A

20203 **120 MINUTES**

1. During the development of female gametophyte, megaspore tetrad is absent in:
   A) Taxus B) Gnetum C) Ephedra D) Pinus

2. Which of the following is having rings and shaft arrangement?
   A) Pili B) Fimbriae
   C) Axial filament D) Flagellum

3. Hfr bacterial strain is involved in:
   A) Complete transfer of F plasmid
   B) Total lack of F plasmid transfer
   C) Integration of Plasmid and Bacterial chromosome
   D) Complete transfer of Bacterial Chromosome

4. Among the following examples, ----- alone share properties of Chaperones.
   A) Virus B) Prion C) Viroid D) Retrovirus

5. In a bunch of 8 fruits, four are red and the others are green. Find out the probability that:
   (i) one fruit drawn from the bunch at random is red
   (ii) two fruits drawn from the bunch at random are of the same colour.

   A) 1/2 & 3/7 B) 1/4 & 2/5 C) 1/3 & 3/7 D) 1/3 & 2/7

6. Guide cells are characteristic feature of:
   A) *Mollecutes* B) *Mosses*
   C) *Gymnosperms* D) *Angiosperms*

7. Which among the following possess isomorphic haplodipontic life cycle?
   A) Ulva B) Laminaria
   C) Sargasssum D) Polysiphonia

8. Irish moss is:
   A) Porella B) Pallavicinia
   C) Funaria D) Chondruscrispus

9. Evolution of chloroplast is the major criteria in the classification proposed by:
   A) Bold and Wynne B) Round
   C) Lee D) Fritsch

10. Choose the characteristic features of Cycas archegonium from the given statements:
    1. Mature archegonium has two neck cells
    2. A largest egg
    3. Neck canal cells are not formed
    A) 1 & 2 only B) 2 & 3 only C) 2 only D) 1, 2 & 3

11. Phenotypic and genotypic F2 ratio remains the same in:
A) Intermediate dominance B) Co dominance
C) Overdominance D) Dominant epistasis

12. Name the place in India known as Golden mine of Liverworts:
A) Eastern Himalaya B) Western Himalaya
C) Western Ghats D) Sunderbans

13. Mendel, after his experiments with garden pea, continued his experiments with:
A) Drosophila and Neurospora
B) Honey bee and Neurospora
C) Heiracium and honey bee
D) Drosophila and honey bee

14. The development of a sporophyte directly from the gametophyte without the intermediate formation and fertilization of gametes is ------.
A) Apospory B) Apogamy C) Recurvation D) None of these

15. Stele is the most important internal component of plant body. Choose a stele which is devoid of pith:
A) Siphonostele B) Haplostele C) Solenostele D) Dictyostele

16. In the case of amphiphloicsiphonostele -----.
A) Phloem present inner side of xylem
B) Phloem is surrounded by xylem
C) Phloem present on both sides of xylem
D) Phloem is present outside the xylem

17. The type of spore development on Marsilea is -----.
A) Eusporangiate type B) Polysporangiate type
C) Leptosporangiate type D) Archegoniate type

18. Identify the causative organism of Coffee rust a devastating foliar disease of the plant that leads to loss of yield:
A) Hemileia vastatrix B) Ganoderma philippii
C) Gibberella stilboides D) Armillaria mellea

19. The pollen grains of Pinus at the time its release is -----.
A) One-nucleate B) Two nucleate
C) Three nucleate D) Four nucleate

20. Which among the following is a unique feature of Gram-positive bacteria?
A) Outer membrane B) Porin protein
C) Thin peptidoglycan cell wall D) Teichoic acids

21. Canada Balsam is obtained from …
A) Agathis B) Araucaria C) Pinus D) Abies

22. Which among the following is a codominant marker?
A) RAPD B) AFLP C) STMS D) AP PCR

23. In Snapdragon the Red flower colour is incompletely dominant over White with the heterozygous producing Pink flowers. Tall plant is completely dominant over Dwarf. If a cross between two shapdrageons produced Tall Red, Tall Pink, Dwarf Red and Dwarf Pink in the ration 3:3:1:1, predict the genotypes of the parents.
A) TtRR X TtRr B) TTRr X TtRr
C) Ttrr X TtRr D) TTrr X TtRr

24. Which of the following statement regarding Gymnosperms is incorrect?
A) The endosperm is triploid in nature.
B) The pollination and dispersal of seeds is by wind.
C) Cleavage polyembryony is of common occurrence in several members.
D) Gymnosperms that bear ovules on stem are called stachysperms.

