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## DUMET-2011 [SERIES 19]

### BIOLOGY

**Choose the correct (✓) answer:**

- |  |   |
|--|---|
| 1. The most important factor which determined the increase in human population in India during the 20th century:<br>(1) Natality (2) Mortality<br>(3) Immigration (4) Emigration<br>Ans. (1)   | 7. Presence of bundle sheath is a characteristic of:<br>(1) Xerophytic plants<br>(2) Members of the grass family<br>(3) C <sub>4</sub> plants<br>(4) C <sub>3</sub> plants<br>Ans. (2)  |
| 2. Vascular bundles in monocotyledons are considered closed because:<br>(1) Xylem is surrounded all around by phloem<br>(2) There are no vessels with perforations<br>(3) A bundle sheath surrounds each bundle<br>(4) There is no secondary growth<br>Ans. (4)  | 8. Which one of the following would not lead to formation of clones?<br>(1) Double fertilization<br>(2) Apomixis<br>(3) Vegetative reproduction<br>(4) Tissue culture<br>Ans. (1)   |
| 3. When there are two haploid nuclei per cell in some fungi before the formation of diploid, this stage is called:<br>(1) Diplotene (2) Diplophase<br>(3) Dikaryophase (4) Dikaryote<br>Ans. (3)   | 9. A plant species which has been exploited for the production of Hirudin is:<br>(1) <i>Brassica napus</i> (2) <i>Zea mays</i><br>(3) <i>Solanum nigrum</i> (4) <i>Oryza sativa</i><br>Ans. (1)   |
| 4. In blood group typing in human, if an allele contributed by one parent is I <sup>A</sup> and an allele contributed by the other parent is i, the resulting blood group of the offspring will be:<br>(1) A (2) B<br>(3) AB (4) O<br>Ans. (1)   | 10. The variation/difference in the offsprings of a species from their parents constitutes an important component of:<br>(1) Genetics (2) Speciation<br>(3) Species fixation (4) Heredity<br>Ans. (1)   |
| 5. A population growing in a habitat with limited resources shows four phases of growth in the following sequence:<br>(1) Acceleration - deceleration - lag phase - asymptote<br>(2) Asymptote - acceleration - deceleration - lag phase<br>(3) Lag phase - acceleration - deceleration - asymptote<br>(4) Acceleration - lag phase - deceleration - asymptote<br>Ans. (3) | 11. If two pea plants having red (dominant) coloured flowers with unknown genotypes are crossed, 75% of the flowers are red and 25% are white. The genotypic constitution of the parents having red coloured flowers will be:<br>(1) Both homozygous<br>(2) One homozygous and other heterozygous<br>(3) Both heterozygous<br>(4) Both hemizygous<br>Ans. (3) |
| 6. Necrosis in crops is due to the deficiency of:<br>(1) Ca, K, S and Mo (2) N, K, S and Mo<br>(3) N, S, Fe and Zn (4) Mg, S, Mn and Ca<br>Ans. (4)  | 12. If the total amount of adenine and thymine in a double-stranded DNA is 60% the amount of guanine in this DNA will be<br>(1) 15% (2) 20%<br>(3) 30% (4) 40%<br>Ans. (2)  |

13. The protein products of the following Bt toxin genes cryIAc and cryIIAb are responsible for controlling:  
 (1) Bollworm (2) Roundworm  
 (3) Moth (4) Fruit fly  
 Ans. (1)
14. In a flowering plant, the pollen tube first arrives in:  
 (1) Egg (2) An antipodal cell  
 (3) A synergid (4) Central cell  
 Ans. (3)
15. A peculiar odor that prevails in marshy areas and cow-sheds is on account of a gas produced by:  
 (1) Mycoplasma (2) Archaeobacteria  
 (3) Slime moulds (4) Cyanobacteria  
 Ans. (2)
16. A germplasm collection is a:  
 (1) Collection of specimens of all the species of an area in a herbarium or botanical garden  
 (2) Collection of modern varieties of a crop  
 (3) Collection of plants or seeds having diverse alleles of all genes in a crop  
 (4) Collection of seeds or pollen of rare and threatened species of a group or area  
 Ans. (3)
17. Walter Sutton is famous for this contribution to:  
 (1) Genetic engineering  
 (2) Totipotency  
 (3) Quantitative genetics  
 (4) Chromosomal theory of inheritance  
 Ans. (4)
18. The reaction, Amino acid + ATP  $\rightarrow$  Aminoacyl-AMP + P-P depicts:  
 (1) Amino acid assimilation  
 (2) Amino acid transformation  
 (3) Amino acid activation  
 (4) Amino acid translocation  
 Ans. (3)
19. The problem of blindness in poor countries can be taken care of by using the following:  
 (1) Golden rice (2) Transgenic tomato  
 (3) Transgenic maize (4) Bt brinjal  
 Ans. (1)
20. The transcription of any gene is the indication of its:  
 (1) Induction (2) Activity  
 (3) Stimulation (4) Hypersensitivity  
 Ans. (2)
21. In  $C_4$  plants, the bundle sheath cells:  
 (1) Have thin walls to facilitate gaseous exchange  
 (2) Have large intercellular spaces  
 (3) Are rich in PEP carboxylase  
 (4) Have a high density of chloroplasts  
 Ans. (4)
22. In root nodules of legumes, leg-haemoglobin is important because it:  
 (1) Transports oxygen to the root nodule  
 (2) Acts as an oxygen scavenger  
 (3) Provides energy to the nitrogen fixing bacterium  
 (4) Acts as a catalyst in transamination  
 Ans. (2)
23. Darwin judged the fitness of an individual by:  
 (1) Ability to defend itself  
 (2) Strategy to obtain food  
 (3) Number of offspring  
 (4) Dominance over other individuals  
 Ans. (1)
