A

18235 **120 MINUTES**

1 Phenetics is also known as

A) Numerical taxonomy B) Evolutionary taxonomy
C) Cladistic taxonomy D) Phylogenetic taxonomy

2. Name the scientist,who instituted the five-kingdom system of classification

A) Carolus Linnaeus B) Robert H. Whittaker
C) Carl Woese D) Haeckel

3. Under the current system of classification, hierarchy of seven basic categories used. Choose the correct sequence of hierarchies

A) Kingdom-Phylum-Class-Order-Genus-Species-Family
B) Phylum-Kingdom-Order-Class-Family-Genus-Species
C) Kingdom-Phylum-Class-Order-Family-Genus-Species
D) Kingdom-Phylum-Class-Family-Order-Genus-Species

4. In the following statements which one is not true?

A) The three-domain system of classification comprises 3 domains namely Bacteria, Protista and Eukarya.
B) Monophyletic group includes all descendant species of a single ancestor and the ancestor species itself.
C) A group of organisms is said to be paraphyletic, if all the members of the group have a common ancestor, but the group does not include all the descendants of the recent common ancestor.
D) Taxonomic groups that contain organisms, which are descendants of more than one ancestor are called polyphyletic group.

5. Match the following:

List I	**List II**
a. Identical names for 2 or more different taxa	1. Taxon
b. A group of interbreeding natural populations that are reproductively isolated from other such species	2. Carolus Linnaeus
c. Systema Naturae	3. Species
d. A group of organisms with common ancestor and with concrete biological objects of classification worthy of being assigned to a definite category in the hierarchical classification	4. Homonyms

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

6. The symbiotic origin of mitochondria and chloroplasts has been confirmed by

A) Molecular taxonomy B) Numerical taxonomy
C) Typological species concept D) Hierarchical taxa

7. From which domain eukaryotes derived?
A) Archea B) Protista C) Bacteria D) Fungi

8. Which of the following statements are true?
1. Metamerism affects the endodermal and mesodermal regions of the body
2. Homonymous segmentation is only hypothetical
3. Many animals exhibit heteronomous type of segmentation in which the segments are variously modified for doing different functions
4. Pseudo-metamerism is exhibited by Nereis

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

9. Given below are four statements, one labelled as Assertion and the others as Reasons.
Assertion: Sponges and placozoans are now regarded as two groups enjoying only marginal animal status
Reason 1: Placozoans are saprophobes and feed more like a fungus than an animal
Reason 2: Sponges and placozoans lack gut, muscles and nerves
Reason 3: Both sponges and placozoans have a cellular grade of organisation

A) Assertion is not true
B) Assertion is not true and reason 1 supports assertion
C) Assertion is true and reason 2 supports assertion
D) Assertion is true and reason 3 does not support assertion

10. Match the following:

List I	**List II**
a. Skeleton	1. Asexual reproduction
b. Gemmule	2. Intercellular space
c. Prosopyle in Sycon	3. Pinacodermal cells
d. Spongocoel	4. Spicules

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

11. A few statements are given below regarding the data considered while adopting ecological approach in classification
1. Suitable habitat 2. Breeding season
3. Tolerance to environmental factors 4. Preference for nutrients
Find out which statements are true?

A) 1, 2, 3 and 4 B) 1 and 3only C) 2 and 4 only D) 1, 2 and 3 only

12. In the following which is a false statement?
A) Bacteria are classified mainly on biochemical and genetic characters.
B) Main application of phenetics is in classifying organisms.
C) A clade is a biological group of species recently derived from different ancestral species.
D) The taxonomic groups that contain organisms that are descendants of more than one ancestor are called polyphyletic.

13. In the following which is not an advantage of the binomial nomenclature?
A) The same name is used in all languages avoiding difficulty of translation.
B) The system has been adopted internationally in Botany, Zoology and Bacteriology.
C) Every species can be unambiguously identified with just two words.
D) When a species is further subdivided, never a third epithet (word) is added.