25. Coefficient of variation is

A) $\frac{Standard\ deviation}{Mean}$ x 100 B) $\frac{Mean}{Standard\ deviation}$ x 100

C) $\frac{Standard\ error}{Standard\ deviation}$ x 100 D) $\frac{Standard\ deviation}{Standard\ error}$ x 100

26. The resolving power of a microscope could be enhanced by:
A) Decreasing the wave length of the radiation used
B) Increasing the refractive index of the medium used
C) Increasing the aperture angle
D) Increasing the wave length of radiation used or decreasing the aperture angle

27. The specimen can be viewed in live condition in:
A) Phase contrast microscopy
B) Light field microscopy
C) Transmission Electron microscopy
D) Scanning Electron microscopy

28. Match the following:

	List 1	**List 2**
a)	*Cinnamomum verum*	1. Simaroubaceae
b)	*Wateria indica*	2. Lythraceae
c)	*Ailanthus altissima*	3. Lauraceae
d)	*Lawsonia inermis*	4. Dipterocarpaceae

A) a-3, b -4, c -1, d -2 B) a -2, b -4, c-1, d-3
C) a-4, b -3, c-1, d-2 D) a -1, b -2, c -3, d-4

29. Which among the following is known as hat thrower fungus?
A) *Agaricus* B) *Peziza* C) *Pencillium* D) *Pylobolus*

30. Crozier formation is a characteristic feature of
A) *Agaricus* B) *Amanita* C) *Rhizopus* D) *Pencillium*

31. Match the following:

	List 1	**List 2**
a)	Apothecium	1. *Agaricus*
b)	Perithecium	2. *Neurospora*
c)	Cleistothecium	3. *Peziza*
d)	Hymenium	4. *Pencillium*

A) a -3, b-2, c-4, d-1 B) a -2, b -3, c-4, d -1
C) a -3, b-2, c-1, d-4 D) a -1, b -2, c -3, d-4

32. Which among the following is a fresh water red algae?
A) *Pterocladia* B) *Polysiphonia*
C) *Batrachospermum* D) *Porphyra*

33. Obdiplostemonous stamen is the characteristic feature of the family:
A) Caesalpineaceae B) Rutaceae
C) Anacardiaceae D) Apocynaceae

34. Suggest the number of phenotypes possible in a test cross of AABBCcDD if there is complete dominance
A) Four B) Six C) Two D) Eight

35. Protein sequence databases are the most comprehensive source of biological information on proteins. Select the non protein database from the given bioinformatics tool:
A) PIR B) SWISS-PROT C) TrEMBL D) DDBJ

36. Propagating plants such as rose, raspberries via development of roots on a stem while it is still attached to the mother plant is known as:
A) Cutting B) Grafting C) Layering D) Budding

37. A plant specimen cited with the original description other than the holotype is:
A) Paratype B) Neotype C) Leptotype D) Syntype

38. The credit for the discovery of reverse transcriptase goes to:
A) Nirenberg and Matthhaei B) Hershey and Chase
C) Beadle and Tatum D) Temin and Baltimore

39. Mannitol is the reserve food material in-------.
A) Brown algae B) Red algae
C) Green algae D) Blue green algae

40. Macdonald Pfitzer law is related with:
A) Reproduction in Bacillariophyta
B) Algal bloom
C) Flagellar movement
D) Algal reserve food formation

41. Match the following:

	List 1	List 2
a)	Verticellaster	1. *Solanum nigrum*
b)	Hypanthodium	2. *Leucas aspera*
c)	Coenanthium	3. *Dorstenia*
d)	Rhipidium	4. *Ficus*