24. Which of the following statements is wrong?  
 (1) Pollen grains remain viable for several months because their outer covering is made of sporopollenin  
 (2) No enzyme can degrade sporopollenin  
 (3) Pollen grains are well represented in fossil strata due to sporopollenin  
 (4) Pollen wall has cavities containing proteins  
 Ans. (4)
25. In plant biotechnology, PEG is used in:  
 (1) Protoplast isolation (2) Cell culture preparation  
 (3) Protoplast fusion (4) Hardening  
 Ans. (3)
26. A regulatory body working under MoEF for the release of transgenic crops is:  
 (1) NBPGR (2) GEAC  
 (3) NSC (4) NIPGR  
 Ans. (2)
27. Analogous structures are:  
 (1) Anatomically different but performing similar functions  
 (2) Anatomically similar but performing different functions  
 (3) Anatomically similar and functioning similarly  
 (4) Anatomically different and functioning differently  
 Ans. (1)
28. A polygenic trait is controlled by 3 genes A, B and C. In a cross AaBbCcX AaBbCc, the phenotypic ratio of the offsprings was observed as:  
 $1 : 6 : x : 20 : x : 6 : 1$   
 What is the possible value of x?  
 (1) 3 (2) 9  
 (3) 15 (4) 25  
 Ans. (3)
29. A transgenic rice (Golden rice) has been developed for increased content of:  
 (1) Vitamin A (2) Vitamin B<sub>1</sub>  
 (3) Vitamin C (4) Vitamin D  
 Ans. (1)

30. When the conditions are dry, a grass leaf curls inward to minimize water loss due to presence of:  
 (1) Thick cuticle (2) Large xylem cavities  
 (3) Parallel venation (4) Bulliform cells  
 Ans. (4)
31. Long, ribbon-like pollen grains are seen in some:  
 (1) Aquatic plants (2) Wind-pollinated grasses  
 (3) Gymnosperms (4) Bird-pollinated flowers  
 Ans. (1)
32. At present the concentration of CO<sub>2</sub> in the atmosphere is about:  
 (1) 100 ppm (2) 240 ppm  
 (3) 380 ppm (4) 520 ppm  
 Ans. (3)
33. Littoral zone is located along the :  
 (1) High mountains (2) Sea  
 (3) Rivers (4) Desert  
 Ans. (2)