14. Match the following:

List I	List II
a. Sagitta	1. Actinotroch larva
b. Phoronis	2. Genital wings
c. Balanoglossus	3. Lophophores
d. Pterobranchia	4. Direct development

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

15. Choose the correct pest (I) of the crop (II) given below:

List I	List II
a. Bruchus chinensis	1. Paddy
b. Nilapurgata lugens	2. Coconut palm
c. Eriophyes guerreronis (Aceria guerreronis)	3. Rubber plant
d. Aspidiotus destructor	4. Stored pulses

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

16. In the following which is not a fishing craft?
A) Catamaran B) Dug-out canoe
C) Plank-built boat D) Hook and lines

17. Catla catla
A) Is an exotic fish B) Is the largest Indian carp
C) Can't survive higher temperature D) Is not a plankton feeder

18. Stifling is the process of:
A) Killing of cocoons of silk worms for silk production
B) Removing threads from the killed cocoons
C) Separating the waste outer or damaged layer of the cocoon
D) Spunning of threads from 4 or 5 cocoons into a single thread

19. Why Penaeus monodon is preferred over P.indicusto culture in brackish water?
1. Due to the fast growth of P.monodon
2. High degree of tolerance of P.monodon to varying environmental conditions
3. P.monodon fetch attractive price in the market
4. Sudden drop in salinity brings heavy mortality of P.monodon

A) 1 and 2 are true B) 1 and 3 are true
C) 1, 2 and 3 are true D) 2 and 3 are true

20. The most convincing and scientific explanation of the origin of life is the one given by
A) Aldus Huxley
B) A.I. Oparin
C) Dobzhamsky
D) Harold. C. Urey and Stanley. L. Miller

21. Given below are four statements, one labelled as **Assertion** and the others as **Reasons**.
Assertion: Animals have changed gradually and their evolution followed a chronological sequence
Reason 1: These evolutionary changes are evident from the fossil deposits in the sedimentary rocks of successive strata
Reason 2: Fossils in the bottom layers represent oldest animals
Reason 3: Fossils in the upper layers are comparatively more recent

A) Assertion is true and Reason 1, 2 and 3 supports the Assertion
B) Assertion is true and Reason 1 only supports the Assertion
C) Assertion is not true and Reason 1 and 2 only supports Assertion
D) Assertion is true and Reasons 1 and 3 only supports Assertion

22. Cultural evolution of man occurred in the
A) Quaternary period of Cenozoic era B) Tertiary period of Cenozoic era
C) Recent epoch of tertiary period D) Pleistocene epoch of Cenozoic era

23. Microevolution refers to
A) Any evolutionary change below the level of species
B) Any evolutionary change at the level of species
C) Any evolutionary change above the level of species
D) The change of a species into another over time

24. Which of the following statements are true regarding the evolutionary changes in Man?
1. Balancing of head on neck
2. Increased cranial cavity and the use of tools
3. Fore-limbs became shorter than hind-limbs
4. Man's pelvis became shorter, wider and vertical

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

25. Match the following:

List I	**List II**
a. Genetic drift	1. Directional
b. Natural selection	2. Bottle neck effect
c. Adverse environmental condition resulting in the survival of a small number of individuals	3. Occupy the same geographical location
d. Sympatric speciation	4. Non-directional

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

26. Given below are two statements, one labelled as **Assertion** and the others as **Reasons**.
Assertion: Grazing food chains have a longer length in aquatic ecosystems
Reason1: Small size of the phytoplankton and zooplankton that chiefly comprise the first two trophic levels
Reason2: Zooplanktons occupying the second trophic levels are also relatively small and numerous
Reason 3: Carnivores in the 3rd trophic level are also relatively small and numerous

A) Assertion is true and reason 1 only supports the assertion
B) Assertion is true and reasons 1, 2 and 3 supports the assertion
C) Assertion is not true and the reasons do not support the assertion
D) Assertion is not true