A) a-3, b-2, c-1, d -4 B) a-1, b-2, c -4, d -3
C) a -2, b-4, c -3, d-1 D) a-2, b -3, c -1, d -4

42. In sporophytic incompatibility the genotype of the male parent is S_1S_3 and that of the female parent is also S_1S_4. The possible genotypes of the progeny are:
A) No fertile progeny B) S_1 S_4, S_3 S_4
C) S_3S_4 D) S_1S_4

43. Root mean square deviation from mean is:
A) Arithmetic mean B) Standard deviation
C) Coefficient of variation D) Standard error

44. Which of the following genus does not belong to Marchantiales?
A) *Fimbriaria* B) *Plagiochasma*
C) *Cyathodium* D) *Fossombronia*

45. The physiological events such as phototropism, stomatal opening, inhibition of hypocotyl elongation and sun tracking by leaves are regulated by:
A) Cryptochrome B) Pfr phytochrome
C) Pr phytochrome D) Both Pfr and Pr phytochromes

46. DNA microarray is a collection of microscopic DNA spots attached to a solid surface. Which among the following is/are examples for its applications in biology?
1. mRNA or gene expression profiling
2. Comparative genomic hybridization
3. Chromatin immune-precipitation studies
A) 1 & 3 only B) 1 & 2 only C) 2 & 3 only D) 1, 2 & 3

47. The pairing of chromosomes during meiosis begin at:
A) Diplotene B) Diakinesis C) Pachytene D) Zygotene

48. Observe the following Table related with enzyme inhibition and select the correct ones from the given options

	K_m	V_{max}
1. Competitive inhibition	1a. Increase	1b. Unchanged
2. Non-Competitive inhibition	2a. Unchanged	2b. Decrease

A) 1a and 2a are correct
B) 1a and 2a are wrong
C) 1a and 2a; 1b & 2b are correct
D) 1a and 2a; 1b & 2b are wrong

49. Diplolepidous peristome teeth is a characteristics feature of --------- moss.
A) *Polytricum* B) *Pogonatum* C) *Bryum* D) *Sphagnum*

50. Amphigastria is a gametophytic character of ---------- bryophyte.
A) *Porella* B) *Riccardia* C) *Pellia* D) *Notothylas*

51. Fixing fluid used in microscopic studies chiefly for preserving details of cells composed of osmium tetroxide, chromic anhydride, and acetic acid in aqueous solution is:
A) Flemming's fluid B) Carnoys fluid
C) Bouin's fixative D) Zenker's fixative

52. The regional station of NBPGR in Kerala is located at:
A) Palakkad B) Trissur
C) Thiruvananthapuram D) Kozhicode

53. Triticale is as example of:
A) Interspecific hybridization B) Intra specific hybridization
C) Intergeneric hybridization D) Intervarietal hybridization

54. Choose the incorrect statement
A) Wheat is an allopolyploid
B) Seedless water melon is triploid
C) Gaint Napier is triploid in nature
D) Vertical resistance is polygenic in nature

55. Match the following:

	List 1	**List 2**
a)	False Smut disease of paddy	1. *Cephaleuros*
b)	Red rust of tea	2. *Ustilaginoideavirens*
c)	Quick wilt of pepper	3. *Hemileia vastatrix*
d)	Coffee rust	4. *Phytopthora capsici.*

A) a-1, b-2, c- 4, d -3 B) a -3, b-4, c -2, d -1
C) a 2, b -1, c-4, d -3 D) a -4, b -2, c -3, d-1

56. Which among the following condition/s favour cross pollination?
A) Dichogamy B) Herkogamy C) Heterostyly D) All the above

57. In KorperKappe theory the term Kappe is meant for cap and Korper is for -----.
A) Body B) Calyptra C) Carpel D) Calyptogen

58. The type of cell division happening in the rib meristem Tunica is ..
A) Multiplane division B) Anticlinal plane only
C) Periclinal plane pnly D) All of the above

59. Promeristem is present in -----.
A) Root apex B) Shoot apex
C) Intercalary meristem D) Embryo

60. What is the correct binomial of the plant commonly known as White dammar?
A) *Vateria indica* B) *Shorea robusta*
C) *Dipterocarpus turbinatus* D) *Canarium strictum*

