

Please check whether you have got the right question paper.

N.B: 1. Attempt **all** sections.

2. **Figures** to the **right** indicate **full** marks.

3. Draw **neat** and **labelled** diagrams wherever **necessary**.

### SECTION I

**All questions are compulsory.**

**1 X 40= 40 Marks**

Choose the most appropriate choice for the following:

- Manubrium is found in antheridium of \_\_\_\_\_  
 a) *Chara*  
 b) *Oedogonium*  
 c) *Chlamydomonas*  
 d) *Spirogyra*
- Which of the following is never found near the sea coast?  
 a) Brown algae  
 b) Mosses  
 c) Green algae  
 d) Red algae
- Columella is a specialized structure found in the sporangium of \_\_\_\_\_  
 a) *Alternaria*  
 b) *Fusarium*  
 c) *Rhizopus*  
 d) *Agaricus*
- One of the following is a heteroecious fungus \_\_\_\_\_  
 a) *Albugo*  
 b) *Puccinia*  
 c) *Ustilago*  
 d) *Phytophthora*
- Hypanthodium inflorescence is observed in \_\_\_\_\_  
 a) *Ficus*  
 b) *Ocimum*  
 c) *Helianthus*  
 d) *Salvia*
- The largest herbarium of the world is in \_\_\_\_\_  
 a) Geneva  
 b) New York  
 c) Kew  
 d) Israel
- Endosperm in gymnosperms is \_\_\_\_\_  
 a) Haploid  
 b) Diploid  
 c) Triploid  
 d) Polyploid

8. Cycadales originated in \_\_\_\_\_
- Mesozoic era
  - Coenozoic era
  - Paleozoic era
  - Proterozoic era
9. The dominant generation in pteridophytes is \_\_\_\_\_
- Haploid
  - Gametophytic
  - Diploid
  - Triploid
10. The structure that produce gametes in prothallus are \_\_\_\_\_
- Anthers and archegonium
  - Ascogonium and anthers
  - Antheridia and archegonia
  - Only Antheridia
11. Protonema is a transition stage in the life cycle of
- Riccia*
  - Funaria*
  - All Bryophytes
  - Cycas
12. The type of fruit in Pineapple is
- Sorosis
  - Caryopsis
  - Samara
  - Silique
13. "*Origin of Species* " was written by
- Linnaeus
  - Mendel
  - Lamarck
  - Darwin
14. Two bacteria most useful in genetic engineering are \_\_\_\_\_
- Rhizobium* and *Azotobacter*
  - Nitrosomonas* and *Klebsiella*
  - Escherichia* and *Agrobacterium*
  - Rhizobium* and *Diplococcus*
15. Application of embryo culture is in \_\_\_\_\_
- Clonal Propagation
  - Production of alkaloids
  - Production of somaclonal variation
  - Overcoming hybridization barrier
16. All are plant derived alkaloids except \_\_\_\_\_
- Nicotine
  - Menthol
  - Codeine
  - Quinine

17. Cybrids are \_\_\_\_\_ .
- Nuclear hybrids
  - Cross pollination Hybrids
  - Cytoplasmic hybrids
  - Cytological hybrids
18. The variation in the restriction DNA fragment length between individuals of a species is called as
- RFLP
  - RAPD
  - AFLP
  - SSR
19. DNA of eukaryotic organisms has several repeating units of short sequences called
- Random Repeats
  - Tandem Repeats
  - Mini Satellites
  - Introns
20. Mycorrhiza represents \_\_\_\_\_ .
- Symbiotic association between fungus and liverworts
  - Parasitic association between fungus and algae
  - Parasitic association between fungus and root of a higher plant
  - Symbiotic association between fungus and root of a higher plant
21. Monohybrid ratio is \_\_\_\_\_
- 9:3:3:1
  - 9:1
  - 9:3:1
  - 3:1
22. Mendels experimental material was
- Pisum sativum*
  - Lathyrus odoratus*
  - Mirabilis jalapa*
  - Oryza Saliva*
23. The five kingdom classification of organisms was proposed by \_\_\_\_\_
- Whittakar
  - John Ray
  - Bentham and Hooker
  - Whitter
24. Synandrous condition is common in the family \_\_\_\_\_
- Umbelliferae
  - Anacardiaceae
  - Malvaceae
  - Cucurbitaceae
25. Which of the following helps in accent of sap?
- Root pressure
  - Transpiration
  - Capillary action
  - Root pressure, Transpiration & Capillary action