27. Pyramid of energy is always upright because
A) At the successive higher trophic level, the amount of energy is higher
B) Greater amount of energy is available at the primary consumer level than at the producer level
C) Some energy is always gained when going from one trophic level to the next
D) The amount of energy decreases from the base of the pyramid to the apex

28. Which is the reservoir pool in Carbon biogeochemical cycle?
A) Limestone B) Earth's crust
C) Volcanoes D) Atmosphere

29. Match the following:

List I	**List II**
a. Ecotone	1. Cactus
b. Edge effect	2. No sharp borders or changes in competition
c. Ecological indicator	3. Increased species richness
d. Continuum concept	4. Transition zone

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

30. Nitrogenoxide and hydrocarbon in automobile exhaust combine in the presence of sunlight and form
A) Oxides of nitrogen B) Carbondisulphide
C) Peroxy acetyl nitrate and ozone D) Hydrocarbons

31. Which antigen is responsible for allergic reaction?
A) IgA B) IgB C) IgD D) IgE

32. What is bio-terrorism?
A) Slow or mass killing of human beings with the aid of natural or biologically engineered disease-causing agents
B) Usage of toxic chemicals for defoliating the forests
C) Designing of genetic weapons to kill specific racial groups
D) Usage of highly neurotoxic chemicals to make people sick

33. Given below are four statements about the ecological functions of wetlands.
1. Controlling the flood on the coastal plains
2. Providing perennial source of water on the coast
3. Providing habitat for both endemic and migrating marine and freshwater organisms
4. Act as a breeding ground for shrimps and fishes

Choose the correct answer

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

34. Match the following:

List I	**List II**
a. Habitat fragmentation	1. Flooding and submergence
b. Global climate change	2. Elephant population
c. Over exploitation of marine fauna by mechanised fishing	3. Rauvolfia serpentina has become threatened
d. Excessively expanding pharmaceutical	4. Decline in fish yield industry

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

35. Why the preservation of wild life is an important genetic resource?
A) The rich source of genes in wild fauna and flora can be used in breeding new forms of plants and animals with new desirable characters.
B) Wildlife is a precious gift of nature.
C) Preservation of wildlife maintains ecological balance.
D) Wild life is a wealth of the country.

36. In the following phases, which is the phase we cannot quite often observe in an animal's behaviour, when studying different motivational states?
A) Searching phase
B) Orientation phase
C) Quiscence phase
D) Feeding phase

37. Which is the simplest type of learning?
A) Habituation
B) Conditioned reflex
C) Latent learning
D) Imprinting

38. Match the following:

List I	**List II**
a. Conditioned response may be weakened and indeed Inhibited by new learning, which interfere with it	1. Law of contiguity
b. Reward strengthens association and learning and punishment weakens them	2. Law of repetition
c. Items to be associated must occur together in time and place. Conditioning grow less and less effective as the interval between conditioned and unconditioned stimulus is lengthened	3. Law of reinforcement
d. Strength of a conditioned reflex grows progressively as more and more pairings of conditioned stimulus and unconditioned stimulus are made	4. Law of interference

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

39. The gyroscopic sense organs of equilibrium in Diptera

A) Halteres B) Statocyst
C) Antennae D) Forewings

40. In the following statements about Pheromones which is not true?

A) They work on other members of the same species.
B) They include substances responsible for olfactory attraction between the sexes.
C) They are "markers" used to establish territories.
D) They can't help in marking rich sources of food.

41. Fill up the blanks with correct choices

The rhythm of activities that are following the 24 hr solar cycle is called-------- and the rhythm which controls the tidal cycles and the behavioural and physiological pattern of the marine, especially the inter-tidal animals is called--------.

