BOTANY

(Original Solved Question Paper)

15603 **120 MINUTES**

1. Protonema in the life cycle of *Funaria* is
   A) Diploid B) Haploid
   C) Dihaploid D) Merodiploid
   Ans. (B)

2. Spore dispersal in moss is made possible by
   A) Columella B) Operculum
   C) Peristome teeth D) None of these
   Ans. (C)

3. Cryopreservation of germplasm is carried out using liquid nitrogen at the temperature ----------
   A) -196^0 C B) -80^0 C C) 0^0 C D) -20^0 C
   Ans. (A)

4. Endosperm in gymnosperms is
   A) Pre fertilization product and haploid
   B) Post fertilization product and diploid
   C) Pre fertilization product and triploid
   D) Post fertilization product and triploid
   Ans. (A)

5. Lichens living on rocks are called
   A) Saxicolous B) Corticolous
   C) Terricolous D) Halicolous
   Ans. (A)

6. When two ecosystems overlap each other, the area is called
   A) Habitat B) Niche
   C) Ecotone D) Ecotype
   Ans. (C)

7. Recently (2013) Government of India notified one biosphere reserve. Choose the correct one from the following:
   A) Valley of Flowers B) Nanda Devi
   C) Nicobar Islands D) Seshachalam
   Ans. (C)

8. The modern synthetic theory of evolution is the consortium of the work by a number of scientists namely T. Dobzhansky, R.A. Fisher, J.B.S. Haldane, Swall Wright, Ernst Mayr, and G.L. Stebbins. Name the two theories in Science that are combined to form the synthetic theory of evolution?

   A) Darwin's Theory of Natural Selection and Lamarck's Theory of Use and Disuse
   B) Mendel's Theory of Heredity and Heckel's Theory of Ontogeny Repeats Phylogeny
   C) Darwin's Theory of Natural Selection and Mendel's Theory of Heredity
   D) Lamarck's Theory of Use and Disuse and Heckel's Theory of Ontogeny Repeats Phylogeny

   Ans. (C)

9. DNA supercoiling is the over- or under-winding of a DNA strand, and is an expression of the strain on that strand. This helical winding of DNA molecules is removed by the activity of an enzyme

A) DNA polymerase B) DNA primase
C) DNA helicase D) DNA topoisomerase

Ans. (D)

10. Match the List I with II

List I	List II
A.Population	i. Large naturally occurring community of flora & fauna occupying a major habitat
B.Biocoenoosis	ii. Assemblage of all the individuals belonging to different species occurring in the same geographical area
C.Ecosystem	iii. Group of similar individuals belonging to the same species found in an area
D.Biome	iv. Interaction between the living organisms and their physical environmental components
	v. Classification of species assemblage based on the type of environment

A) A- v, B- ii, C- iii, D- i B) A- iv, B- i, C- ii, D- iii
C) A- iii, B- ii, C- iv, D-i D) A- ii, B- iii, C- iv, D- i

Ans. (C)

11. Okazaki fragments are short, discontinually newly produced DNA fragments that are formed on the lagging template strand during replication of DNA. These DNA fragments are sealed by which one of the following enzyme?

A) RNA primase
B) DNA ligase
C) Single strand binding proteins
D) DNA polymerase

Ans. (B)

12. Coding region of an mRNA is 336 nucleotides long, including the initiator and termination codons. Predict the number of amino acids in the protein translated from this m RNA?

A) 109 B) 110 C) 111 D) 112

Ans. (C)

13. The protective covering of radicle in monocot seeds is called

A) Coleoptile B) Coleorrhiza
C) Scutellum D) Aleurone layer

Ans. (B)

14. Match the List I (interaction) with List II (character) using the codes given below the Lists:

List – I	List – II
I) Incomplete dominance	1) Human skin colour
II) Codominance	2) Purple colour in maize due to anthocyanin
III) Polygenes	3) Human being belonging to AB blood group
IV) Complementary genes	4) Pink colour in 4 O' clock plant

Code:

