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STUDY MATERIAL

MEMORY BASED PAPER

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CSIR NET LIFESCIENCES

INSTITUTE FOR ADVANCED STUDIES

B-7 SARASWATI NAGAR, JODHPUR(RAJ.)

0291-2721056

e-mail:ifasnet@gmail.com

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INSTITUTE FOR ADVANCED STUDIES (IFAS)

B-7 SARASWATI NAGAR, BASNI-I, JODHPUR (RAJ)

Contact: 0291-2721056; 09460660533

e-mail:ifasnet@gmail.com

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VISIT

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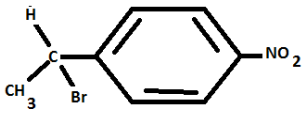
1. The correct configuration for given structure is



1. L configuration 2. D configuration
3. R configuration 4. S configuration

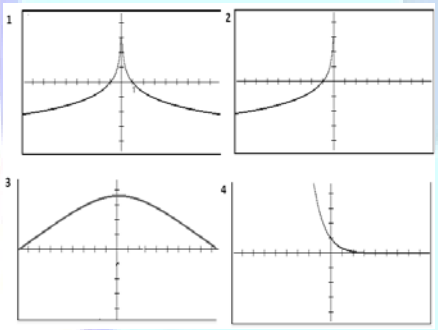
2. Pumice is the name of the most common volcanic rock that floats. It has various air bubbles and capillaries which trap air. Which statement is correct for this rock
1. Air cavities are interconnected
2. Air cavities are not connected
3. Density of rock is more than water
4. Rock is very older

3. For a reaction A→B, the rate of reaction can be represented as

$$\frac{dx}{dt} = K(a-x)\ ,$$

where a and (a-x) are concentration of reactants at time 0 and t. Then the unit of K will be
1. $Mol^{-1}L^{-1}$ 2. $Mol^{-2}L^{-1}$
3. $L{\cdot}mol^{-1}{\cdot}s^{-1}$ 4. Sec^{-1}

4. Identify the graph of the logarithmic function $f(x) = xe^x$



5. What amount has to be taken from 11 N HCl to make 50 ml of 2N HCl
1. 11.0 ml 2. 9.09 ml
3. 6.03 ml 4. 2.0 ml

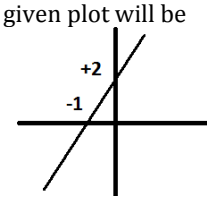
6. High Biological oxygen demand in water body indicates
1. Chemical pollution 2. Organic pollutant
3. High photoautotroph 4. Pressure of heterotrophs

7. If standard enthalpies of formation for H_2O (g) -242, CH_4 (g) -75 and CO_2 (g) is -111 $KJmol^{-1}$ respectively. Determine the heat of reaction of the following reaction:

$$CH_4\ (g) + 2H_2O\ (g) \rightarrow CO_2\ (g) + 4H_2$$

1. – 206 KJ mol^{-1} 2. +206 KJ mol^{-1}
3. –448 KJ mol^{-1} 4. – 670 KJ mol^{-1}

8. Slope of line in given plot will be



1. -1 2. -1/2
3. +1/2 4. 2

9. If period of f(x)=sin x is 2π, then the period of g(x)=sin(2x) will be
1. π 2. 2π
3. π/2 4. 4π

10. It is predicted that due to global warming there would be rise in level of oceans. If radius of earth is R and rise in level of water is 'h', then the volume of water will be
1. $\pi r^2 h$ 2. $¾\ \pi r^2 h$
3. $2\pi r^2 h$ 4. $4\pi r^2 h$

11. If a rectangle is inscribed in circle of diameter 'D'. Then the area of rectangle will be
1. Independent of length and breadth
2. Will be always smaller than $D^2/2$
3. Will be always smaller than $D^2/4$
4. Will be always greater than $\pi D^2/4$

12. An aero plane flies with a ground speed of 800 km/h and velocity of wind is constant 50 km/h. If this aero plane flies one hour upstream and one hour downstream of wind. Then total distance covered and average speed will be
1. 1600 km and 800 km/h 2. 1650 km and 825 km/h
3. 1550 km and 775 km/h 4. 1700 km and 850 km/h

13. Which of the following element is required for production of thyroxin?
1. Nacl 2. Iodine
3. Bromine 4. Fluorine

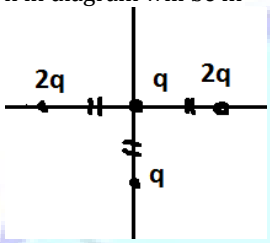
14. Temperature above which gas cannot be liquefied even by applying pressure is termed as
1. Critical temperature 2. Boyle temperature
3. Curie temperature 4. Charles temperature