34. Which of the following is used as a bioweapon?  
 (1) *Bacillus subtilis* (2) *Bacillus licheniformis*  
 (3) *Bacillus thuringiensis* (4) *Bacillus anthracis*  
 Ans. (4)
35. The chromosome constitution  $2n - 2$  of an organism represents:  
 (1) Monosomic (2) Nullisomic  
 (3) Haploid (4) Trisomic  
 Ans. (2)
36. Meristem culture is practised in horticulture to get:  
 (1) Somaclonal variation (2) Haploids  
 (3) Virus-free plants (4) Slow-growing callus  
 Ans. (3)
37. Tendrils in plants are an example of:  
 (1) Convergent evolution (2) Adaptive radiation  
 (3) Divergent evolution (4) Co-evolution  
 Ans. (1)
38. Leghemoglobin is:  
 (1) An oxygen carrier in human blood  
 (2) A protein used as food supplement  
 (3) An oxygen scavenger in root nodules  
 (4) A plant protein with high lysine content  
 Ans. (3)
39. Stomatal opening is affected by:  
 (1) Nitrogen concentration, carbon dioxide concentration and light  
 (2) Carbon dioxide concentration, temperature and light  
 (3) Nitrogen concentration, light and temperature  
 (4) Carbon dioxide concentration, nitrogen concentration and temperature  
 Ans. (2)
40. Taxonomic hierarchy refers to:  
 (1) Step-wise arrangement of all categories for classification of plants and animals  
 (2) A group of senior taxonomists who decide the nomenclature of plants and animals  
 (3) A list of botanists or zoologists who have worked on taxonomy of a species or group  
 (4) Classification of a species based on fossil record  
 Ans. (1)
41. Which of the following get accumulated in the vacuoles of guard cells during stomatal opening?  
 (1) Water, calcium and magnesium  
 (2) Starch, potassium and chloride ions  
 (3) Malate, sodium and potassium ions  
 (4) Malate, potassium and chloride ions  
 Ans. (4)
42. Which of the following is the most accepted theory for movement of water through plants?  
 (1) Cohesion theory (2) Capillarity  
 (3) Passive transport (4) Root pressure  
 Ans. (1)
43. Scutellum in a caryopsis represents:  
 (1) Outermost layer of endosperm  
 (2) A sheath that protects that radicle  
 (3) The place where the seed is attached to raphe  
 (4) A cotyledon  
 Ans. (4)
44. In an annual ring, the light coloured part is known as :  
 (1) Early wood (2) Late wood  
 (3) Heartwood (4) Sapwood  
 Ans. (1)
45. Natural cytokinins are synthesized in tissues that are:  
 (1) Senescent (2) Dividing rapidly  
 (3) Storing food material (4) Differentiating  
 Ans. (2)
46. Resemblance of one organism to another for protection and hiding is:  
 (1) Mimicry (2) Predation  
 (3) Adaptation (4) Camouflage  
 Ans. (1)
47. Spirochetes are:  
 (1) A class of insects (2) A class of viruses  
 (3) Bacteria (4) Fungi  
 Ans. (3)
48. The metachromatic granules are:  
 (1) Present in plant cells at metaphase stage  
 (2) Inclusion bodies in bacteria  
 (3) Produced in insects during metamorphosis  
 (4) Chromatophores in animal skin  
 Ans. (2,4)

49. The rough endoplasmic reticulum (RER) in the cells are because of the presence of:  
 (1) Mitochondria associated with ER  
 (2) Ribosomes on the surface of ER  
 (3) Volutin granules on the surface of ER  
 (4) Sulphur granules on the surface of ER  
 Ans. (2)
50. Elaioplasts store:  
 (1) Starch (2) Proteins  
 (3) Fats (4) Essential amino acids  
 Ans. (3)
51. Aggregates of lymphoid tissue present in the distal portion of the small intestine are known as:  
 (1) Villi (2) Peyer's patches  
 (3) Rugae (4) Choroid plexus  
 Ans. (2)
52. Mendel's principle of segregation means that the germ cells always receive:  
 (1) One pair of alleles  
 (2) One quarter of the genes  
 (3) One of the paired alleles  
 (4) Any pair of alleles  
 Ans. (3)
53. Rotenone is a:  
 (1) Bioherbicide  
 (2) Commonly used biofertilizer  
 (3) Bioinsecticide  
 (4) Juvenile hormone  
 Ans. (3)
54. Which of the following vitamins has some physiological effects similar to those of parathormone?  
 (1) Vitamin A (2) Vitamin D  
 (3) Vitamin C (4) Vitamin B  
 Ans. (2)
55. Somatostatin:  
 (1) Stimulates glucagon release while inhibits insulin release  
 (2) Stimulates release of insulin and glucagon  
 (3) Inhibits release of insulin and glucagon  
 (4) Inhibits glucagon release while stimulates insulin release  
 Ans. (3)
56. Hiccups can be best described as:  
 (1) Forceful sudden expiration  
 (2) Jerky incomplete inspiration  
 (3) Vibration of the soft palate during breathing  
 (4) Sign of indigestion  
 Ans. (2)
57. ELISA assay:  
 (1) Uses complement mediated cells lysis  
 (2) Uses a radiolabelled second antibody  
 (3) Involves addition of substrate which is converted into coloured end product  
 (4) Requires red blood cells  
 Ans. (3)
58. "Complete competitors cannot coexist" is true for:  
 (1) Character displacement  
 (2) Competitive exclusion  
 (3) Primary succession  
 (4) Secondary succession  
 Ans. (2)
59. mRNA directs the building of proteins through a sequence of:  
 (1) Introns (2) Codons  
 (3) Exons (4) Anticodons  
 Ans. (2)
60. Foramen ovale:  
 (1) Connects the two atria in the fetal heart  
 (2) Is a condition in which the heart valves do not completely close  
 (3) Is a shallow depression in the interventricular septum  
 (4) Is a connection between the pulmonary trunk and the aorta in the fetus  
 Ans. (1)