	I	II	III	IV
A)	4	3	1	2
B)	3	4	2	1
C)	4	3	2	1
D)	3	4	1	2

Ans. (A)

15. A Ti plasmid is:
A) A vector that can transfer recombinant genes into plant genomes
B) A vector that can be used to produce recombinant proteins in yeast
C) A vector specific to cereals like wheat and rice
D) All of the above

Ans. (A)

16. Which among the following is a naturally occurring hormone?
A) Zeatin B) 2,4-D
C) Benzyl adenine D) Indole-3-butyric acid

Ans. (A)

17. Observe the following statements related with various biological process and their structural components. Which one of the following is NOT a correct statement?
A) Manganese forms the structural core of chlorophyll
B) Iron is a structural component of porphyrin rings
C) Boron plays major role in translocation of sugars
D) Molybdenum regulates nitrogen fixation

Ans. (A)

18. The scientists who proposed the system of classification called as Neo-Adansonian system are
A) Engler & Prantl
B) Bentham & Hooker
C) Sokal & Sneath
D) Camp & Gilly

Ans. (C)

19. Sporophyte of *Riccia* is protected by
A) Indusium B) Calyptra
C) Endothecium D) Amphithecium

Ans. (B)

20. Meiosis is a specialized type of cell division which reduces the chromosome number by half. This process occurs in all sexually reproducing eukaryotes (both single-celled and multicellular) including animals, plants, and fungi. Which of the following statements about meiosis is NOT true?

A) Kinetochores of sister chromatids attach to opposite poles in Meiosis I
B) Kinetochores of sister chromatids attach to opposite poles in Meiosis II
C) Chiasma is formed in Prophase I
D) Homologous chromosomes are segregated in Meiosis I

Ans. (A)

21. The site for coupled oxidation-reduction reactions in the chloroplast is the
A) Outer chloroplast membrane
B) Inner chloroplast membrane
C) Thylakoid space
D) Stromal space

Ans. (C)

22. Which one of the following pairs is mismatched?
A) Tundra: permafrost
B) Coniferous: evergreen trees
C) Prairie: deciduous forest
D) Savanna: Acacia

Ans. (C)

23. Auxin namely IAA, is present in all parts of a plant, although in minute quantities. The structure of this hormone is related to which one of the following amino acids?
A) Glutamic acid
B) Aspartic acid
C) Threonine
D) Tryptophan

Ans. (D)

24. Stomatal movement in leaves of well-watered plants grown in natural environment is significantly controlled by Light. Which one of the following wavelengths of light is responsible for such regulation?
A) Red light
B) Blue light
C) Green light
D) Far-red light

Ans. (B)

25. Pharmacogenomics deals with
A) Interaction of two molecules
B) Protein sequencing
C) Genetic Variations and responses to drugs
D) All of the above

Ans. (C)

26. Commensalism is a class of relationships between two organisms. An example of the species interaction called commensalism is
A) Nitrogen-fixing bacteria in association with legume plant roots.
B) A microbe in living human gut.
C) Female mosquito deriving nourishment from human blood
D) Orchid plant growing on the trunk of mango tree

Ans. (D)

27. A eukaryotic chromosome at metaphase consists of
A) Naked DNA
B) Single strand DNA
C) Two chromatids joined by a centromere
D) A single chromatid

Ans. (C)

28. DNA is not hydrolyzed by alkali whereas RNA is readily hydrolyzed. The reason is due to
A) The double helical structure of DNA
B) The presence of uridine in RNA
C) Due to features observed in RNA such as stem-loop structures
D) The presence of 2'-OH group in RNA

Ans. (D)

29. Which among the following correctly depicts the chromosome complement of nullisomics?
A) 2n+1 B) 2n-1 C) 2n-2 D) 2n+2

Ans. (C)

30. DNA replication takes place during
A) G1 Phase B) G2 Phase C) G0 Phase D) S Phase

Ans. (D)

31. Which of the following does NOT contain phosphate?
A) A nucleoside B) A nucleotide C) DNA D) RNA

Ans. (A)

32. Plant membranes are relatively abundant with a class of proteins called Aquaporins. Following are certain statements regarding the properties of aquaporins:

a. Aquaporins form water channels in membrane
b. Aquaporins form tetramers in the cell membrane
c. The aquaporins also permit the movement of charged particles
d. The aquaporins are present only in higher plants

Which one of the following combinations of above statements is correct?