15. If a nail is hammered in the bark of tree at height 4 m, after ten years the height of tree is doubled. Then the height of nail will be
1. 4 m 2. 8 m
3. 16 m 4. 10 m

16. Let f:[0, 1]→ (0, ∞) be a continuous function. Suppose f(0) = 1 and f(1) = 7. Then
1. f is uniformly continuous and is not onto.
2. f is increasing and f([0, 1]) = [1, 7].
3. f is not uniformly continuous.
4. f is not bounded

17. Lassaigne's test is employed to detect the presence of nitrogen, sulphur, halogens, and phosphorous in an organic compound. These elements are present in the covalent form in an organic compound. On treatment with sodium metal covalent carbon and nitrogen of organic compound are converted into which ionic form
1. Cyanide 2. Suphide
3. Nitrate 4. Carbide

18. The net direction of force on charge placed at origin as shown in diagram will be in



1. +Y 2. -Y
3. +X 4. -X

19. Zinc oxide is thermochromic, changing from white to yellow when heated to high temperature. This color change is caused due to
1. Stoichiometric property of metal
2. Non-stoichiometric property of metal
3. Burning of oxygen
4. Fluorescence at high temperature

20. A wild form animal gives one egg and mutant from gives three egg per year respectively. If all parents and progenies survive, then what would be ratio of number of wild to mutant after four years.
1. 4 2. 2 X 4
3. 2 X 3 X 4 4. 2^4

21. If a certain place shows stable population distribution. It means maximum number of individual will be
1. Healthy
2. Youngest
3. Oldest
4. Reproductively more active

22. Which of the following is responsible for ozone hole?
1. CO_2 2. CH_4
3. Chlorine 4. NO

23. At 35^0 C ambient room temperature any liquid in two containers are allowed to cool from 100^0 C to 70^0C and 80 to 50^0C respectively. If we compare rate cooling in we find that rate of cooling in later will be
1. Slow 2. Fast
3. Both at same rate
4. Depends on container size

24. Earth is active planet and have phenomenon like volcano, earthquake and continental drift. The major source of energy for continental drift is
1. Moon gravity
2. Earth gravity
3. Radioactivity in core of earth
4. Energy from sun

25. The mean salinity of sea 35 g per liter. The main cause of this observed salinity is
1. Evaporation and rainfall
2. Photosynthesis
3. Crust erosion and surface run off
4. Rivers drainage

26. If the handle of a door placed at hinges is displaced toward centre, more force is required to open it because
1. Less moment of force
2. More moment of force
3. Force will be zero
4. Centre of gravity is zero

27. If a gas is released from pressurized bottle, then which statement will be true for release gas?
1. It will gain energy
2. It will have same temperature as in bottle
3. It will gain temperature
4. It will cool as compare to gas in container

28. Among the following which cell can divide by binary fission
1. Muscle cell 2. Nerve cell
3. RBC 4. Bone marrow cell

29. Which statement is not correct for all mammals?
1. Absence of scales
2. Absence of laying egg
3. Absence of segmentation
4. Presence of asexual reproduction

30. Smog is due to
1. Air pollution derived from smoke and vehicles
2. More moisture in environment
3. Increase in CO_2
4. Low temperature of earth surface

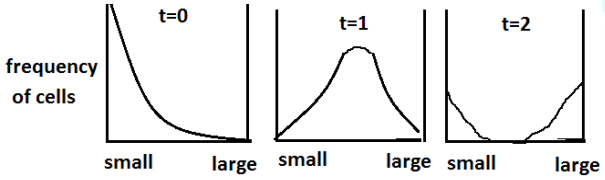
31. Cell with large round size has more chance to survive as compare to thin cell under desiccation because of
1. Low surface to volume ratio
2. High surface to volume ratio
3. Thin membrane
4. Thick membrane

32. Which of the following is not a direct consequence of green house effect?
1. Increase in sea level 2. Rainfall
3. Tsunami 4. Global warming

33. NaCl has ionic bond because
1. Both Na and Cl has same number of valence electron
2. Both Na and Cl belongs to same group
3. Na looses one electron and chlorine receive one electron
4. Due to difference in their electronegativity