26. Who fought the case of Turmeric patent for India?

- a) Dr. C. V. Raman
- b) Dr. K. Rajgopalan
- c) Dr. R. Mashalkar
- d) Mr. Daswani

27. The condition for any solution to obey Beer-Lambert's law is \_\_\_\_\_

- a) The incident radiation should be polychromatic
- b) The incident radiation should be monochromatic
- c) Both the above
- d) None of these

28. Calibration of the instruments is done using \_\_\_\_\_

- a) Reference material
- b) Known standards
- c) Pure samples
- d) Certified reference material

29. Radioactive tracers used in Biological applications are

- a) Alpha emitters
- b) beta emitters
- c) gamma emitters
- d) X ray emitters

30. Which of the following is rich in Triglycerides?

- a) HDL
- b) LDL
- c) VLDL
- d) Chylomicrones

31. Western blot technique is used for \_\_\_\_\_.

- a) DNA samples
- b) RNA samples
- c) Protein samples
- d) Gene expression

32. Which of the following test is used for reducing sugar?

- a) Barford's Test
- b) Iodine Test
- c) Anthrone Test
- d) Fehling's Test

33. Which of these class of enzymes is not ATP dependent?

- a) Lyases
- b) Ligases
- c) Synthetase
- d) Kinases

34. Example of a non-parametric statistical test is

- a) t test
- b) z test
- c) F test
- d) Chi Square test

35. Insulin gene is located on chromosome
- 19
  - 11
  - 7
  - 9
36. The special type of root inhabited by microbes in *Cycas* are \_\_\_\_\_
- Adventitious root
  - Microbial root
  - N<sub>2</sub> fixing root
  - Corolloid root
37. Which of the following is a good source of phytoestrogens ?
- coffee beans
  - green tea leaves
  - Soya bean
  - green leafy vegetables
38. Which of the following is reported to promote good health of eyes?
- Phenolic acids
  - Flavonoids
  - Carotenoids
  - Phytoestrogens
39. Which of the following food source contains probiotics?
- Canned green beans
  - Yogurt
  - Apple slices
  - Whole wheat bread
40. The ectomycorrhiza form an intercellular network in root called
- Arbuscules
  - Vesicles
  - Hartig net
  - Hauatoria

## SECTION II

**3 X 10= 30 Marks**

Attempt **any three** of the following:-

- Discuss the therapeutic and commercial value of medicinal plants ginger, clove and aloe.
- Explain giving suitable examples the different types of biological methods to synthesize nanomaterials
- C<sub>4</sub> plants are more efficient than C<sub>3</sub> plants, Justify.
- Describe the procedure for the preparation of specimens for electron microscopy.
- Distinguish between WTO and Indian Patent Law.

## SECTION III

2 X 1.5= 30 Marks

Attempt **any two** of the following:-

1. Describe the current practices used in conservation of biodiversity.
2. Giving suitable examples, explain the application of tracer techniques in biology.
3. Two horticultural plots were divided into 6 equal sub-plots. Organic fertilizer is added to plot 1 & chemical fertilizer is added to plot 2. The yield of fruits from plot 1 & plot 2 in kg/ sub-plot is given below. Can we say the yield due to organic fertilizer is higher than that due to chemical fertilizer.

PLOT 1	6.2	5.7	6.5	6.0	6.3	5.8
PLOT 2	5.6	5.9	5.6	5.7	5.8	5.7