A) a, b and c B) b, c and d
C) a, c and d D) a, b and d

Ans. (A)

33. Recombinant DNA may be inserted into mammalian cells by
A) Transfection B) Translation
C) Transduction D) All the above

Ans. (A)

34. Blue cheese is made from cow's milk, sheep's milk, or goat's milk with the cultures of the mold. The microorganism involved in making of blue cheese is:
A) *Penicillium crustosum* B) *Penicillium commune*
C) *Penicullum roquefortii* D) *Penicillium purpurogenum*

Ans. (C)

35. The formation of product by Allosteric enzymes is regulated by:
A) Competitive inhibition B) Non-competitive inhibition
C) Feedback inhibition D) Uncompetitive inhibition

Ans. (C)

36. Which among the following lack sexual reproduction?
A) Ascomycetes B) Basidiomycetes
C) Deuteromycetes D) Oomycetes
Ans. (C)

37. The function of enzyme ligase is to
A) Covalently join two ends of a double stranded DNA
B) Covalently join the ends of two single DNA strands
C) Connects RNA strands to DNA
D) All the above
Ans. (B)

38. Resurrection plant is a species of
A) Usnea B) Selaginella
C) Cycas D) Sargassum
Ans. (B)

39. Secondary metabolite biosynthetic pathway result in the synthesis of many significant phytochemicals in the plants. Identify the pathway/s that produce terpenes?
A) Mevalonic acid and MEP pathways
B) Malonic acid and MEP pathways
C) Shikimik acid and Malonic acid pathway
D) Shikimik acid and Mevalonic acid pathways
Ans. (A)

40. Large number of cloning vectors are available. Identify the cloning vector capable of an insert size upto 3000 KB?
A) Phage B) Cosmid
C) BAC D) YAC
Ans. (C)

41. According to Chargaff's rules
A) In double-stranded DNA, the amount of G equals the amount of C.
B) All DNA molecules contain the same proportions of A, C, G and T
C) Single stranded RNA molecules contain same amount of A and U
D) In double-stranded DNA, the amount of T equals the amount of C
Ans. (A)

42. Occurrence of Himalayan floral element in Western Ghats of India is best explained by which hypothesis?
A) Continental Drift Theory
B) Deccan Trap Hypothesis
C) Himalayan Glaciations Theory
D) Coromandel Coast Hypothesis
Ans. (C)

43. How do the bacteria save its DNA from the restriction enzymes it produces?
A) Bacterial DNA has no restriction sites
B) Modification enzymes inactivates the restriction sites
C) DNA is protected by methylation
D) Restriction enzymes are not produced inside the cell
Ans. (C)

44. The taxonomic designation called Tautonym used for referring to
A) Same name for both the genus and species
B) Same name for species and subspecies
C) Trinomial nomenclature
D) The name of the author for the species

Ans. (A)

45. Inulin is an organic compound, a polysaccharide consisting of repeated units of:
A) Glucose and galactose B) Galactose
C) Glucose D) Fructose

Ans. (C)

46. Transpiration in plants are regulated by a pigment known as
A) Crypto chromes B) Carotenoids
C) Cytochromes D) Phytochrome

Ans. (A)

47. Mass scale production of vitamin B2 is carried using the fungus ----------
A) *Penicillium chrysogenum* B) *Aspergillus niger*
C) *Ashbya gossypi* D) *Trichoderma harzianum*

Ans. (C)

48. Engler and Prantl system is one of the phylogenetic classifications. They classified --------
A) All tracheophytes
B) All plants
C) All seed plants
D) Thallophytes, bryophytes and Pteridophytes

Ans. (B)

49. The class of fungi to which the common mushroom, puffballs and truffles belongs to:
A) Ascomycetes B) Basidiomycetes
C) Oomycetes D) Deuteromycetes