34. Brown ring test is confirmatory test for which anionic species
1. Nitrate 2. Bromide
3. Chloride 4. Fluoride

35. The graph below shows frequency distribution of different sizes of cell during different stages of cell culture.



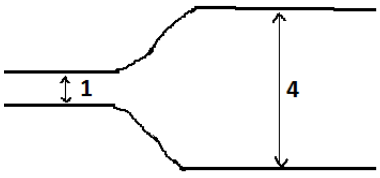
From this pattern of growth we can draw conclusion that
1. Most of the cell divides at same time
2. Rate of cell division is constant
3. Cell does not divide
4. All the cell divides at same time

36. The computer codes for decimal number 99 will be
1. 1100011 2. 1110111
3. 1000011 4.011000111

37. Parts per billion can be represented as
1. ng/Kg 2. µg/Kg
3. µl/l 4. µg/g

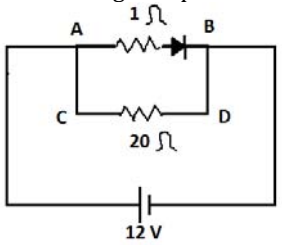
38. Which of the following is not possible in biological systems?
1. DNA→RNA→Protein
2. Protein→RNA→DNA
3. Glucose→amino acid→Protein
4. RNA→DNA→Protein

39. The liquid is flowing in tube as shown in diagram.



The rate of flow at position A as compare to B will be
1. four times 2. Sixteen times
3. Half 4. One fourth

40. In given circuit voltage drop at diode is 0.9 V.



Then which statement is correct
1. More current is flowing through path AB
2. More current is flowing through path CD
3. Equal current is flowing from both routes
4. Resistance is not influencing flow of current

41. A bottle containing 2 ml of ^{14}C labeled phenyl alanine shows radioactivity of 1mCi. The specific activity of isotope is 200 Ci/mMol. Then the concentration of phenyl alanine in bottle is
1. 200×10^{-3} M 2. 400×10^{3} M
3. 100×10^{-3} M 4. 2.5×10^{-3} M

42. The general procedure for estimation of primary production is the "light" and "dark" bottles method. In an experiment two bottles containing 200 mg/l of O_2 was incubated in light and dark for seven days. The amount of O_2 estimated after incubation period was found to be 600 mg/l and 100 mg/l in light and dark respectively. The net primary production during incubation period is.
1. 400 mg/l 2. 100 ml/l
3. 500 mg/l 4. 600 mg/l

43. Which is not a structural alignment tool?
1. SSAP 2. TM-Align
3. T-coffee 4. DALI

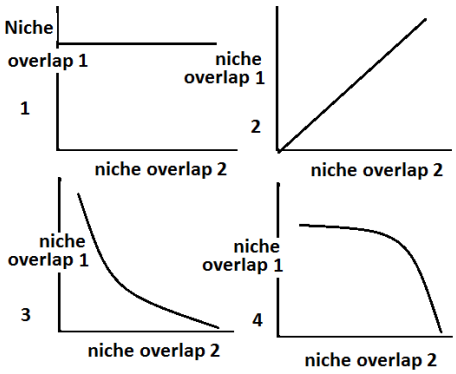
44. Which of the following is major radioactive indoor air pollutant in home air conditioner?
1. Cs 2. U
3. Sr 4. Rn

45. Variation in two characters in two or more species can be best represented by
1. Histogram 2. Scattered diagram
3. Triagular box 4. Linear curve

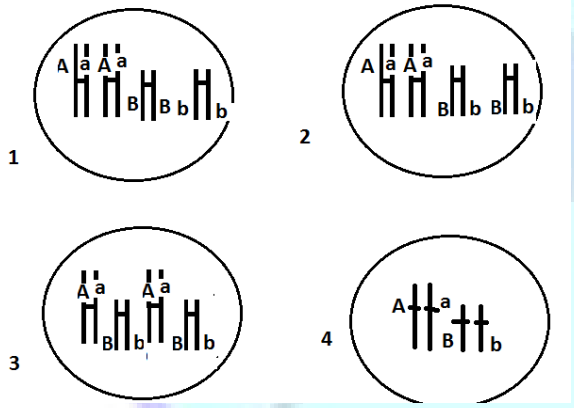
46. Which of the following statement correctly refer statistical parameter mode?
1. Most of insects mature on third day of development
2. Major part of population fails to advance their education above 10+2.
3. The average number of seeds by plant is 3.5
4. The height of plant ranges from 5 to 10 m

