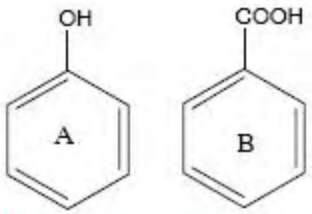
Memory based questions of CSIR-JRF/NET.JUNE 2008

1. 

1. B is more acidic than A
2. A is more acidic than B
3. Both are equal acidic
4. A is not acidic at all

2. If accelerated charged particles with similar velocity are allowed to pass through the magnetic field which is perpendicular to their direction. It was observed that all have same radius of curvature. Thus we can conclude that
1. They have same mass
2. Mass is directly proportional to square of charge
3. Have same mass: charge ration
4. Charge is directly proportional to square of mass

3. It is expected that around 2100 AD all ice in polar glaciers will melt and level of sea will increase as a consequence of global warming. What would be effect of it on rotation speed of earth?
1. Increase 2. No change
3. Stop 4. Decrease

4. Consider the following algorithm
n>O
f (n)
If n=O
then return0
Else 2 + f (n-2)
Consider the initial value of n= 11, then the value returned after execution of program will be
1. 9
2.11
3. 13
4. Program will not terminate

5. Consider the following statements, where,
:=stands for implies to
x:=x+y
y:=x-y
x:=x-y
Ifx=2 and y=3, then out put (x,y) will be
1.1,1 2. 3,2
3.2,3 4.5,3

6. Consider a series is in certain geometrical progression with exact difference'd' between successive number. If series starts with 10 and consist 100 integers. Their sum can be represented by the equation
1. 100 (100+99d) 2. 100 (90+100d)
3. 50 (20+99d) 4.20 (50+99d)

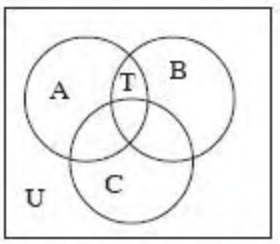
7. Consider the following table, where . = AND, + = $\overline{X}$ OR, =NOT X and $\overline{Y}$ =NOT Y
Value off (x,y) will be

X	Y	f(x,y)
T	T	T
T	F	F
F	T	F
F	F	T

1. $X.Y+\overline{X}.\overline{Y}$ 2.$X.\overline{Y}$
3.$X+Y$ 4.$X.\overline{Y}+\overline{X}.Y$

8. Consider the equations; the second equation will be equal to
$1+ 1/2^2+1/3^2+1/4^2+...1/n^2 = \pi^2/6$
$1+ 1/3^2+1/5^2+1/7^2+...1/(2n-1)^2 =$
1. $\pi^2/2n-1$ 2. $\pi^2/6$
3. $\pi^2/3$ 4.$\pi^2/2$

9. Consider the folowing ven diagram for universal set of U



The area T can be represented by
1. $AnBnC$ 2. $A^cnB^cnC^c$
3.A^cnB^cnC 4. $AnBnC^c$

10. Among the following which graph correctly represent the growth rate in yeast considering that it bud once in life

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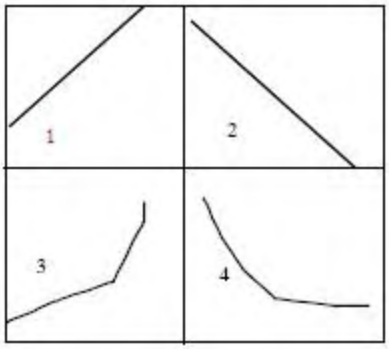


11. If a bar magnet is allowed to fall through solenoid connected to the closed circuit. Its acceleration will be
1. Smaller than g 2. Equal to g
3. Greater than g 4. It will not fall

12. Mumbai and Chennai are more humid cities as compare to Delhi because they are
1. Near to tropics
2. Near to equator
3. Lies in low pressure zone
4. Coastal cities

13. Electron microscopes have comparatively better resolution as compare to light microscope because
2. Uses more lenses
1. They are costly
3. Carried out in vacuum
4. Wavelength used is lesser then visible light

14. If a ball of mass "m" was dropped from certain height "h", The distance covered by it after 2 sec will be ($g=9.8\ ms^{-2}$)
1. 4.9m 2.9.8 m
3.28m 4.19.6m