Ans. (B)

50. Identify the correct sequences of the trend in the evolution of thallus in algae?
A) Unicellular – Heterotrichous-Colonial - Filamentous
B) Unicellular -Filamentous -Heterotrichous -Colonial
C) Unicellular -Colonial -Filamentous -Heterotrichous
D) Unicellular -Filamentous -Colonial – Heterotrichous

Ans. (C)

51. Name the algal group that contain the predominating pigment fucoxanthin, laminarin as reserve food is
A) *Rhodophyceae* B) *Chryophyceae*
C) *Phaeophyceae* D) *Cyanophyceae*

Ans. (C)

52. A frame shift mutation is
A) A point mutation in which a single base pair is inserted or deleted
B) When one base is replaced by another
C) When a segment of DNA is inverted but remains in the same overall location
D) A mutation that inactivates the gene completely

Ans. (A)

53. Groups of genes with similar function that arose by multiple rounds of duplication are called
A) Genomes B) Gene families
C) Operons D) Quasi genes
Ans. (B)

54. The effect of increasing humidity on rate of transpiration would be----------
A) Rate of transpiration will decrease
B) Rate of transpiration will increase
C) Initially low then it will be high
D) It will be unaffected
Ans. (A)

55. Corymb is a racemose inflorescence and is a characteristic feature of the Family---
A) Mimosoideae B) Papilionoideae
C) Caesalpinioideae D) Apiaceae
Ans. (C)

56. Identify the type of stain which on ionization gives positively charged molecules
A) Acidic Stain B) Basic Stain
C) Anionic Stain D) Basic Mordant
Ans. (B)

57. In a hybridization experiment due to Duplicate dominant gene interaction, the following phenotypic ratio was observed 15:1. How many genes control the trait for the observed phenotypic ratio?
A) One B) Two
C) Three D) Polygene *Ans. (B)*

58. Polyploid developed from two different species is known as
A) Triploid B) Autopolyploid
C) Allopolyploid D) Monoploid
Ans. (C)

59. The Unique chemotaxonomic character of the family caryophylaceae is the presence of
A) Betalain B) Glycosides
C) Terpenes D) Alkaloids
Ans. (A)

60. To determine the variation in style length of carpel of Hibiscus plant from five different places which would be the best statistical test?
A) Chi-square B) Student t-test
C) F-test D) Regression analysis
Ans. (C)

61. The Mendelian law of Independent assortment is due to the arrangement of chromosome during
A) Anaphase-I B) Anaphase-II
C) S-Phase D) Cytokinesis
Ans. (A)

62. Triticale is a product of
A) Inter specific cross B) Inter generic cross
C) Intra specific cross D) Intra generic cross
Ans. (B)

63. Multiple effects of a single gene is known as
A) Polyploidy B) Heterosis
C) Pleiotropy D) None of these
Ans. (C)

64. Climbers with tendrils are borne in the axil of the leaf, radially symmetrical, bisexual flowers, one-chambered ovary composed of three to five carpels with numerous ovules, stamens are present below the ovary, born in androgynophore, seeds with fleshy aril and fruits are capsules or berries. Name the family that possess these features
A) Passifloraceae B) Vitaceae
C) Cucurbitaceae D) Oleaceae
Ans. (A)

65. The 1987 Montreal Protocol was signed for which of the following reasons?
A) To ban nuclear testing in tropical oceans
B) To stop the global trade in products made from endangered tigers
C) To begin converting from fossil fuel use to more renewable energy sources to reduce the anthropogenic greenhouse effect
D) To phase out the use of CFC's, found to be causing depletion of the ozone layer
Ans. (D)

66. The antibody known to be responsible for allergic reaction is:
A) IgG B) IgA
C) IgM D) IgE
Ans. (D)

67. Which of the following molecule acts as connecting link between EMP pathway and Kreb's cycle?
A) Pyruvic acid B) Acetyl CoA
C) Phosphophenol Pyruvate D) Ribulose bis phosphate
Ans. (B)