61. Name the metabolic cycle used by some microorganism if acetate is the sole source of carbon?
A) Glyoxylate pathway B) Dicarboxylic acid pathway
C) Hexoe phosphate pathway D) α-ketoglutarate pathway

62. Storied cork is present in ----.
A) Dracaena B) Bignonia C) Boerhaavia D) Eupatorium

63. Identify the gymnosperm that possesses simple, large, petiolate, fan-shaped bilobed foliage with expanded apex and narrow base resemble the Maiden-hair fern.
A) Ginkgo B) Gnetum C) Welwitschia D) Agathis

64. Select the correctly matched pairs in terms of Botanic Garden with its location
1. Indian Botanic Garden : Kolkata
2. National Botanic Garden : Lucknow
3. Lloyd Botanic Garden : Darjeeling
A) 1 & 3 only B) 2 & 3 only C) 1 & 2 only D) 1, 2 & 3

65. During histochemical preparation, Sudan Black is used to localize -----.
A) Carbohydrates B) Lipids
C) Proteins D) Phosphodiesterbond

66. Father of Indian Ethnobotany who made pioneering painstaking works lead to growth and development of ethnobotany in India:
A) S. K. Jain B) Pushpagandan
C) H. Santapau D) Virendra Nath

67. In ethnobotanical practices the combination of Areca nut, Pomegranate rind and Rhuschinensis along with iron sulfate is used for -----.
A) Envenoming B) Lacquering of teeth
C) Lowering blood pressure D) Wound healing

68. Flax fibres are extracted from ------.
A) *Crotalaria juncea* B) *Linum usitatssimum*
C) *Agave Americana* D) *Corchorus*

69. Which among the following reaction of glyoxylate cycle takes place inside the Glyoxysome during the germination of fatty seeds?
A) Citric acid is converted in to isocitric acid via Cis-aconitic Acid in the presence of Aconitase
B) Succinic acid is converted into oxaloacetic acid
C) Oxaloacetic acid produced is decarboxylated in the presence of ATP to form phosphoenol pyruvic acid
D) Phosphoenol pyruvic acid is converted into the glucose and fructose phosphates

70. The source for para rubber is----.
A) *Holostemma adakodien* B) *Calotropis gigantea*
C) *Hevea brasiliencis* D) *Ficus elastica*

71. Bagasse is by-product accumulated during the retrieval of --- from plants.
A) Cellulose B) Betel C) Cane sugar D) Flax fibres

72. Numerical taxonomy, the modern trend in which classification is based on the branching patterns of the estimated evolutionary history of the taxa referred as
A) Cladistics B) Phenetics
C) Phylogenetics D) Neosystematics

73. Which among the following is an indole alkaloid?
A) Atropine B) Reserpine C) Ephedrine D) Morphine

74. The benefits of micropropagation are ------.
A) Rapid multiplication of superior clones
B) Multiplication of disease free plants
C) Cost effective process
D) All the above

75. Which of the following characters are applicable to Psilotum?
1. Stem has a relatively simple vascular cylinder.
2. The sporangia are borne in groups (trilocular) and form synangia
3. Spores are homosporous
4. The development of gametophyte is exosporic
5. The development of embryo is exoscopic

A) 1, 2 & 3 only B) 1, 2, 3 & 4 only
C) 2, 3 & 4 only D) All the above

76. Cell staining is a technique used for increasing contrast through changing the color of some of the parts of the structure being observed thus allowing for a clearer view. Analyze the statement and chose the correct ones
1. Acid fuchsin is a magenta red acid dye that is used largely for plasma staining whereas basic fuchsin is a magenta basic dye used to stain the nucleus
2. Haematoxylin turns the cytoplasm blue while eosin turns the nuclei as well as other parts pink or red

A) 1 only B) 2 only
C) Both 1 & 2 D) Neither 1 nor 2

77. The free nuclear type of division in angiosperm is related to the -----.
A) Gamete formation B) Embryo formation
C) Callus formation D) Endosperm formation