15. For an equation, the sum of root square will be
$x^5+15x^4+10x^3+5x^2+1=0$
1. 10 2. 15
3.-15 4.-10

16. According to Chares law a real gas at 1 atm pressure and temperature 't' was kept at absolute 0 degree. Its volume at this temperature will be
1.1 1 2. 0
3. V /273 4. V /273+t

17. At present half life of C^{14} is 5730 years. Its half life 11460 year ago was
1.11460 2.5730
3.2680 4.1680

18. Two first order reaction convert substrate A into C via B. The rate constant for A-7 B is 1jmin and for B-7 C is 1jhr. The overall rate of reaction from A to C will be
1. 1/hr 2. 1/min
3.2/hr 4.2/min

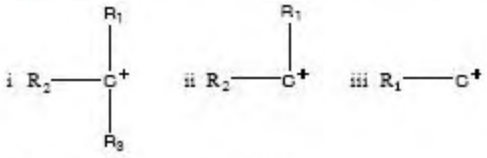
19. It is observed that tail of revolving comet is always directed away from sun. The probable reason is
1. Due to gravitational pull of Saturn and Jupiter
2. Due to high speed
3. Due to repulsive force from solar wind
4. Due to lesser evaporation at sunlit side

20. Volume of a person of 50 kg will be
1. 50 ml 2. 500 ml
3. 50 lit 4. 5 lit

21. Which statement is correct regarding the meiosis
1. There is two round of replication and two round of cell division
2. There is one round of replication and one round of cell division
3. There is two round of replication and one round of cell division
4. There is one round of Teplication and two round of cell division

22. Among the following which process do not occur in nucleus
1. Replication 2. Transcription
3. Repair 4. Translation

23. The order of stability in given structures would be



1. i<ii<iii 2. i>ii>iii
3. ii>iii>1 4. i>iii>ii

24. Consider the following 4 X 4 matrix table

0	1	0	1
2	3	1	3
0	0	0	1
a	3	0	3

1. invertible if a=0
2. non- invertible if a=0
3. non-invertible if 0<a<l
4. invertible if 0<a<l

25. Elevation level altitude (ELA) for a glacier is constant height when deposition of ice at top is equal to melting of ice from its base. It is estimated that height of Himalayan glaciers has

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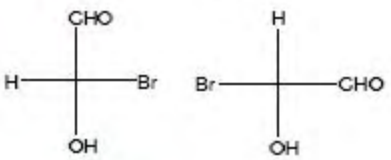
reduced 500 m since ice age, considering that temperature change per km rise in height is 6^0 C. The global temperature during ice age as compare to present was

1. 6^0 higher 2.6^0 lower
3.3^0 lower 4. 30 higher

26. Possible combination of gametes which can be formed by genotype AaBbCcDdEeFfGg are

1.16 2.32
3.128 4.64

27. The pair of structure are



1. Enantiomers 2. Identical
3. Distereisomers 4. Epimers

28. The light falling on oil is dispersed into several colors due to phenomenon of

1. Reflection 2. Refraction
3. Interference 4. Diffraction

29. f(x)=3^value ofx will be

1. 0 2.1
3.3 4.1/3

30.

31. A tryphophan auxotroph in corn showed 50 times more accumulation of IAA then the normal. Probable explanation for this is

1. IAA is probably not inhibited by feed back mechanism
2. There may be some other precursor for IAA synthesis
3. IAA was not oxidized
4. Deconjugation of ester linked IAA does not take place

32. Frequency of blood group 0 in population is 25 %. Remaining individual of population have equal number of Blood group A and B. What would be the ratio of Allele frequency between blood group A, Band 0

1. 1:1:1 2.3:2:2
3.3:3:1 4.1:1:2

33. With time molecular distance between "I organisims increases during evolution due to

1. Neutral Mutation 2. Natural selection
3. Random drift 4. Point Mutations

34. During Gametophytic self incompatibility the primary response is

1. Deposition of callose
2. Formation of concentric ring from Golgi
3. Self-incompatibility triggers a Ca-t-dependent signalling cascade in incompatible pollen
4. Pollen tube lysis

35. Major cause of evolution of genes and protein is

1. Gene duplication and divergence
2. Point mutation
3. Chromosomal aberrations
4. Sexual reproduction

36. Photoperiodic Stimulus from leaves to shoot apical meristemjfloral meristem is transported through

1. Phloem 2. Xylem
3. Plasmodesmata 4. Apoplast

37. Bacteria propels with the help of

1. Actin like MreB proteins
2. Flagella made of protein flagellin
3. Myosin
4. Cytoskeleton

38. Blood vessel A has thick wall, narrow lumen and no valves while blood vessel B has thin wall, wide lumen and have valves. Here A and Bare