A) Lunar rhythm, Circadian rhythm B) Circadian rhythm, Lunar rhythm
C) Lunar rhythm, Annual rhythm D) Circadian rhythm, Tidal rhythm

42. Match the following with reference to the Animal's migrating habits

List I	**List II**
a. Migrating rodents	1. Rivers, valleys, mountains, coastal lines
b. Birds	2. Makes cells in holes, which she digs in soil and lays eggs there
c. Female digger wasp	3. They are hatched out in gravel beds of river and after spending some time in fresh water they migrate to ocean
d. Pacific salmon	4. Measure the distance from a vertical tree trunk to another and scale the entire distance they travel by landmarks

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

43. The proximate principles of food are

A) Carbohydrates B) Proteins C) Fats D) Vitamins

44. Temporary cytoplasmic bridge is formed in

A) Fission B) Fragmentation
C) Conjugation D) Budding

45. In the following statements about lymphatic system, which one is false?

A) Lymphatic capillaries are blind-ended.
B) Capillaries are highly permeable.
C) Excess fluid and protein within the interstitial vascular space can drain into the Lymphatic system.
D) Lymph is eventually returned to the system at the venacaval veins.

46. The normal rate of glomerular filtration in humans
A) 125 ml/ min. B) 100 ml/ min. C) 150 ml/min D) 110 ml/min.

47. Which part of human eye has the highest visual acuity and is responsible for our sharp central vision?
A) Retina B) Cornea
C) Fovea D) Rods and cones

48. In the following statements about the action of neurons which is not true?
A) Spinal motor neurons which synapse on muscle cells use acetylcholine as their neurotransmitter.
B) Excitatory neurons excite their target pre-synaptic neurons causing it to function.
C) Excitatory neurons in the brain are often glutamatergic.
D) Modulatory neurons evoke more complex effects called neuro-modulation.

49. Which of the following statements about human respiration are true?
1. The rhythmicity centre in the medulla oblongata directly controls breathing, but it receives input from the control centres in the pons.
2. The aortic and carotid bodies regulate the brainstem respiratory centres by means of sensory nerve stimulation.
3. An increase in blood CO_2 stimulates breathing indirectly by increasing the P^H of blood and cerebrospinal fluid.
4. Shifting of the oxyhaemoglobin dissociation curve to the right is called Bohr effect.

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

50. In the following statements which is false?
A) Stem cells from the bone marrow divide in thymus and bone marrow to give virgin T and B cells respectively.
B) Lymph nodes and spleen are secondary lymphoid organs.
C) Virgin T and B cells migrate to secondary lymphoid organs to await antigenic stimulation.
D) Immunity is mediated by lymphocytes and successors, unaided by accessory cells.

51. Fill in the blanks with appropriate words
Innate immunity is called ---------immunity and acquired immunity is called -------- immunity
A) Non-specific, adaptive B) Specific, adaptive
C) Specific, non-specific D) Non-specific, natural

52. Degradation of an antigen into short peptides of 8 to 18 amino acids long by antigen-presenting cells are called
A) Antigen presentation B) Antigen processing
C) Antigenic determinant D) Antigen response

53. In the following properties, which one B-cell receptor and T-cell receptor do not share in common?

A) They are formed even before the cell encounters an antigen
B) They are present identically in plenty and are exposed at the cell surface
C) They are external lipo-proteins
D) They are internal membrane proteins

54. Match the following:

List I	**List II**
a. Class 1 MHC molecule	1. Immune response (Ir) genes
b. Human MHC antigen	2. Contains 2 separate polypeptide chains, the heavier (44-47KDa) alpha chain and the lighter (12KDa) beta chain
c. Class II MHC molecule	3. Human leucocyte antigen
d. MHC gene products that control immune system	4. Contains 2 non-identical non-covalently associated polypeptide chains (alpha & beta)

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

55. Genetic predisposition to synthesize inappropriate levels of IgE specific for external allergens is known as

A) Carer effect B) Hapten
C) Atopy D) Hypersensitivity

56. Spermatocytogenesis is the process during which

A) The spermatocytes go through one reduction division
B) The spermatids differentiate into spermatozoa
C) Spermatogonia divide and produce successive generation of cells
D) The spermatocytes go through one equational division

57. Name the event in gastrulation during which rapid multiplication of the micromeres near the animal pole move all round downwards over the megameres