47. In statistical error Type-I is represented by α and Type II by β. Then measure of power of error will be
1. 1-α 2. 1-β
3. α-β 4. β-α

48. Which of the following diagram correctly represents co-existence of two species even during niche overlapping?



49. If all four gametes AB, aB, Ab and ab are formed in equal probability. Then arrangement of chromosomes at metaphase-I of meiosis will be



50. The distance between gene A and B is 10 cM. If a genotype $\frac{A\ b}{a\ B}$ is selfed, the percentage of progeny with genotype aabb will be
1. 10 % 2. 25 %
3. 0.25 % 4. 0.01 %

51. Male parental care is expected to observed during
1. Polygynous species
2. Small population size
3. Life long bond pairing
4. Reverse sexual dimorphism

52. Which of the following is the major environmental cue for migration of birds during winter?
1. Duration of day length 2. Instinct
3. Falling temperature 4. Learning

53. Which cyclin is involved in formation of pre transcriptional enhancer binding protein (PTEB)?
1. Cyclin D 2. Cyclin K
3. Cyclin E 4. Cyclin T

54. Binding of erythropoietin to its EPO receptor leads to activation of signaling pathway termed as
1. JAK-STAT pathway
2. NF-kβ pathway
3. Apaf-smad pathway
4. Tyrosine kinase pathway

55. Receptors for FSH is present on
1. Leydig cells
2. Sertoli cells
3. Peritubular cells
4. Spertogonium germ cells

56. During gametogenesis in male, cell during development are termed as primary spermatocytes when they are
1. Before meiosis-I
2. After meiosis-I
3. After meiosis-II
4. Mature sperms

57. Which statement is true about progenitor cells?
1. They are same as stem cells
2. They are totipotent cells
3. They can divide but do not remain differentiated as stem cells
4. They cannot divide

58. Neuropeptides and neurotransmitters are molecules secreted by neuron. Which statement is correct statement about neuropeptide as compare to neurotransmitter?
1. Less potent and short acting
2. More potent but short acting
3. Less potent but long acting
4. More potent and longer acting

59. There is small gap between two neuron at synapses. The purpose of gap is
1. Unidirectional flow of information
2. Reabsorbtion of neurotransmitter
3. Coupling of charge over membrane
4. Slow down speed of propagation

60. Most abundant intracellular ion in plants is
1. Iron 2. Calcium
3. Potassium 4. Zinc

61. Na^+-K^+ pump operates under intracellular concentration of
1. High Na and low K 2. High Na and High K
3. Low Na and low K 4. Low Na and high K

62. Precursor for amino acid proline is
1. Pyruvate 2. 3-Phosphoglycerate
3. Oxalo acetate 4. α-keto glutarate

63. S-adenosyl methionine is a precursor of which plant hormone?
1. Absiccic acid 2. Auxin
3. Ethylene 4. Cytokinin

64. Under certain conditions pyruvate can be allowed to decarboxylate into acetyl CoA and CO_2. For evolution of ^{14}C labeled carbon in CO_2, which carbon atom must be radiolabelled in glucose prior to glycolysis?
1. C1 or C6 2. C2 or C3
3. C3 or C4 4. C5 or C2

65. Which cycle has been used in hetero lactic fermentation?
1. Entner–Doudoroff pathway
2. Phosphoketolase Pathway
3. Pentose Phosphate Pathway
4. Glycolate pathway

66. The characteristic of mitochondrial genome is?
1. Intron free DNA
2. Repetitive DNA
3. Polycistronic RNA
4. Satellite DNA

67. In scanning Simple Sequence Repeats (SSR) primers are used against
1. Random sequence
2. Repetitive sequence
3. Flanking region of repetitive sequence
4. Conserved region of exon of gene

68. Integrity of introduced transgene in mouse can be validated by
1. Male pronuclei insertion
2. Fusion of enucleated egg with somatic cells
3. Transfer into competent embryogenic cell
4. Southern blot analysis

69. Techniques used to assess HIV-I seroconversion are
1. immunoblot and ELISA
2. Immuno precipitation and PCR
3. PCR and Immunofluroscence
4. PCR and ELISA

70. Which of the following cancerous transformation is due to retero virus?
1. Human T-Cell leukemia
2. Burkitt Lymphoma
3. Oral Epithelial Cancer
4. Colon cancer

71. Among the following which is termed as proof reading activity of DNA polymerase?
1. 5'→3' polymerase activity
2. 3'→5' polymerase activity
3. 5'→3' exonuclease activity
4. 3'→5' exonuclease activity