1. A is vein and B is artery
2. A is artery and B is vein
3. A is vein and B is capillary
4. A is capillary and B is Artery

39. Pitcher plant *Nepenthes alata* would be expected to have

1. $Na+$-NH_3 synporter
2. $N0_3$-specific ion channel
3. $H+$-$N0_3$- symporters
4. ATP powered pumps for $N0_3$

40. Primary carnivores consume 40 % production of herbivore and assimilate 70 % of energy. What percentage of energy these carnivores assimilates the energy available from herbivores

1.28 1.30
3.10 4.40

41. During cell cycle sister chromatid are pulled apart during

1. Anaphase 2. Metaphase
3. Prophase 4. Interphase

42. In chromosome 30 nm fibres during metaphase attach to

1. Centromere 2. Scaffold
3. Nuclear matrix 4. Nuclear lamina

43. Which of the following DO NOT bring variation in population

1. Random drift 2. Non-random matting
3. Natural Selection 4. Recombination

44. The adaptation related to high altitude is

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1. Decrease in RBC count
2. Increase in RBC count
3. Increase affinity for oxygen by haemoglobin
4. Decrease affinity for oxygen by haemoglobin

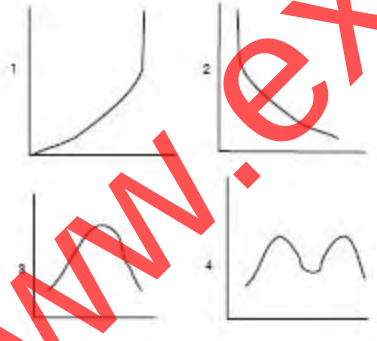
45. Natural selection is primarily based on fitness which is dependent on maximum number of offspring laid for next generation but at present new concept is added where organism help in reproduction of relatives to increase the overall fitness. This concept is termed as
1. Inclusive fitness 2. Evolutionary fitness
3. Relative fitness 4. Kin selection

46. Which of the following monochromatic lights are more suitable for growth and development of plants
1. Red, Blue, far red 2. Red, far red
3. Red, green 4. Blue, far red

47. Shannon weaver index for biodiversity characterization can be represented as
1. D= H log Pi 2. H=Pi log Pi
3. D=L(njN2) 4. H=log(N)- log(n)

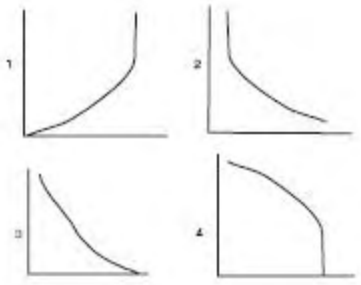
48. Which statement is NOT true regarding genetic drift as an evolutionary force
1. Small population size
2. Reproductive variance
3. Change in allele frequency
4. Effective population size

49. The correct representation for relation between disturbance and biodiversity is



50. Among the following which in endangered animal
1. Indian tiger 2. Indian lion
3. Indian wild ass 4. Lion tailed macaca

51. Curve representing constant mortality at every stage oflife would be (3)



52. Among the following which microorganism is involved in nitrogen fixation with woody trees?
1. *Rhyzobium* 2. *Frankia*
3. *Azotobacter* 4. *Azospirillium*

53. In India which conservation program is related with protection of entire "Tropic ladder"
1. Project Tiger 2. Project Elephant
3. Biosphere reserve 4. Ramsar Sites

54. On molar basis if DNA has 20 % cytosine, then percentage of Adenine would be
1.30 % 2. 20 %
3.40% 4.60%

55. The maximum BOD and minimum DO for pure drinking water should be
1. 2,5 2. 25,5
3.3,9 4.0,6

56. Among the following which data alone are capable for preparing dendrogram from given operational taxonomic unit (OTU)
1. Mean of similarity
2. Characters taken into account
3. Criteria for classification
4. Similarity matrix

57. Immunological diversity in antibody is generated by
1. Alternative RNA processing
3. Post transcriptional modification
3. Post translation modification
4. Rearrangement of immunoglobulin genes