78. The entry of the pollen tube through the micropyle is termed as -----.
A) Mesogamy B) Porogamy
C) Chalasogamy D) Schizogamy

79. During the seed development in higher plants the outer integument forms …
A) Tegmen B) Testa C) Perisperm D) Pericarp

80. How many ATP molecules are required for Nitrogenase enzymic reduction of atmospheric nitrogen in to ammonia?
A) 16 B) 24 C) 18 D) 32

81. In C4 pathway, the malic acid is transferred from the chloroplasts of mesophyll cells to the chloro plasts of bundle sheath cells where it is decarboxylated to form CO_2 and pyruvic acid in the presence of the enzyme--------.

A) $NADP^+$ specific malic enzyme
B) $NADP^+$ specific malate dehydrogenase
C) pyruvate Pi kinase
D) phophoenol pyruvic carboxylae

82. Which among the following statements are true in connection with the statement "Plants are phenomenal hydraulic engineers"?
1. Solute potential (Ψs) decreases with increasing solute concentration; a decrease in Ψs causes an increase in the total water potential.
2. The internal water potential of a plant cell is more negative than pure water; this causes water to move from the soil into plant roots via osmosis
3. Positive pressure inside cells results into turgor pressure, which is responsible for maintaining the shape and structural features of the leaves; absence of turgor pressure leads to wilting

A) 1 only B) 2 only C) 1 & 3 only D) 2 & 3 only

83. The process of returning of an excited chlorophyll to its ground state by emitting a photon is called -----.
A) Resonance B) Fluorescence
C) Funnelling in D) Photosynthesis

84. Dikaryon is a nuclear feature which is unique to some fungal groups such as:
A) Ascomycetes and Basidiomycetes
B) Phycomycetes and Basidiomycetes
C) Ascomycetes and Phycomycetes
D) Phycomycetes and Zygomycetes

85. Isolation as the result of differences between two species in the reproductive structures or other body parts, so that mating is inhibited. This is referred as:
A) Temporal isolation B) Habitat isolation
C) Behavioural isolation D) Mechanical isolation

86. In the case of C4 plants the decarboxylation of the C4 acids occur in-----.
A) Mesophyll cells B) Bundle sheath cells
C) Guard cells D) Pericycle

87. Which among the following plants the Hatch and Slack cycle is absent?
A) Sugarcane B) Maize C) *Cleome* D) *Sorghum*

88. In the case of CAM plants deacidification of malate stored in the large vacuoles occurs in ----.
A) Open stomata during day time
B) Closed stomata during day time
C) Open stomata during night
D) Closed stomata during night

89. Somaclonal variation arises as a result of chromosome structural changes like -----.
A) Deletions and duplications B) Gene mutations
C) Transposons D) All the above

90. The transmembrane proteins that function as selective pores, through which molecules or ions can diffuse across the membrane is termed as ----.
A) Channels B) Carriers
C) Pumps D) Protein sheath

91. Potassium cyanide and other cyanide ion forming compounds are effective toxins because of the following reason:
A) Blocks signal molecule and respective receptor in neuron junctions.
B) Blocking of electron transfer between cytochrome oxidase and O_2.
C) Instantaneous hemolysis followed by sudden death
D) None of the above

92. In non-cyclic photophophorylation P680 absorbs the shorter wave length of light and get excited. The ejected electrons are transferred to an electron acceptor molecule and become a strong oxidizing agent. Name the primary electron acceptor molecule of non-cyclic photophophorylation.
A) cytochromes B) flavin mononucleotide
C) ferredoxin D) pheophytin

93. Match the following terms with its description.

	List 1	**List 2**
a)	Light reactions	1. Generates ATP, NADPH, and O_2
b)	Photosystem I	2. Powers the formation of NADPH
c)	Cytochrome bf complex	3. Pumps protons
d)	Light-harvesting complex	4. Uses resonance energy transfer to reach the reaction center

A) a – 2, b – 1, c – 3 , d – 4 B) a – 3, b – 4, c –4 , d –2
C) a – 1, b – 2, c – 3 , d – 4 D) a – 4, b – 3, c – 1 , d – 2

94. Cyclic electron flow by P700 that powers ATP synthesis occur when
A) Light intensity is low
B) The ratio of NADPH to $NADP^+$ is very high
C) The uncoupler is present in the plant cell.
D) Plastocyanin compete with $NADP^+$ for electrons

95. Which among the following statement is incorrect statement?
A) Oxidation of glycolate to glyoxylate occurs in peroxisomes
B) Glyoxylate is dephosphorylated to Phosphoglycolate in peroxisomes
C) NH_3 is produced in mitochondria
D) Glycine is converted to serine in mitochondrion.