A) Epiboly B) Emboly
C) Formation of dorsal lip D) Formation of lateral lips

58. The ability of an embryonic tissue to respond to inductive stimuli is known as

A) Embryonic induction B) Competence
C) Differentiation D) Determination

59. Identify the incorrect combination

A) Gene amplification – Lampbrush chromosomes
B) Molluscs – Polar lobe in zygote
C) Induction – Stored mRNA of the cytoplasm
D) Frog zygote – 1st division horizontal

60. Interstitial type of placenta is seen in

A) Pig B) Cow C) Man D) Rat

61. Cloning (Somatic cell nuclear transfer) is an evidence for

A) Gene induction
B) Gene specificity
C) Genomic equivalence
D) Gene competence

62. Match the animals with their organiser

List I	List II
a. Amphibians	1. Shield
b. Chick	2. Dorsal lips and its derivatives
c. Fish	3. Node
d. Mammals	4. Henson's node

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

63. The hematopoietic stem cell is

A) Multi potent
B) Pleuripotent
C) Totipotent
D) Unipotent

64. Teratogenesis cannot be caused due to

A) Infection
B) Drugs
C) Radiation
D) Mental stress

65. In the following statements about Chi-Square test, which one is not true?

A) This test is used to determine if a certain distribution differs from some pre-determined theoretical distribution
B) Used in testing 'goodness of fit'
C) Used in testing hypothesis concerning the significance of difference of the responses of two or more groups to the effect of treatment of one or other
D) Used to calculate the coefficient of correlation

66. In the following statements about the Normal (Gaussian) distribution which one is not true?

A) A symmetrical bell-shaped curve
B) The mean, mode and median all coincide at the exact midpoint of distribution
C) The area under the graph is not taken as unity so as not to represent total probability
D) Tails of the curve get closer and closer to the axis as you move away from the mean

67. Poisson probability distribution provides a close approximation to binomial probability distribution, when

A) n is large and p is quite small or quite large
B) n and p are large
C) n and p are small
D) n is small and p is large

68. A relationship between two variables, in which a change in one variable results in change in other variables, is called

A) Correlation
B) Regression
C) Analysis of variance
D) Significance

69. In the following which one is not used as a 'blocking agent' to eliminate non-specific binding in ELISA test?

A) Bovine serum albumin B) Tween -20
C) Powdered milk D) Horse radish peroxidase

70. With NMR a strong high frequency magnetic field stimulates atomic nuclei of the isotopes

A) H-1 B) D-2 C) C-13 D) N-15

71. Match the following functions of a light microscope given in List II with its respective part given in List I

List I	**List II**
a. Objective	1. Focus the light source on the specimen
b. Condenser	2. Functions to deliver the image to the eye
c. Iris diaphragm	3. Functions to magnify the object
d. Eye piece	4. Controls the amount of light reaching the specimen

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

72. The QRS complex is larger than the P-wave because

A) The ventricles contain more muscle mass than Purkinje system
B) The auricles contain more muscle mass than ventricles
C) The ventricles contain more muscle mass than auricles
D) The QRS complex is a structure that corresponds to the depolarisation of the auricles

73. In the following statements which is not true about MRI?

A) MRI uses a powerful magnetic field to align the nuclear magnetisation of usually hydrogen atoms in water in the body.
B) It is a nuclear medicine imaging technique, which produces a three-dimensional image on the structure of functional processes in the body.
C) It provides much greater contrast between the different soft tissues of the body than CT.
D) It uses no ionizing radiation.