72. The Carboxy-Terminal domain (CTD) of RNA polymerase II consists of heptapeptide repeats (YSPTSPS). Other proteins often bind the C-terminal domain of RNA polymerase in order to activate polymerase activity. Which of the following is not a function associated with CTD of RNA polymerase?
1. Promoter recognition
2. Promoter clearance
3. 5'-Capping
4. Splicing

73. Which of following is reactive centre for splicing of exons during processing of m-RNA?
1. U1 and U5
2. Branch point, U2 and U6
3. Branch point, U4 and U6
4. U2 and U4

74. Which of the following is the first step in translational proof reading?
1. Aminoacylation of t-RNA by amino acyl t-RNA synthetase
2. Peptide bond formation
3. Entry into A site
4. Formation of amino acyl-t-RNA, 40 S ribosome and m-RNA ternary complex

75. Puromycin blocks translation. Mode of action of drug puromycin is
1. binds to A site and stop elongation
2. stops peptidyl transferase activity
3. Binds EF-TU-GTP and prevent initiation
4. donot allow termination of translation

76. Tetracyclines are a group of broad-spectrum antibiotics against bacterial resistance. Tetracycline antibiotics are protein synthesis inhibitors and exerts its effect by binding to
1. 30 S subunit of ribosome
2. 50 S subunit of ribosome
3. A site of ribosome
4. Peptidyl transferase

77. Ciprofloxacin is a synthetic chemotherapeutic antibiotic of the fluoroquinolone drug class. The target of antibiotic ciprofloxacin is
1. Replication
2. Protein synthesis
3. Cell wall synthesis
4. Membrane structure

78. The one of the most widely used herbicides methyl viologens interfere photosynthesis of higher plants. They are responsible for
1. Evolution of more oxygen
2. Dissipation of proton gradient across thylakoid membrane
3. Inhibition of flow of electron from PS II to PSI
4. Transfer of electrons from PS I to molecular oxygen

79. Which would be the result of mutation in genes responsible for radial patterning in roots of higher plants?
1. No apical root formation
2. Root hair will fail to develop
3. Variation in number and position of cell in vascular system
4. Roots will be positively geotrophic

80. In *Arabidoposis* gene responsible for formation shoot meristem is
1. Leafy 2. Agamous
3. Clavata 4. Wus

81. Among the following which gene product migrates from leaves to shoot meristem during transition of shoot meristem into floral meristem?
1. Flowering locus T 2. Flowering locus D
3. Leafy 4. Apetala 1

82. The postion of collagen triple helix in Ramachandran plot is at-
1. Top Left 2. Top right
3. Bottom right 4. Bottom left

83. One of the most important gene, involved in dorsal– ventral axis determination in Drosophila is *dorsal.* It codes Dorsal protein which
1. is taken up into the nuclei of cells and this side will become the ventral side
2. remains in the cytoplasm of cell and this side will become ventral side.
3. is taken up into the nuclei of cells and this side will become the dorsal side.
4. degraded in one side and that will become dorsal side

84. Which is true for amount of yolk and cleavage in egg of amphibian?
1. Mesolecithal and holoblastic cleavage
2. Isolecithal and holoblastic cleavage
3. Mesolecithal and meroblastic cleavage
4. Microlecithal and meroblastic cleavage

85. Among the following which enzyme used NAD as cofactor?
1. Histone acetyl transferase
2. Histone methyl transferase
3. Histone deacetylase
4. Histone demethylase

86. Which of the following system can be utilized for glycosylation of peptides expressed using recombinant DNA technology?
1. Large bacterial fermenters
2. Small bacterial fermentors
3. Normal bacterial bioreactors
4. Mammalian Cell line

87. Among the following which is not responsible for producing near UV signal in circular dichorasim for secondary structure determination of proteins?
1. Tyrosine 2. Tryptophan
3. Disulphide bond 4. Peptide bond

88. β-α-β structure in protein structure are known for
1. ligand binding
2. stereological hindrance in binding of ligand
3. Catalytic centre
4. transmembrane domain

89. Which of the following is most unstable condition in protein folding?
1. Non-polar side chain exposed to outside
2. Polar side chain present in core of protein
3. Non polar side chains in core of protein
4. Polar amino acids exposed to outside

90. Most effective protein denaturant form of guanidinium when used in equimolar concentration is
1. Iodide 2. Chloride
3. Bromide 4. Sulphate