96. Which among the following reactions in Calvin cycle is reversible?
A) Aldol condensation between dihydroxyacetone phosphate (DHAP) and an aldehyde
B) Synthesis of ribulose 1,5-bisphosphate from ribose 5-phosphate
C) Synthesis of 3-phosphoglyceraldehyde from 3PGA
D) Conversion of xylulose 5-phosphate to ribulose 5-phosphate.

97. The mode of action of the inhibitor rotenone in aerobic cellular respiration is through
A) dysfunction of complex I B) dysfunction complex III
C) dysfunction aconitase D) dysfunction ATP synthase

98. Which of the following statements regarding aminoacyl-tRNA synthetases is/are true?
I. All the organisms have their own 20 aminoacyl-tRNA synthetases.
II. ATP is needed for the action of amino acids.
III. Direct attachment of an amino acid to a tRNA is not energetically favourable.

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

99. Match the following:

	List 1		**List 2**
a)	BLAST	1.	Progressive method
b)	CLUSTAL	2.	Scoring Matrix
c)	PAM	3.	Secondary Structure prediction
d)	Chau Fasman	4.	Specificity and Speed

A) a-1, b-2, c-3, d-4 B) a-4, b-1, c -2, d - 3
C) a - 4, b-3, c-2, d-1 D) a-1, b-4, c-2, d-3

100. Arrange the given statements in the correct order of postulates proposed by Robert Koch.
I. The suspected pathogen must be grown in pure culture.
II. Cells from a pure culture of the suspected pathogen must cause disease in a healthy animal.
III. The suspected pathogen must be present in all cases of the disease.
IV. The suspected pathogen must be reisolated from second-infected healthy hosts and shown to be the same as the original.

A) III, II, IV, I B) II, IV, III, I C) III, I, II, IV D) I, II, III, IV

101. The processes of evolution of first land plant according to Telome theory in correct order is:

I. Overtopping
II. Syngenesis
III. Planation
IV. Reduction and curvation

A) III, II, IV, I B) I, IV, III, II C) III, I, II, IV D) I, III, II, IV

102. An example for an unique enzyme that caries its own substrate is:

A) Reverse transcriptase
B) Recombinase
C) Telomerase
D) Ligase

103. Plasmids are said to be relaxed when they are ------.

A). High copy number plasmids
B) Stringent plasmids
C). Low copy number plasmids
D) Promiscuous plasmids

104. According to the ABC molecular model, the identity of the organs present in the four floral verticils is a consequence of the interaction of at least three types of gene products, each with distinct functions. -------- allows the differentiation of petals from sepals in the secondary verticil, as well as the differentiation of the stamen from the carpel on the tertiary verticil

A) A & C factors
B) A factor
C) B factor
D) A & B factors

105. Expression of a gene in tissues where it is normally not expressed or at a time not normally expected is called -----. This situation reveals the information about-----.

A) Unblocking of gene , quantitative trait.
B) Epitopic expression , gene redundancy
C) Epigenetic expression , gene abundance
D) Gene enhancer , tissue specific expression

106. Identify the correct statement/s connected with phytohormones related with ripening:

1. ABA plays an important regulatory role in fruit ripening
2. IAA is probably an endogenous hormonal inhibitor of ripening
3. Gibberellins are known to delay fruit ripening in plants
4. Cytokinins delay ripening processes

A) 1 & 3 are correct
B) 1, 2 & 3 are correct
C) 1, 3 & 4 are correct
D) 1, 2, 3 & 4 are correct