74. The first stage in the formation of glycolysis, namely, conversion of glucose into fructose 1, 6 biphosphate consists of 3 steps in the order

A) Aphosphorylation-an isomerisation-a second phosphorylation
B) A phosphorylation-a second phosphorylation-an isomerisation
C) An isomerisation-A phosphorylation-A second phosphorylation
D) An isomerisation-a second isomerisation-a phosphorylation

75. Consider the following statements and choose the correct answer
The KM value of an enzyme depends on the particular substrate and also on environmental conditions such as

1) P^H 2) Temperature 3) Humidity 4) Ionic strength

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

76. Fill in the gaps with correct answers
Guanosine triphosphate and adenosine triphosphate are ---------inhibitors, whereas GDP and ADP are allosteric -------

A) Allosteric, activators
B) Allosteric, inhibitors
C) Allylic, activators
D) Allylic, inhibitors

77. Given below are four statements, one labelled as **Assertion** and the others as **Reasons**.
Assertion: A blockage of carbamoyl phosphate synthesis or of any of the 4 steps of urea cycle has devastating consequences
Reason1: There is no alternative pathway for the synthesis of urea
Reason2: It will lead to hyper ammononemia (elevated level of NH_4+ in the blood)

A) Assertion is true and the reason 1 supports the assertion
B) Assertion is true and reason 1 and 2 support the assertion
C) Assertion is false
D) Assertion is true, but the reasons do not support the assertion

78. Which is the correct pair?

A) Laurate – 12 Carbon atoms
B) Palmitate – 14 Carbon atoms
C) Stearate – 16 Carbon atoms
D) Linoleate – 16 Carbon atoms

79. Which of the following processes does not takes place in 5^{l} → 3^{l} direction?

A) RNA editing
B) Transcription
C) DNA replication
D) Nick translation.

80. The 1st step in the preparation of cDNA is

A) To isolate rRNA
B) To isolate mRNA
C) To prepare gDNA
D) Synthesis of RNA-DNA hybrid

81. In gene cloning, introduction of a naked viral DNA as vector is called

A) Transformation
B) Transduction
C) Amplification
D) Transfection

82. Out of the following statements about cloning vectors, which is not true?

A) Their size is limited to the genome size of many organisms.
B) Plasmids are rarely functional above 10kb.
C) Cosmid is a cloning vector that increases the size of insert DNA that can be incorporate.
D) YAC Can't clone large fragments of DNA.

83. Monoclonal antibodies can be used effectively for the diagnosis of a variety of diseases because

A) The test is not sensitive and will take a few weeks to get the results.
B) The test is very sensitive and will take only minutes to get the results.
C) It requires culturing of viruses and bacteria.
D) The test is very sensitive, but it will take a few weeks to get the results.

84. In the following statements which is not true?

A) Southern blotting is a technique to detect the presence of specific genes in cellular DNA.

B) Northern blotting is used for the detection of specific mRNAs in different types of cells.

C) The most common method of protein detection is Western blotting.

D) Northern blotting is now successfully used in the laboratories for the detection of HIV antigens.

85. In the following statements about true bacteria, which statement is false?

A) Cell wall is made up of peptidoglycan.

B) All are single-celled.

C) They are prokaryotic.

D) DNA enclosed within a nuclear membrane.

86. Find the incorrect match

A) Tobacco mosaic virus – Straight tubular rigid rod-shaped

B) Bacteriophage T2 E.coli – Tadpole-shaped

C) Common bean mosaic virus – Straight tubular rigid rod-shaped

D) Cucumber mosaic virus – Polyhedral

87. Consider the following statements and choose the correct answer

1. Proteobacteria and nitrospirae are called Gram negative Bacteria.
2. Single layer of peptidoglycan D in proteobacteria and nitrospirae fails to retain the Gram stain.
3. Members of other phyla also stain Gram negative.

A) 1, 2 and 3 only are correct

B) 1 and 2 only are correct

C) 2 and 3 only are correct

D) 1 and 3 only are correct

88. Find the correct match

List I	**List II**
a. Chloroflexus	1. Sun bacteria
b. Heliobacterium	2. Blue greens
c. Anabaena	3. Green sulphur
d. Chlorobium	4. Green non-sulphur

A) a – 1, b – 4, c –3, d – 2

B) a – 4, b - 1, c- 2, d –3

C) a- 4, b – 1, c – 3, d – 2

D) a – 1, b -4, c –2, d –3

89. Why we are not protected from recurring infections of cold, after having one cold?

A) The common cold is caused by over100 known serotypes of rhinovirus and serotype of a particular rhinovirus differ from another in the antigen make up of a specific protein.