58. In honey bee males are developed parthenogenetically while workers are developed as sexual reproduction. The workers exhibits more similarity among them selves as compare to queen. If workers starts giving organisms parthenogenetically then offspring would most likely resemble to
1. Among themselves and slightly differ from mother
2. Among themselves and with mother
3. Among themselves and with queen
4. Among themselves and with father

59. Calculate the pH of acid with Ka=10^{6} and 0.01 M
1.4 2. 0

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3.6 4.2

60. Polar head group in membrane cholesterol is due to
1. Long alkyl chain 2. Hydroxy group
3. Benzene rings 4. Carboxylic groups

61. Which of the statement regarding plasma cell is correct
1. They are produced during secondary immune response
2. They are involved in removal of intracellular viruses
3. The are mature antibody secreting cells
4. Involved in inflammatory responses

62. Goucher disease where glucocerebrocide are not degraded is related to
1. lysosomes 2. Mitochondria
3. Peroxisomes 4. Golgi

63. Area under forest cover in India as per estimates of2001
1. 7.9 2.12.7
3. 16.3 4.20.6

64. Consider the following DNA sequence 5'-ATGGGCATAGACGATATGGTAG-3' If due to frame shift mutation there is insertion of G between 3rd and 4th position. Consider a reverse mutation occur in same mutated sequence. Which reverse mutation will have minimum effect in protein change
1. Insertion of three nucleotide between 5th and 6th position
2. Insertion of nucleotide between 5th and 6th position
3. Deletion of a nucleotide between 5th and 6th position
4. Deletion of a nucleotide between 11th and 12th position

65. Among closely lying cells signal are communicated by
1. Neurotransmitters
2. hormones
3. Cell membrane proteins
4. Gap junctions

66. The genes for improving rice cultivars have been taken from the Indian rice variety
1. *Oriyza sativa* 2. O. *indica*
3. O. *rhyzae* 4. O. *nivara*

67. Which statement is NOT correct for Vitamin D
1. It helps in bone formation
2. It is produced by skin in presence of UV light
3. It helps in bone resorption
4. It is water insoluble

68. Among the following critically endangered plant species is
1. *Dipterocarpus nilgirinsensis*
2. *Saraca indica*
4. *Terminalia arjuna*
3. *Cupressus cashmeriana*

69. A pathogen is capable of transovarial transmission in its vector. During evolution host will become
1. Resistant 2. Susceptible
3. Kill pathogen 4. Cannot be predicted

70. Consider that two population are growing exponentially with initial difference in growth rate of 10 %. After 10 generation the difference between population size would be
1.1:1 2.4:1
3.10:1 4.8:1

71. Genes between related organism exhibits high variation. The variations would maximally occur in
1. Intron 2. Exons
3. Promoters 4. Polyadenylation site

72. If in a operon repressor binds to operator it will lead to
1. Switch on transcription
2. Enhanced transcription
3. Differential gene expression
4. Switch offtranscription

73. The possible type of gametes formed from genotype AABbCCDdEe will be
1.8 2. 4
c. 16 4.32

74. For an enzyme catalyzed reactions exhibiting Michelis Menten equation what would be increase in substrate concentration to increase the rate of reaction from 10 % of V max to 90 % of V max
1.80 2.8
3.4 4.2

75. In signal transduction trimeric G protein with α, β and γ is involved. Which subunit will activate adenyl ate cylase
1. β subunit 2. α subunit
3. γ subunit 4. All three

76. Ecological adaptations in which some organism are favored due to more energy investment on their reproductive rate while other on basis of channelizing energy for homeostasis. Such a selection strategies are termed as
1. Logistic and exponential selection
2. K selection and r selection
3. Directional and disruptive selection
4. Kin and group selection

77. In eukaryotes shortening of chromosomes from ends is prevented by
1. DNA polymerase2. RNA polymerase
3. Transposase 4. Tel om erase

78. Gene for fungal resistance is found cytoplasm.

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If a susceptible female and resistant male are crossed then progeny will exhibit
1. All resistance
2. Half resistance and half susceptible
3. All susceptible
4. Cannot be predicted

79. Primary acceptor of CO_2 in photosynthesis is
1. Ribose
2. Ribulose-5-P
3. 3-Phosphoglycerate
4. Ribulose1,5-bis Phosphate

80. Receptors for signaling for steroid hormones are located at
1. Plasma membrane
2. Cytosolic
3. organelle membrane
4. No receptor