61. Which of the following is a gram-negative bacterium?  
 (1) *Escherichia coli*  
 (2) *Bacillus subtilis*  
 (3) *Streptomyces coelicolor*  
 (4) *Ampycolatopsis orientalis*  
 Ans. (1)
62. What is meant by the term "Darwin fitness"?  
 (1) The ability to survive and reproduce  
 (2) High aggressiveness  
 (3) Healthy appearance  
 (4) Physical strength  
 Ans. (1)
63. Absence of one sex chromosome causes:  
 (1) Turner's syndrome (2) Klinefelter's syndrome  
 (3) Down's syndrome (4) Tay-Sach's syndrome  
 Ans. (1)
64. Comparing small and large cells, which statement is correct?  
 (1) Small cells have a small surface area per volume ratio  
 (2) Exchange rate of nutrients is fast with large cells  
 (3) Small cells have a large surface area per volume ratio  
 (4) Exchange rate of nutrients is slow with small cells  
 Ans. (3)



65. Which one of the following animals shows discontinuous distribution?  
 (1) Green muscles (2) Bats  
 (3) Lung fishes (4) Pacific salmons  
 Ans. (3)
66. The number of autosomes in human primary spermatocyte is:  
 (1) 46 (2) 44  
 (3) 23 (4) 22  
 Ans. (2)
67. The most abundant molecule in cell is:  
 (1) Water (2) Carbohydrate  
 (3) Lipid (4) Protein  
 Ans. (1)
68. How many chromosomes will the cell have at  $G_1$ , after S and after M phase respectively, if it has 14 chromosomes at interphase?  
 (1) 14, 14, 7 (2) 14, 14, 14  
 (3) 7, 7, 7 (4) 7, 14, 14  
 Ans. (2)
69. The Golgi apparatus:  
 (1) Is found only in animals  
 (2) Is found in prokaryotes  
 (3) Is a site of rapid ATP production  
 (4) Modifies and packages proteins  
 Ans. (4)
70. Glycolysis:  
 (1) Takes place in the mitochondria  
 (2) Produces no ATP  
 (3) Has no connection with electron transport chain  
 (4) Reduces two molecules of  $NAD^+$  for every glucose molecule processed  
 Ans. (4)
71. Total number of all species of organisms in a given region is known as the region's  
 (1) Biota (2) Flora  
 (3) Fauna (4) Diversity  
 Ans. (4)
72. The arthropod exoskeleton is composed of:  
 (1) Several kinds of polysaccharides  
 (2) Layers of proteins and a polysaccharide called chitin  
 (3) Several kinds of proteins  
 (4) Single complex protein called arthropodin  
 Ans. (2)
73. Which of the following groups is absolutely essential functional component of the ecosystem?  
 (1) Producers  
 (2) Producers and herbivores  
 (3) Producers and detritivores  
 (4) Detritivores  
 Ans. (3)
74. Phagocytosis and pinocytosis are collectively termed as:  
 (1) Endocytosis (2) Suspension feeding  
 (3) Omnivores (4) Mucous trap  
 Ans. (1)
75. PCR proceeds in three distinct steps governed by temperature, they are in order of:  
 (1) Denaturation, Annealing, Synthesis  
 (2) Synthesis, Annealing, Denaturation  
 (3) Annealing, Synthesis, Denaturation  
 (4) Denaturation, Synthesis, Annealing  
 Ans. (1)
76. Corpus luteum releases:  
 (1) Estrogen  
 (2) Progesterone  
 (3) Estrogen and progesterone  
 (4) Androgen  
 Ans. (3)