91. The melting temperature (Tm) is defined as the temperature at which half of the DNA strands are in the double-helical state and half are in the random coil states. Tm of DNA does not depends on
1. Length of DNA 2. % GC content
3. Presence of cations 4. Presence of anions

92. In a heterozygous two recessive mutation at different site will give mutant phenotype when genes involved are
1. Allelic and placed in cis
2. Allelic and placed in trans
3. Non-allelic and placed in cis
4. Non-allelic and placed in trans

93. Allele frequency of a particular allele was found to be 0.6 in three different populations. It is probably due to is
1. Neutral allele 2. Stable polymorphism
3. Heterozygote advantage 4. Natural selection

94. Molecular evolution do not reflects
1. Species divergence 2. Convergent evolution
3. Natural selection 4. Neutral mutation

95. Somatic hypermutation in immunoglobulin genes is responsible for
1. Class switching 2. Affinity maturation
3. Clonal selection 4. VDJ Recombination

96. To assess the mutation in bacteria, bacteria were inoculated in various aliquots and later on shifted on screening media for selection of mutants. The most important information for assessing mutation would be
1. Total number of mutant
2. Average number of mutant per aliquot
3. Petri plates with single mutant colony
4. Petri plates without any mutant colony

97. Interaction of antibody with antigen is like lock and key. The major force responsible for antigen antibody interaction is
1. Hydrogen bond 2. Vander wall interaction
3. Disulphide bond 4. Peptide bond

98. Which is common cytokine secreted by both T_{H1} and T_{H2} cells
1. IL-2 2. IL-4
3. INF-γ 4. IL-5

99. Major Histocompatibilty complex I (MHC I) is present at
1. All nucleated cells
2. Only on antigen presenting cells
3. Only on B and T lymphocytes
4. Macrophages and Dendritic cells

100. Major reason for evolution for diversity in immune system is
1. Natural selection 2. Neutral mutations
3. Directed evolution 4. Co-evolution

101. At any place if more diversity and variation is observed in any species of domestic animal, then it can be concluded that
1. Place is natural centre of origin of that species
2. Animal has been introduced once and is invasive
3. Animal has been introduced more than once
4. People take more care of animals

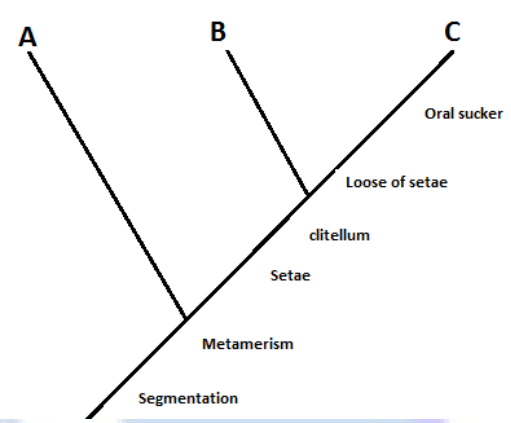
102. Among the following which is typical tree of Indian desert ecosystem?
1. *Prosopis cineraria*
2. *Avicennia officinalis*
3. *Mangifera indica*
4. *Acer negundo*

103. Which of the following is not an invasive plant species in India?
1. *Parthenium hysterophorus*
2. *Salvinia molesta*
3. *Lantana camara*
4. *Myristica fica*

104. The causal organism for blast of rice is
1. *Pyricularia grisea* 2. *Ustilago tritici*
3. *Erwinia chrysanthemi* 4. *Cercospora janseana*

105. Which group of algae is believed to be most closely related to higher plants?
1. Charophyceae 2. Chlorophyceae
3. Rhodophyceae 4. Pheophyceae

106. Following cladogram represent changes in annelids during evolution.



The group 'C' in cladogram represents
1. Hirudinea 2. Echiura
3. Polychaetes 4. Oligochaeta

107. Characteristic feature of Cnidaria is
1. No tissue or organ system
2. Diplobastic or bilayered
3. Triploblastic or three layered
4. Segementation

108. Nilgiri Tahr is restricted only to upper heights (1,200 to 2,600 metres) of western ghat. The major reason is
1. Habitat preferences
2. Habitat shrinkage
3. Urbanization in other part of habitat
4. Pressure of tiger predation at lower height

109. Which of the following is not a characteristic of climax community?
1. Wide niche 2. Complex food web
3. Low resilience
4. Inter-biotic nutrients dependence

