----|---------|-----|------------|
| (1) | Sulphur | (2) | Phosphorus |
| (3) | Carbon  | (4) | Nitrogen   |
88. Transgenic plant with edible vaccine for hepatitis-B is :
- |     |        |     |         |
|-----|--------|-----|---------|
| (1) | Potato | (2) | Tomato  |
| (3) | Cowpea | (4) | Spinach |
89. Study the following statements and choose the *correct* combination :
- |    |  |
|----|--|
| A. | The legal characterization and treatment of trade related biotechnological processes and products is popularly described as 'Intellectual property'. |
| B. | Intellectual property is tangible and includes patents, trade secrets, copyrights and trade marks.   |
| C. | Intellectual property encourages industries to allocate labour, R and D units and funding to facilitate the production.                              |
| D. | PBR (Plant Breeders Right) is an example of intellectual property.   |
- |     |            |     |         |
|-----|------------|-----|---------|
| (1) | A, B, C, D | (2) | A, B, C |
| (3) | B, C, D    | (4) | A, C, D |

90. According to Indian Patent Act, 1970, the duration of the patent in India is :
- (1) Five years from the date of filing applications
  - (2) Seven years from the date of grant of patent
  - (3) Five years from the date of grant of patent
  - (4) Ten years from the date of filing application
91. In PCR technique the thermostable enzyme is :
- (1) P flu DNA polymerase
  - (2) Taq DNA polymerase
  - (3) RNA polymerase
  - (4) Thiokinase
92. The technique used to detect proteins of particular specificity is known as :
- (1) Southern blotting
  - (2) Northern blotting
  - (3) Western blotting
  - (4) Eastern blotting
93. What are the component-II of the enzyme dinitrogenase in nitrogen fixation :
- (1) The smaller subunit DN
  - (2) The larger subunit DNR
  - (3) DNR has Fe protein
  - (4) DN has Mo protein
94. The bacterial genes helping in formation of nodules are called :
- (1) Nodulation genes
  - (2) Nodulin genes
  - (3) Nif genes
  - (4) Hup genes
95. Arrange the following vegetational zones in their increasing altitude :
- |                   |                      |
|-------------------|----------------------|
| A. Polar zone     | B. Tropical zone     |
| C. Temperate zone | D. Sub-tropical zone |
- (1) A, B, D, C
  - (2) B, D, C, A
  - (3) B, C, D, A
  - (4) A, C, B, D
96. The plants do *not* have perennating organs and pass the unfavourable period in the form of seeds are known as :
- (1) Phanerophytes
  - (2) Chamephytes
  - (3) Hemicryptophytes
  - (4) Therophytes
97. Without fertilization the embryos are formed from synergids in :
- (1) *Allium*
  - (2) *Ulmus*
  - (3) *Argemone*
  - (4) *Trillium*
98. The sharp line of demarcation between two biomes is called as :
- (1) Niche
  - (2) Ecotone
  - (3) Ecad
  - (4) Ecotype
99. The phytochrome components exhibit dark reversion of  $P_{fr}$  to  $P_r$  in :
- (1) Monocotyledons only
  - (2) Dicotyledons only
  - (3) Both Monocotyledons and Dicotyledons
  - (4) In all flowering plants
100. Somatic embryogenesis in culture was demonstrated for the first time in :
- (1) Carrot
  - (2) Beetroot
  - (3) Potato
  - (4) Pea

Space for Rough Work

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