68. Most stable kind of RNA is
A) mRNA B) tRNA
C) rRNA D) snRNA
Ans. (C)

69. Antisense technology
A) Selectively blocks gene expression
B) Helps in gene expression
C) Always keeps genes inactivated
D) Always keeps genes expressed
Ans. (A)

70. A structure which arises from the funicle and surrounds the ovule more or less completely in post fertilization stage is called
A) Aril B) Caruncle
C) Sarcotesta D) Operculum
Ans. (A)

71. The family that display Pseudo Embryo Sac is
A) Podostemaceae B) Polygonanceae
C) Piperaceae D) Portulacaceae
Ans. (A)

72. Choosing the best and most uniform of organisms for subsequent generations of a self-pollinated crop

A) Mass Selection B) Pedigree analysis
C) Germ line selection D) Pure line selection

Ans. (D)

73. A ------- is a genotype formed when haploid cells undergo chromosome doubling?

A) Doubled Haploid B) Selective Haploid
C) Artificial Aneuploid D) Diplo-haploid

Ans. (A)

74. Vital stains are used for

A) Staining of dead tissue outside the body
B) Staining of a living cell inside the body
C) Staining of a fixed cell outside the body
D) Staining of a dead tissue inside the body

Ans. (B)

75. An Hfr strain of *E. coli* contains:

A) A vector of yeast or bacterial origin which is used to make many copies of a particular DNA sequence
B) A bacterial chromosome with a human gene inserted
C) A bacterial chromosome with the F factor inserted
D) A human chromosome with a transposable element inserted

Ans. (C)

76. Red rust of coffee is caused by ---------- while red rust of tea by ---------

A) *Ustilago* & *Puccinia*
B) *Albugo* & *Puccinia*
C) *Cephaleuros* & *Albugo*
D) *Hemileia* & *Cephaleuros*

Ans. (D)

77. The organelle of the endomembrane system associated with the sorting of lipids and proteins for various cellular functions are

A) Rough endoplasmic reticulum
B) Lysosomes
C) Vesicles
D) Golgi complex

Ans. (D)

78. Wood is classified into hardwood or softwood through its physical structure and make up. Which among the following is/are example/s for hardwood?

i. Mahogany ii. Oak iii. Teak iv. Walnut

A) i & ii B) i, ii & iii
C) i & iii D) i, ii, iii & iv

Ans. (D)

79. Vascular connection between leaf and stem that is maintained by leaf traces, which are associated with parenchymatous interruptions in the stem vascular cylinder. Nodal anatomy where a leaf is associated with one leaf gap is known as

A) Unilacunar node B) Trilacunar node
C) Multilacunar node D) Polyaxial node

Ans. (A)

80. Select the correct option from the following. One is an example of a colonial and other as heterotrichous green alga.
A) *Ulva* & Coleochaete B) *Chlamydomonas* & Ulothrix
C) *Volvox* & Coleochaete D) *Sargassum* & *Pandorina*

Ans. (C)

81. The amount of living matter present in a population at any time in the given ecosystem is known as
A) Net productivity B) Gross primary productivity
C) Standing crop D) Standing state

Ans. (C)

82. Anthracosis is a serious lung disease associated with inhaling ----------
A) Cotton dust B) Pollen C) Coal D) Fibers

Ans. (C)

83. Mitochondrial DNA is advantageous for evolutionary studies because:
A) It is inherited only through the female parent and thus evolves in a way that allows trees of relationship to be easily constructed
B) It is inserted into the X chromosome
C) It first appeared in humans and is not found in other animals
D) It evolves more slowly than the genes in the nucleus

Ans. (A)

84. Algae have diverse roles. Which among the following are the economically important products of the red algae?
A) Agar used to make capsules for drugs and vitamins as well as a solidifying agent for bacterial media.
B) Calcium carbonate
C) Nitrogen fixation
D) Both A & B

Ans. (D)

85. The sporocarp of ascomycetes have high diversity in their characters. Name the fruiting body in Xylaria
A) *Cleistothecium* B) *Perithecium*
C) *Apothecium* D) *Gymnothecium*

Ans. (A)