B) Rhinovirus is a large enveloped single-stranded RNA virus.

C) Rhinovirus is a small non-enveloped single-stranded RNA virus.

D) Neutralising antibodies to one strain of rhinovirus will neutralise a different strain.

90. Comprehensive database which gives information about ongoing genome projects World wide is:
A) DDBJ B) ORF C) GOLD D) KEGG

91. Receptors for FSH present on
A) Sertoli cells B) Leydig cell
C) Peritubular cells D) Spermatogonium germ cell

92. One of the alternative forms of a gene that occurs at a given locus in a chromosome is called
A) Locusmorph B) Pseudo-allele
C) Allele D) Complement

93. Co-dominance is
A) The joint expression of both the alleles in a heterozygote
B) When more than two different forms of a given gene exist in a species
C) When neither of the alleles are dominant
D) When two pairs of non-allelic genes are involved

94. Fill in the blanks with suitable words
The phenomenon of masking the effect of one dominant gene by another is called------- and the masked gene is called-------gene
A) Epistasis, Epistatic B) Hypostasis, Epistatic
C) Epistasis, Hypostatic D) Hypostasis, Hypostatic

95. In the following which is not a feature of crossing over?
A) It occurs at pachytene stage after synapsis of the homologous chromosomes has occurred in prophase-1 of meiosis.
B) It involves the breakage of each of the two non-sister chromatids of the homologous chromosomes.
C) The two alleles of a gene in a heterozygote occupy corresponding positions in the homologous chromosomes.
D) T.H. Morgan was the first to discover the occurrence of crossing over between homologous chromosomes during meiosis.

96. In the following, which is not a mutagen?
A) Mustard gas B) Nitrous acid C) Base analogue D) Nitric oxide

97. Mongolism results as a result of trisomy in
A) 21^{st} chromosome B) 18^{th} chromosome
C) 20^{th} chromosome D) 20^{th} and 21^{st} chromosomes

98. Find out the incorrect pair
A) Sickle-cellanemia – Haemoglobin – S
B) Tachysach disease – Neurological deterioration
C) Gaucher disease – Enlarged liver and kidney
D) Achondroplasia – Congenital dwarfism

99. Which was the 1st eukaryotic organism to have its entire genome sequenced?

A) Caenorhabditiselegans B) Saccharomyces cerevisiae
C) Hemophilus influenza D) Drosophila melanogaster

100. In the following, which is not a mechanism of dosage compensation for X-linked genes?

A) Superactivation B) Inactivation
C) Hyperactivation D) Hypoactivation

101. Consider the following statements with respect to primary nucleotide sequences

1. GenBank is physically located in the USA and is accessible through NCBI portal over internet.
2. EMBL (European Molecular Biology) is in UK.
3. The access to Genbank, as to all databases at NCBI (National Centre for Biotechnology Information) is through the ENTREZ search programme

Select the correct options from below

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

102. In the following, which is not a criterion by which the SWISS-PROT database distinguishes itself from other protein sequence databases?

A) Annotations B) Minimal redundancy
C) Integration with other databases D) Maximum redundancy

103. Each of the activation steps in cell signal transduction pathway can be reversed by a

A) Kinase B) Phosphatase
C) Protease D) Tyrosinase

104 Retinitis pigmentosa is caused

A) By the mutations that interfere with phosphorylation of rhodopsin by a G protein- coupled receptor kinase leading to the death of the photoreceptor cells in the retina
B) By the mutations that interfere with the guanosinediphosphate metabolism and death of photoreceptor cells in the retina
C) By the mutations that interfere with the phosphorylation of iodopsin by a G protein-coupled kinase leading to the destruction of retina
D) By the mutation that interfere with the guanosine tri phosphate metabolism and death of the photoreceptor cells in the retina.

