

(3 Hours)

[ Total Marks : 100

28/4/12

- N.B. :** (1) Attempt **all** questions.  
 (2) **Figures** to the **right** indicate **full** marks.  
 (3) Draw neat labelled **diagrams** wherever **necessary**.

Section I**I All questions are compulsory****Choose the most appropriate choice for the following:****40**

- 1) *Sargassum*, *Fucus* and *Ectocarpus* belong to the division
  - a) Chlorophyta
  - b) Phaeophyta
  - c) Cyanophyta
  - d) Chrysophyta
- 2) The causative organism for the disease late blight of potato is
  - a) *Phytophthora infestans*
  - b) *Pythium debaryanum*
  - c) *Perenospora pisi*
  - d) *Xanthomonas citri*
- 3) The genetic code is highly redundant. In most cases several codons direct the insertion of the same amino acid into a protein molecule. Which of the following amino acids are specified by one codon each ?
  - a) Phenylalanine and Leucine
  - b) Methionine and Tryptophan
  - c) Methionine and Valine
  - d) Serine and Tryptophan
- 4) The evolutionary innovations that first appeared among the gymnosperms (i.e. not seen in bryophytes and seedless vascular plants) include
  - a) true roots
  - b) presence of xylem and phloem elements
  - c) retention of the female gametophyte on the maternal sporophyte
  - d) heterospory
- 5) According to Bentham and Hooker's system of classification the family Sterculiaceae has the following characters:
  - a) 5 or 10 or more Monoadelphous stamens, superior stalked ovary.
  - b) 5 or 10 or more Monoadelphous stamens, superior sessile ovary.
  - c) Numerous free stamens, superior sessile ovary
  - d) Numerous free stamens, superior stalked ovary.
- 6) Trimerous, epigynous flowers with only one fertile stamen is a characteristic of the
  - a) Sub-family Musaceae
  - b) Sub-family Zingiberaceae
  - c) Sub - family Cannaceae
  - d) None of the above

- 7) The occurrence of speciation due to spontaneous chromosomal modifications is called
- Allopatric speciation
  - Sympatric speciation
  - Parapatric speciation
  - Statispatric speciation
- 8) The transitional zone where two different communities meet, is called an
- Ecad
  - Ecotone
  - Ecotype
  - Ecophene
- 9) C<sub>4</sub> plants exhibit
- Low CO<sub>2</sub> compensation point
  - Kranz type anatomy of leaves
  - Both a and b
  - High CO<sub>2</sub> compensation point
- 10) Sennosides A, B, C and D are present in the leaves of
- Centella asiatica*
  - Cassia angustifolia*
  - Ruta graveolens*
  - Atropa belladonna*
- 11) Chlorophyll a differs from chlorophyll b in having
- Aldehyde group at tetrapyrrole ring II
  - Aldehyde group at tetrapyrrole ring I
  - Methyl group at tetrapyrrole ring II
  - Methyl group at tetrapyrrole ring I
- 12) DNA hybridization is a technique commonly used in the detection of specific DNA sequences in a sample. This technique is based on all of the following properties except
- Double strandedness
  - Base pair pairing
  - Major and minor grooves
  - Sequence specificity.
- 13) In TLC, Vitamins and Carotenoids are detected by using -
- 50% Antimony chloride in Glacial acetic acid
  - 0.3% Ninhydrin in N-butanol containing 3% acetic acid.
  - Bromothymol blue in Aqueous NaOH
  - Bromocresol green in ethanol
- 14) During non-cyclic electron flow, the electron hole left in PSII is filled by the electrons coming from
- PSI
  - Water
  - PSII
  - NADPH
- 15) Which of the following is an excellent source of tocopherol ( Vitamin E)
- Sprouted pulses