86. The stele in *Marsilea* rhizome is an example for
A) Amphiploic Siphonostele B) Meristele
C) Amphixylic Siphonotele D) Dictyostele

Ans. (A)

87. Irish famine occurred in 1845 is associated with ----------
A) *Phytophthora* B) *Albugo*
C) *Chondrus crispus* D) *Penicillium*

Ans. (A)

88. Which statement given below is true about lichens?
A) Algal component always enheathed by fungal mycelium
B) Both components occur side by side
C) Algae and fungal cells are intermixed
D) Fungal mycelium envelop algal cells

Ans. (D)

89. Which among the following is an example for fossil bryophyte?
A) *Pogonatum* B) *Naiadita*
C) *Lejeunea* D) Both B & C
Ans. (B)

90. Apomixis is defined as the replacement of the normal sexual reproduction by asexual reproduction, without fertilization. The process is discovered by
A) Hans Winkler B) Smith
C) Bower D) Farlow
Ans. (A)

91. Canada balsam is a resinous essential oil, viscous, sticky, colourless or yellowish liquid that turns to a transparent yellowish mass when the essential oils have been allowed to evaporate and is obtained from
A) *Pinus* B) *Abies*
C) *Cedrus* D) *Taxus*
Ans. (B)

92. The tendency of ecotone to contain a greater number of species and higher population density is known as
A) Niche B) Ecotype
C) Edge effect D) Carrying capacity
Ans. (C)

93. Black rust of wheat is caused by
A) *Pucciniagraminis* B) *Pucciniarecondita*
C) *Pucciniastriformis* D) *Pucciniaglumarum*
Ans. (A)

94. Enzymes responsible for alcoholic fermentation
A) Ketolase B) Zymase
C) Peroxidase D) Oxidase
Ans. (B)

95. Read the features and identify the family- evergreen plants, coriaceous leaves stamens frequently in whorls, with a pair of glands at the base of the filaments, Anthers with two or four pollen sacs, opening by valves, usually from the base upwards, in the two outer whorls usually introrse. Ovary unicarpellate, unilocular, usually superior, sometimes surrounded by the receptacle to completely enclose in it, with a single, pendulous ovule.
A) Solanaceae B) Dipterocarpaceae
C) Lauraceae D) Myrsticaceae
Ans. (C)

96. The principle light- trapping pigment molecule in plants, Algae, and Cyanobacteria is
A) Chlorophyll a B) Chlorophyll b
C) Porphyrin D) Rhodapsin
Ans. (A)

97. Which of the following microscopic techniques relies on the specimen interfering with the wavelength of light to produce a high contrast image without the need for dyes or any damage to the sample?
A) Conventional bright field light microscopy
B) Phase contrast microscopy
C) Electron microscopy
D) Fluorescence microscopy
Ans. (B)

98. The total amount of water present in the soil is
A) Holard B) Capillary water
C) Chesard D) Echard
Ans. (A)

99. Which is a true statement about ribosomes?
A) Ribosomes contain DNA and protein.
B) Ribosomes are active in carbohydrate synthesis.
C) Ribosomes are present both in prokaryotes and eukaryotes.
D) Ribosomes are only found associated with the endoplasmic reticulum in prokaryotic cells.
Ans. (C)

100. Name the Scientists who constructed the prototype electron microscope in 1931
A) Ernst Ruska & Max Knoll
B) Eli Franklin Burton, Cecil Hall, James Hillier, and Albert Prebus
C) Dennis Gabor, & Leo Szilárd
D) Ernst Lubcke of Siemens & Halske
Ans. (A)

101. Hybridoma technique was first demonstrated by
A) Kohler and Milstein B) Robert Koch
C) 'D' Herelle D) Land Steiner
Ans. (A)

102. Complete reduction of archegonium is observed in the gymnosperm --------
A) *Gnetum* B) *Cycas* C) *Ginkgo* D) *Pinus*
Ans. (A)