105. In the following, which is not a process of the DNA replication in prokaryotes?

A) Initiation B) Elongation C) Ligation D) Termination

106. In the following statements, which is not true about cell division?

A) Neurons never divide.
B) In rapidly dividing embryonic cells G1 and G2 are very short.
C) In all cells decision to continue through the cell cycle occurs at entry into the S-phase and entry into the mitosis.
D) Muscle cells divide at a rapid rate.

107. Where gene expression is regulated, the most extensively utilised point is

A) DNA-RNA Transcription B) RNA transport
C) Translation D) Messenger RNA degradation

108. The base excision repair system in eukaryotes is initiated by

A) DNA glycosylase B) Polymerase
C) Synthetase D) Endonuclease

109. Transcription activators are classified according to the type of

A) RNA binding domain B) DNA binding domain
C) Receptor binding domain D) Enzyme binding domain

110. Find out the unmatched pair

A) Trans-membrane proteins of opposite cells attach in a tight zipper-like fashion, no leakage is found –Tight junction.
B) Cytoplasmic plaques of two cells bind with the aid of intermediate filaments of keratin, it allows stretching – Desmosomes.
C) Each gap junction is made up of specialised lipid channels – Connexins.
D) Channel proteins of opposite cells join together providing channels for ions, sugars, amino acids and other small molecules to pass, it allows communication between cells – Gap junctions.

111. In the following statements about active transport which are correct?

1. In active transport, molecules are transported away from thermodynamic equilibrium, hence energy is required.
2. This energy comes from the hydrolysis of ATP from electron movement or from light.
3. The maintenance of electrochemical gradient in biological gradient in biological system is so important that it consumes almost 30 to 40% of total energy expenditure in a cell.

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

112. Fill up the gaps with suitable words

Cells have active ion pump that removes ---- from cells and introduces -----

A) Na+, K+ B) K+, Na+ C) Na+, Cl- D) Cl-, Na+

113. In the following, which is not a function of Golgi apparatus?

A) Processing of proteins generated in the endoplasmic reticulum.
B) Enzymes present in the membranous discs of cisternae carry out the modifications of cargo proteins which travel through them.
C) Nucleotide sugars are imported by golgi apparatus from cytosol to carry out the glycosylation and phosphorylation processes.
D) Incorporation of phosphate molecules into molecules of carbohydrates is also an important task carried out in the golgi apparatus.

114. Why lysosomes are called suicidal bags?

A) Lysosomes are ruptured in the injured or dead cells and release the hydrolytic enzymes to digest its own cellular contact.
B) They are phagocytic
C) They contain catalases and oxidases
D) They are involved in glyoxylate cycles

115. Longest phase of the mitotic cycle

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

116. Develpoment of synaptonemal complex occurs at

A) Zygotene stage B) Pachytene stage
C) Diplotene D) Leptotene

117. Find the correct match

List I	**List II**
a. Microaerophiles	1. Maintains internal pH of 9.5 over an external pH range 9-11
b. Halophiles	2. Below pH 8 and above pH 4.5
c. Neutrophiles	3. Low oxygen concentration
d. Alkalophiles	4. Extreme high salt environment

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

118. The lac promoter has

A) Two components namely the RNA polymerase binding site and the Catabolite Activator Protein binding site
B) The RNA polymerase binding site only
C) The Catabolite Activator protein binding site only
D) The Nuclei acid Activator binding site only

119. In the following, which is not an example of gene regulation?

A) Induction, in which a molecule induces the expression of an enzyme
B) The Enzyme induction of heat shock proteins in Drosophila melanogaster
C) The lac operon
D) Repressable operon

120. Given below are three statements about Transposons

1. They are segments of DNA that are capable of moving to another location, either on the same chromosome or on a different one.
2. If a transposon inserts itself within another gene, it can prevent the gene from expressing itself.
3. Sometimes the transposon carries a gene which can become activated, if it becomes inserted downstream from an active promoter.

In the above statements which are true?

A) 1 and 2 only are true B) 1, 2 and 3 only are true
C) 1 and 3 only are true D) 2 and 3 only are true

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