77. Which of the following organs is devoid of glands?  
 (1) Uterus (2) Vagina  
 (3) Vulva (4) Oviduct  
 Ans. (2)
78. Primary spermatocyte differs from spermatogonium in:  
 (1) Number of chromosomes  
 (2) Size and volume  
 (3) DNA content  
 (4) Size of chromosomes  
 Ans. (2)
79. In human, cleavage divisions are:  
 (1) Slow and synchronous  
 (2) Fast and synchronous  
 (3) Slow and asynchronous  
 (4) Fast and asynchronous  
 Ans. (3)
80. The basic unit of study in Ecology is:  
 (1) Population (2) Organism  
 (3) Community (4) Species  
 Ans. (2)
81. Chimera is produced due to:  
 (1) Somatic mutations (2) Reverse mutations  
 (3) Lethal mutations (4) Pleiotropic mutations  
 Ans. (1)
82. Maltose gives rise to 2 molecules of:  
 (1) Fructose (2) Lactose  
 (3) Glucose (4) Sucrose  
 Ans. (3)
83. In a lake, phytoplankton grow in abundance in:  
 (1) Littoral zone (2) Limnetic zone  
 (3) Profundal zone (4) Benthic region  
 Ans. (2)

84. Sigmoid growth curve is represented by:  
 (1)  $dN/dt = rN$  (2)  $dN/dt = rN (1 - N/K)$   
 (3)  $N_t = N_0 + B + I - D - E$  (4)  $dN/dt = 1 - N/K$   
 Ans. (2)
85. Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme. Their experiments demonstrated that:  
 (1) Cells need specific enzymes in order to function  
 (2) Genes are made of DNA  
 (3) Genes carry information for making proteins  
 (4) Enzymes are required to repair damaged DNA information  
 Ans. (3)
86. DNA has equal number of adenine and thymine residues (A=T) and equal number of guanine and cytosine (G=C). These relationships are known as:  
 (1) Chargaff's rule (2) Coulomb's law  
 (3) Le Chatelier's principle (4) Van't Hoff plot  
 Ans. (1)
87. 'Balancing selection' promotes:  
 (1) Homozygotes (2) Heterozygotes  
 (3) Polyploids (4) Recessive traits  
 Ans. (2)
88. Vomiting centre is located in the:  
 (1) Medulla oblongata  
 (2) Stomach and sometimes in duodenum  
 (3) GI tract  
 (4) Hypothalamus  
 Ans. (1)
89. How many bio-geographical regions are present in India?  
 (1) 3 (2) 4  
 (3) 7 (4) 10  
 Ans. (4)
90. Vital stains are employed to study:  
 (1) Living cells  
 (2) Frozen tissues  
 (3) Fresh tissues  
 (4) Preserved tissues  
 Ans. (1)
91. Which of the following organs in earthworm neutralizes humic acid present in humus?  
 (1) Typhosole (2) Calciferous glands  
 (3) Intestinal caecum (4) Gizzard  
 Ans. (2)
92. Fertilized eggs of *P. americana* are encased in:  
 (1) Ootheca (2) Cocoon  
 (3) Genital chamber (4) Phallomere  
 Ans. (1)
93. Insufficient quantities of antidiuretic hormone in blood lead to:  
 (1) Diabetes mellitus (2) Glycosuria  
 (3) Diabetes insipidus (4) Uremia  
 Ans. (3)
94. Sphincter of Oddi guards:  
 (1) Hepato-pancreatic duct  
 (2) Common bile duct  
 (3) Pancreatic duct  
 (4) Cystic duct  
 Ans. (1)
95. Graveyard for RBCs is:  
 (1) Liver (2) Spleen  
 (3) Kidney (4) Lymph glands  
 Ans. (2)
96. Blood cells involved in inflammatory reactions are:  
 (1) Basophils  
 (2) Neutrophils  
 (3) Eosinophils  
 (4) Monocytes  
 Ans. (1)
97. To obtain a standard ECG, a patient is connected to the machine with three electrodes:  
 (1) One to each wrist and to the left ankle  
 (2) One to each ankle and to the left wrist  
 (3) One to each wrist and to the left chest region  
 (4) One to each ankle and to the left chest region  
 Ans. (1)
98. The clavicle articulates with ..... of scapula  
 (1) Acromion process  
 (2) Glenoid cavity  
 (3) Acetabulum cavity  
 (4) Ball and socket joint  
 Ans. (1)
99. The age of pyramid with broad base indicates "  
 (1) High percentage of young individuals  
 (2) Low percentage of young individuals  
 (3) High percentage of old individuals  
 (4) Low percentage of old individuals  
 Ans. (1)
100. Thymosin hormone is secreted by:  
 (1) Thyroid gland  
 (2) Parathyroid gland  
 (3) Thymus gland  
 (4) Hypothalamus  
 Ans. (3)