103. Assuming Hardy-Weinberg equilibrium, the genotype frequency of heterozygotes, if the frequencies of the two alleles at the gene being studied are 0.6 and 0.4, will be:
A) 0.80 B) 0.64 C) 0.48 D) 0.32
Ans. (C)

104. Recently, the major reason for worldwide loss of species from the natural habitats is?
A) Habitat destruction B) Intraspecific competition
C) Random mating D) Viral outbreaks
Ans. (A)

105. A homeotic mutation is one which:
A) Is present in only one form in an individual
B) Substitutes one body part for another in development
C) Results in development of a tumor
D) Is wild type at one temperature and abnormal at another ***Ans. (B)***

106. Eusporangiate ferns are those where the sporangia arise from group of epidermal cells. Identify the eusporangiate fern from the choices given below
A) *Dicranopteris* B) *Matonia*
C) *Equisetum* D) *Osmunda*
Ans. (C)

107. Which one of the following bacterium is commonly employed for production of transgenic plants?
A) *Escherichia coli* B) *Bacillus thuringiensis*
C) *Staphylococcus aureus* D) *Agrobacterium tumefaciens*
Ans. (D)

108. Identify the abnormal base pairings noticed in "wobble" codon-anticodon binding?

A) Adenosine-uracil B) Guanine-uracil
C) Cytosine-inosine D) Guanine-thymine

Ans. (B)

109. Which of the following is TRUE about G-protein signaling?

I. During activation of G-protein, subunit of the G-protein dissociates from the activated G-protein to activate adenyle cyclase
II. During activation of G-protein, the active α subunit is terminated by the hydrolysis of the bound GTP caused by GTPase
III. Testosterone can bind to the cell membrane receptor to activate G- protein
IV. The ratio of G-protein coupled receptor to G-protein is 1:1

A) I only B) II only
C) III only D) II and IV only

Ans. (B)

110. Which type of Genetic Analysis method can detect the presence of a gene but is not useful for single base pair changes?

A) Genetic Sequencing B) Western Blot Analysis
C) Southern Blot Analysis D) Cytogenics

Ans. (C)

111. Name the mitotic stage that is unique and is characterized by the shortening of kinetochore microtubules?

A) Metaphase B) Anaphase
C) Prophase D) Telophase

Ans. (B)

112. Name the triplet codons which is a chain termination codon?

A) UGU B) AAU C) UUG D) UAG

Ans. (D)

113. The terminology employed to denote species is restricted to a specific area is known as

A) Sibling species B) Allopatric species
C) Sympatric species D) Endemic species

Ans. (D)

114. Which one of the following immunoglobulins is found as pentamer?

A) IgG B) IgM
C) IgA D) IgE

Ans. (B)

115. The sum total of an organism's interaction with the biotic and abiotic resources of its environment is called its

A) Habitat B) Logistic growth
C) Ecological niche D) Microclimax

Ans. (C)

116. Which of these ecosystems accounts for the largest amount of Earth's primary productivity?

A) Open ocean B) Savanna
C) Tundra D) Salt marsh

Ans. (A)

117. Hemophilia is a sex-linked recessive trait in humans. If a father and the son are hemophilic, but the mother is normal, her genotype must be:

A) X^hX^h B) X^HX^h
C) X^HX^H D) X^hY

Ans. (B)

118. Hairy root cultures for secondary metabolite production are induced by transforming plant cells with

A) *Agrobacterium tumefaciens*
B) *Bacillus thurigiensis*
C) *Agrobacterium rhizogens*
D) *E.coli* plasmids

Ans. (C)

119. Elicitors are molecules that induce secondary metabolite production. Identify the non plant derived elicitor from the given options

A) Chitin B) Pectin
C) Pectic acid D) Cellulose

Ans. (A)

120. Following are few statements for regeneration of plants from explants/tissues.

(1) Cytokinin is required for shoot development.
(2) Auxin is required for shoot development.
(3) Auxin to cytokinin ratio is very important.
(4) Jasmonic acid is required for both root and shoot development.

Which of the following combinations of above statements is true?

A) (1) and (3) B) (2) and (4)
C) (1) and (4) D) (2) and (3)

Ans. (A)