- b) Papaya  
c) Wheat germ oil  
d) Carrot
- 16) The NAD Me- type of  $C_4$  cycle is also known as a -  
a) Malate transporter  
b) Aspartate transporter  
c) Pyruvate transporter  
d) Oxaloacetate transporter
- 17) A mixture of amino acids is separated on a strong acid cation exchanger. Gradient elution using increasing pH and ionic concentration, first elutes  
a) Neutral amino acids  
b) Acidic amino acids  
c) Basic amino acids  
d) Hydrophobic amino acids
- 18) The technique known as RT-PCR is best suited for the detection of  
a) RNA  
b) Bacteria  
c) Alleles  
d) Viruses
- 19) All of the following detectors can be used in HPLC except  
a) UV – visible detector  
b) Flame ionisation detector.  
c) Refractive index detector.  
d) Fluorescence detector.
- 20) The value of Nygard's Index is used for the assessment of  
a) Marine pollution  
b) Eutrophication of freshwater bodies.  
c) Soil pollution  
d) Radioactive pollution
- 21) Sieve tubes and companion cells are not found in  
a) *Gnetum*  
b) *Mangifera*  
c) *Hibiscus*  
d) *Nymphaea*
- 22) Endosperm formation can occur in  
a) Dicots only  
b) Monocots only  
c) Both Dicots and Monocots  
d) Pteridophytes
- 23) The difference in the double fixation of  $CO_2$  in  $C_4$  and CAM plants is  
a) The carboxylising enzymes in the two plants are different  
b)  $CO_2$  fixation in  $C_4$  plants is separated by space and in CAM plants by time.  
c) The two pathways of  $CO_2$  fixation are different in  $C_4$  and CAM plants  
d) The  $CO_2$  compensation points in these two plants is different.
- 24) The alkaloids from *Catharanthus roseus* that possess anti-leukemic properties are

- a) Catheranthin and ephedrine  
 b) Colchicine and strychnine  
 c) Vincristine and vinblastine  
 d) Strychnine and brucine
- 25) \_\_\_\_\_ of *Curcuma longa* is used as medicine.  
 a) Dried flowers  
 b) Roots  
 c) Rhizome  
 d) Tuber
- 26) Which of the following do the Bryophytes, Pteridophytes and Spermatophytes have in common?  
 a) Aquatic habitat  
 b) Presence of Vascular tissues  
 c) Development of the embryo  
 d) Plant body divided into root, stem and leaves
- 27) Cell wall of Fungi contain  
 a) Cellulose  
 b) Chitin  
 c) Pectin  
 d) Lignin
- 28) Glucosinolates occur in the family  
 a) Brassicaceae  
 b) Sterculiaceae  
 c) Apiaceae  
 d) Verbenaceae
- 29) Pteridophytes are the first  
 a) Vascular plants  
 b) Seed bearing plants  
 c) Flowering plants  
 d) Sporophytic plants
- 30) Compounds having oxytocin like activity are found in the tubers of .  
 a) *Gloriosa superba*  
 b) *Asparagus racemosus*  
 c) *Puraria tuberosa*  
 d) *Solanum tuberosum*
- 31) The occurrence of speciation due to geographical isolation from the parent species is called  
 a) Allopatric speciation  
 b) Sympatric speciation  
 c) Parapatric speciation  
 d) Statispatric speciation
- 32) The process involving the uptake of contaminants by plants and their release into the atmosphere , typically in a modified form is known as  
 a) Rhizofiltration  
 b) Phytovolatalisation  
 c) Phytostabilisation  
 d) Phytodegradation

- 33) Paper chromatography is an example of
- Partition chromatography
  - Affinity chromatography
  - Ion exchange chromatography
  - Size exclusion chromatography
- 34) In TLC, proteins are detected by using -
- 50% Antimony chloride in Glacial acetic acid
  - 0.3% Ninhydrin in N-butanol containing 3% acetic acid.
  - Bromothymol blue in Aqueous NaOH
  - Bromocresol green in ethanol
- 35) In climacteric fruits such as bananas, melons and tomatoes, which of the following statements is true?
- It marks the end of fruit maturation and the beginning of fruit senescence.
  - There is a sudden rise in the respiration of the fruit
  - Ethylene induced changes occur in the fruit including pigment changes and sugar release.
  - All of the above.
- 36) The Kyoto Protocol was signed by 100 countries in 1997 -
- To set legally binding targets to reduce green house gases.
  - To conserve endangered species
  - To reduce illegal trafficking of endangered species.
  - To reduce and phase out the use of CFC's
- 37) According to the principles of ICBN, if the same name has been applied by different authors to several species of a genus, it is rejected and indicated as
- Nomen superfluum*
  - Nomen dubium*
  - Nomen confusum*
  - Nomen ambiguum*
- 38) Conversion of pyruvic acid into acetyl CoA requires
- Mg<sup>++</sup>, Coenzyme A and NAD<sup>+</sup>
  - Mg<sup>++</sup>, TPP and Lipoic acid
  - Mg<sup>++</sup>, TPP, NAD<sup>+</sup> and Lipoic acid
  - Mg<sup>++</sup>, TPP, Coenzyme A, NAD<sup>+</sup> and Lipoic acid
- 39) Bryophytes are
- Heterosporous
  - Amphibians of the plant world
  - The first vascular plants
  - Heterotrophs
- 40) Gymnosperms are \_\_\_\_\_ in nature.
- Heterosporous
  - Homosporous
  - Homosporous and Heterosporous
  - Heterotrophs