110. In an abandoned area first nitrogen fixing communities arrives and carry out nitrogen fixation with non-nitrogen fixers, later on this community is nitrogen fixers are lost and it is dominated by non-nitrogen fixing species. In the mechanism of succession this is in general agreement according to
1. Facilitation 2. Tolerance
3. Inhibition 4. Adaptation

111. Under what thermodynamically condition reaction would be spontaneous?
1. $\Delta H>0$ and $\Delta S>0$ 2. $\Delta H<0$ and $\Delta S>0$
3. $\Delta H<0$ and $\Delta S<0$ 4. $\Delta H > T\Delta S$

112. Which is most favorable for maximum sustainable harvesting of resources?
1. Major part of population is near or around the carrying capacity
2. Population is half of the carrying capacity
3. Population is one fourth below the carrying capacity
4. Population has slow doubling time

113. Which statement is not correct for blood?
1. Mature RBC is of larger size as compare to its precursor cells
2. Platelets play important role in blood clotting
3. Neutrophils are major phagocytotic cells
4. Basophils are present in least amount

114. Mammalian jaw has evolved from
1. Pharyngeal arches 2. Temporal bone
3. Frontal bone
4. Dentary and squamosal bones

115. Which eukaryotic RNA polymerase transcribes t-RNA genes?
1. RNA polymerase I 2. RNA polymerase II
3. RNA polymerase III 4. DNA polymerase I

116. An insertion of single nucleotide in coding region of gene leads to frameshift mutation and result is formation of non functional protein. Under certain condition second suppressor mutation in another gene may result into formation of functional protein. How suppressor mutation can do this
1. There is insertional mutation in gene of t-RNA anticodon such that it is able to interact with four nucleotide codon
2. Mutation in gene of ribosome leading to frameshift over transcript
3. Mutation in gene whose product buldge out extra nucleotide
4. Another mutation reverses the original insertion

117. Which statement is correct regarding ABC transporters?
1. Consist of the transmembrane domain as well as the nucleotide-binding domain
2. All are P glycoproteins
3. Present in only eukaryotes
4. Makes membrane porous

118. The organelle of C_3 plants, where glyoxylate is formed is
1. Chloroplast 2. Peroxisome
3. Mitochondria 4. Cytosol

119. In prokaryotes during replication, the lagging strand is synthesized in a series of short fragments known as Okazaki fragments, consequently requiring many primers. The RNA primers of Okazaki fragments are subsequently degraded by DNA Polymerase I and the gap are filled. How DNA polymerase I fills the gap once the primer have been removed from lagging stand?
1. DNA polymerase I has its own primer
2. DNA polymerase I do not require primer
3. DNA from leading stand serves as primer
4. Ends of existing Okazaki fragments on lagging stand serves as primer

120. Which of the following small G-protein is involved in nuclear transport and targeting?
1. Ras 2. Ran
3. Rab 4. Rho

121. Which of the following is not a characteristic feature of Apoptosis?
1. Swelling of cell
2. Nuclear fragmentation
3. Change in cell wall porosity
4. Permeability of mitochondrial inner membrane

122. Which statement is correct in relation of activity of telomerase?
1. Increase with age
2. Observed in all cancers and responsible for immortality
3. Responsible for apoptosis but not for ageing
4. Re-synthesize telomeres

123. In an organism if number of linkage group is 12 then, number of haploid set of chromosome is
1. 12 2. 6
3. 24 4. 4

124. Chromophore associated with phytochrome of plants is
1. Phycobillin 2. β-carotene
3. Pterin
4. Flavin adenine dinucleotide

125. During the early origin of earth oxygen was absent in environment. Later on the oxygen increased and reached to present level. The main source of oxygen was
1. Photosynthesis 2. Released from $CaCO_3$
3. Escape of CO_2 to environment
4. Escape of oxygen from internal sources

126. Which of the following is produced in phenyl propanoid pathway?
1. Phenolics 2. Carotenes
3. Alkaloids 4. Terpenes

127. Which of the following helps in osmoprotection in plants?
1. Proline 2. Tryptophan
3. Glycine 4. Levulinic acid

128. Frog A has length "l" and weight "w". Another frog "B" has double length and four times weight. It means
1. Frog A is more cylindrical
2. Frog B is more cylindrical
3. Both Frogs have same surface to volume ratio
4. Frog B is overweight

129. In a certain genetic cross, 1/16 proportion of progeny shows mutant phenotype. It means
1. Two independent assorting genes are involved for trait
2. Two independently assorting duplicate genes are involved
3. Two linked genes are involved for trait
4. Two independent segregating alleles are responsible for trait