81. Receptor mediated endocytosis is carried by
1. Coated Pits
2. Coated vesicles
3. Endocytosis
4. Exocytosis

82. After meiosis the 20 % gametes are recombinant for two genes. The distance between two genes will be
1. 5 cM
2. 10 cM
3. 40 cM
4. 20 cM

83. If activator binds to repressor, it will prevent
1. Transcription
2. Binding of RNA polymerase to promoter
3. Binding of repressor to promoter
4. Binding of repressor to operator

84. Which of the following is characteristic feature of climax community
1. Simple food chain
2. High resilience
3. Narrow niche specialization
4. High productivity

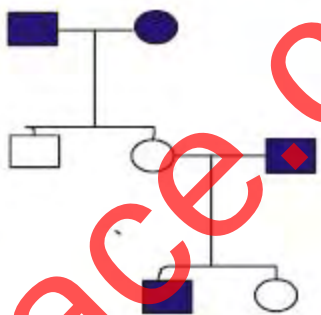
85. Which mineral ion play important role in functioning of photosystem II
1. Magnesium
2. Manganese
3. Iron
4. Molybdenum

86. Negative potential across plasma membrane is maintained by
1. Passive transport
2. Active transport
3. Ion channels
4. Transporters

87. Organisms with high growth and production are
1. Endotherm
2. Ectotherm
3. Carnivore Insects
4. Detrivores

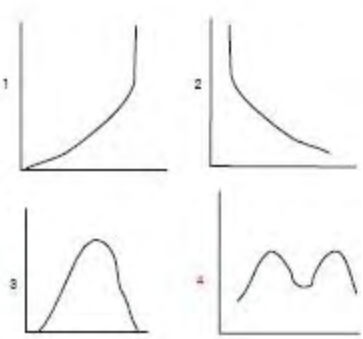
88. In Drossosphila XO are male and XXY are female while in humans XX are female and XY are female. On the basis of given information which statement is NOT true
1. Y chromosome do not play any role in sex determination of drosophila
2. Y chromosome is sex determinant in humans
3. In Drosophila sex determination is based on number of X chromosome to sets of autosomes.
4. In humans sex determination is based on number of X chromosome to sets of autosomes.

89. Consider the following pedigree chart



1. Sex limited recessive
2. X-linked dominant
3. X-linked recessive
4. Autosomal dominant

90. In a community there are two species. If a dissimilarity pair wise frequency distribution curve is prepared by comparing them it will look like



91. In *TCA* cycle malonate is competitive inhibitor of
1. Fumarate
2. Oxaloacetate
3. a-keto glutarate
4. Succinate

92. During transposition transposons are

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exicised by
1. Nuclease 2. Transposase
3. Topoisomerase 4. Exonuclease

93. Highest extinction during history of earth was observed during
1. End of cretaceous 2. End of Permian
3. End of Devonian 4. End of carboniferous

94. Which of the following statement is correct with reference to replication in eukaryotes
1. Single origin and continuous replication
2. Multiple origin and continuous replication
3. Single origin and continuous and discontinuous replication
4. Multiple origin and continuous and discontinuous replication

95. Renaturation of human genome has reveled that it contains both repetitive and non-repetitive sequences. Which statement is incorrect
1. Repetitive sequences renaturate fast
2. Human have more unique sequences
3. Repetitive sequence are located only to centromere
4. Unique sequences renaturate fast

96. In which of the following condition realized niche exceed over fundamental niche
1. Competition 2. Mutualism
3. Ammensalism 4. Commensalisms

97. Cattle are known to be responsible for green house effect due to
1. Fermentation in rumen
2. More consumption of plant
3. high respiration rate
4. High reproductive rate

98. Gases used by Urey and Miller for experimentation of origin of life by Oparin and Haldane hypothesis was
1. Hydrogen, Ammonia, methane and CO_2
2. Hydrogen, methane and CO_2
3. Hydrogen, methane and Ammonia
4. Hydrogen, Carboxylic acid and Amino acids

99. Bacteria cannot be classified as species by the biological species concept because they
1. Do not have nucleus
2. High growth rate
3. Exhibits little morphological variations
4. Asexually reproducing organisms

100. Temperature of body is regulated by
1. Cerebrum 2. Suprachaismatic nuclei
3. Cerebellum 4. Hypothalamus

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