107. Match the following Biomolecular database related information:

a.	TIGER	1.	Global Query Cross-Database Search System-NCBI
b.	ENTREZ	2.	DDBJ
c.	STAG	3.	Secondary database
d.	PRINT	4.	Database for tissue-specific gene expression

A) a-1, b-2, c-3, d-4
B) a-4, b-1, c-2, d-3
C) a-4, b-3, c-2, d-1
D) a-1, b-4, c-2, d-3

108. The insertion of a single viral gene related with crop protection is popularly employed in GMOs production towards resistance. Which among the following is/are examples of the above statement?
A) Coat Protein (CP) & Movement Protein (MP) Mediated Protection
B) Satellite RNA Mediated Resistance
C) Ribozyme Mediated Resistance
D) All the above

109. Which among the following plant species is not a member of Annonaceae?
A) *Artabotrys odoratissimus* B) *Hopea micrantha*
C) *Uvaria cordata* D) *Polyalthia longifolia*

110. How much energy is available at the third trophic level of an energy pyramid if 1,000 kcal is available in the first level?
A) 1,000 kcal B) 10 kcal C) 100 kcal D) 1 kcal

111. Photo chemical smog is one of the major phenomena of air pollution. Photochemical smog was first reported in Los Angeles (USA) .Which of the following statement/(s) related to photochemical smog are true.
1. It is formed when hydrocarbons react with NO_2 in the presence of light
2. Oxides of nitrogen and sulphur interact with one another and with H_2O.
3. Peroxylacetyl nitrate is formed as result of photochemical smog

A) 1 & 2 only B) 1 & 3 only C) 1, 2 & 3 D) 1 only

112. Which among the following is not an example for leaf tendril modification?
A) *Passiflora grandiflora* B) *Pisum sativum*
C) *Clematis buchananiana* D) *Lathyrus sativus*

113. Which of the following statements about the phosphorus cycle are correct?
1. Phosphorus is fixed by plants and algae.
2. Most phosphorus released from rocks is carried to the oceans by rivers.
3. Animals cannot get their phosphorus from eating plants and algae.
4. Fertilizer use has affected the global phosphorus budget.

A) 1, 2, 3 and 4 are correct B) 1 and 2 are correct
C) 1 and 4 are correct D) 1 and 3 are correct

114. Identify the first eukaryote whose genome is completely sequenced:
A) *Pneumocystis carinii* B) *Saccharomyces cerevisiae*
C) *Tolypocladium inflatum* D) *Cladosporium herbarum*

115. Orchids are ornamental plants. Name the binomial of Lady's slipper orchid
A) *Cypripedium calceolus* B) *Grammatophyllum speciosum*
C) *Rossioglossum grande* D) *Dendrobium crumenatum*

116. Which of the following protein has quaternary structure?
A) Chymotrypsin B) Haemoglobin
C) Insulin D) Myoglobin

117. Citrate stimulates fatty acid synthesis by all of the following except for.
A) allosterically activating acetylCoAcarboxylase.
B) providing a mechanism to transport acetyl CoA from the mitochondria to the cytosol.
C) participating in a pathway that ultimately produces CO_2 and NADPH in the cytosol.
D) participating in the production of ATP.

118. Base excision repair:
A) is used only for bases that have been deaminated.
B) uses enzymes called DNA glycosylases to generate an abasic sugar site.
C) removes about 10–15 nucleotides.
D) recognizes a bulky lesion.

119. Which of the following statement regarding sigma factor of prokaryotic RNA polymerase is **not** correct?
A) is part of the core enzyme.
B) binds the antibiotic rifampicin.
C) is inhibited by a amanitin.
D) specifically recognizes promoter sites.

120. Select the correct statements in connection with the wild life sanctuaries of Kerala:
1. Periyar and Parambikulam Wildlife Sanctuaries has been selected and declared as Tiger Reserves
2. Neyyar Wildlife Sanctuary is a part of Agasthyamala biosphere reserve
3. Chinnar Wildlife Sanctuary in Idukki is home to the Great Grizzled Squirrel of India

A) 1, 2 & 3 B) 1 & 3 only C) 2 & 3 only D) 1 & 2 only