130. Which statement is correct for membrane receptors for signal transduction?
1. Contain single or multiple membranes spanning domain
2. Always coupled with trimeric G protein
3. Always results in production of secondary messanger
4. Recognized non-polar signaling molecules

131. Spontaneity of mutation means
1. Mutation in absence of exogenous mutagen
2. Mutation directly proportion to presence of mutagen
3. Mutation inversely proportion to presence of mutagen
4. Mutation at in appropriate time

132. Plasmid copy number achieved by plasmid-encoded control elements that regulate the initiation of the replication step. For example in stringent plasmid protein Rep A dimerize and binds to origin of replication and donot allow replication more than once. What mutation may convert this stringent mode of replication in plasmid into relaxed one?
1. Over expression in repA protein
2. Mutation in repA gene in dimerization domain
3. Mutation in repA other than dimerization domain
4. Gain of function in recognization domaon of repA

133. Ants and bees social structure include queen, sterile female workers and soldier drones. This is best example of
1. Eusociality 2. Sub-social
3. Group selection 4. Altruism

134. Among the following which is insulin dependent glucose transporter?
1. GLUT1 2. GLUT2
3. GLUT4 4. GLUT 5

135. What would be effect on serum concentration of TSH if a bolus of thyroxine is injected to a person?
1. Remain unchanged
2. First increase and then come to normal
3. Initially decrease but after short time will be normal
4. Remain high for prolonged period of time

136. Substrate for DNA synthesis is?
1. Nucloetide tri phosphate
2. Nucleoside tri phosphate
3. Nucleoside pyrophosphate
4. Ribonucleotide tri phosphate

137. Optimum temperature for growth of extemo thermophiles is
1. 0^0 C 2. 20^0 C
3. 50^0 C 4. Over 80^0 C

138. Treatment of acetosyringone is given during transfer of transgene using Agrobacterium as vector. The rationale behind this is that acetosyringone
1. Helps in anchorage of bacteria to plant cell wall
2. Activates vir operon of bacteria
3. Helps in integration of T-DNA in plant genome
4. Promotes bacterial growth by activating genes in plant

139. When a person enters a dark room from bright sunlight he cannot see anything for a few seconds because
1. Rhodoposin pigment of rod cells is inactivated in bright light which takes time and is activated in dark and associate with opsin protein
2. Scotopsin proteins of rods are denatured
3. All Scotopsin are bound with retinal in rod cells
4. All Sctoposin becomes non-functional in bright light

140. Largest reservoir of carbon is
1. Atmosphere
2. Ocean sediments
3. Carbonate and Silicate Rocks
4. Inorganic carbon in earth mantle

ANSWER KEY

1	3	21	2	41	4	61	4	81	1	101	3	121	1
2	2	22	3	42	1	62	4	82	1	102	1	122	2
3	4	23	1	43	3	63	3	83	1	103	4	123	1
4	1	24	3	44	4	64	3	84	1	104	1	124	1
5	2	25	1	45	1	65	2	85	3	105	1	125	1
6	2	26	1	46	1	66	1	86	4	106	1	126	1
7	3	27	4	47	2	67	3	87	4	107	1	127	1
8	4	28	4	48	2	68	4	88	1	108	1	128	1
9	1	29	4	49	1	69	2	89	1	109	1	129	2
10	4	30	1	50	3	70	1	90	2	110	1	130	1
11	2	31	1	51	4	71	4	91	4	111	2	131	1
12	1	32	3	52	1	72	1	92	1	112	1	132	2
13	2	33	3	53	2	73	2	93	1	113	1	133	1
14	1	34	1	54	1	74	2	94	3	114	4	134	3
15	1	35	1	55	2	75	1	95	2	115	3	135	3
16	3	36	4	56	1	76	1	96	2	116	1	136	2
17	1	37	2	57	3	77	1	97	1	117	1	137	4
18	1	38	2	58	4	78	4	98	1	118	2	138	2
19	2	39	2	59	1	79	3	99	1	119	4	139	1
20	4	40	1	60	3	80	3	100	4	120	2	140	2

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Suggestions and thanks are welcome.....
at
ifasnet@gmail.com

INSTITUTE FOR ADVANCED STUDIES
B-7 SARASWATI NAGAR
BASNI-I
JODHPUR, RAJASTHAN

http://csirnetlifesciences.tripod.com
Contact:
09460660533
02912721056