
SINDH MDCAT PAST PAPER: 2018

#BIOLOGY

1. In which of the following growth phases, the number of bacteria increases the most rapidly ?

- A. Lag phase**
- B. Log phase ✓**
- C. Stationary phase**
- D. Death / decline phase**

2. Which of the following is the simplest form of pathogens causing diseases ?

- A. Viruses**
- B. Prions ✓**
- C. Fungus**
- D. Amoeba**

3. The category of organisms which are able to make their own food is called:

- A. Heterotrophs**
- B. Autotrophs ✓**
- C. Consumers**
- D. Decomposers**
- E. Apostrophes**

4. The branch of science dealing with the fossil record is called:

- A. Genetics**
- B. Taxonomy**
- C. Archeology**
- D. Paleontology ✓**
- E. Biochemistry**

5. Which of the following is the manipulation of genetic material for practical purposes ?

- A. Grafting**
- B. Tissue culture**
- C. Genetic engineering ✓**
- D. Cell culture**

6. Which part of the cell does glycolysis occur in ?

- A. Mitochondria**
- B. Chloroplast**
- C. Cytoplasm ✓**
- D. Nucleus**
- E. Vacuole**

7. The technique used for identification of criminals is called:

- A. Cloning**
- B. DNA fingerprinting ✓**
- C. Restriction analysis**
- D. Polymorphism**
- E. Gene sequencing**

8. Which of the following bacteria are able to release oxygen into the environment?

- A. Saprotrophic bacteria**
- B. Parasitic bacteria**
- C. Cyanobacteria ✓**
- D. Pathogenic bacteria**

9. Which of the following is not a part of RNA?

- A. Nitrogenous bases**
- B. Ribose sugars**
- C. Deoxyribose sugars ✓**
- D. Phosphate groups**
- E. Adenine**

10. Referring to sexual reproduction, humans are:

- A. Hermaphrodites**
- B. Viviparous ✓**
- C. Oviparous**
- D. Self-fertilized**

11. Which of the following is NOT the function of cell membranes?

- A. Protection of cytoplasm**
- B. Regulating the passage of different molecules**
- C. Protein synthesis ✓**
- D. Cellular communication**
- E. Cellular transportation**

12. Genetic information in the DNA is encoded as:

- A. Deoxyribose sugars**
- B. Ribose sugars**
- C. Phosphate groups**
- D. Sequence of nitrogenous bases ✓**
- E. Sequence of phosphate groups**

13. The chromosomes with equal arms are called:

- A. Metacentric ✓**
- B. Sub metacentric**
- C. Acrocentric**
- D. Telocentric**

14. The disease arising due to age is:

- A. Alzheimer's ✓**
- B. Hepatitis**
- C. Cholera**
- D. Malaria**
- E. Beri Beri**

15. Which of the following end parasites of humans replicates within human cells?

- A. Bacteria ✓**
- B. Leech**
- C. Fungi**
- D. Helminths**

16. The disease caused by Protozoal infection is:

- A. Rickets**
- B. Goiter**
- C. Malaria ✓**
- D. Beri-Beri**
- E. Alzheimer's**

17. Which of the following are divided by fission?

- A. Viruses**
- B. Viroid's**
- C. Bacteria ✓**
- D. Fungi**

18. In recombinant DNA technology, the copies of recombinant DNA are increased by:

- A. Restriction enzyme**
- B. Ligase**
- C. Selection of host with rDNA**
- D. Multiplication of host with rDNA ✓**

19. The disease caused by nutritional deficiency is:

- A. Hepatitis**
- B. Cholera**
- C. Malaria**
- D. Beri-Beri ✓**
- E. Alzheimer's**

20. Which of the following basic structural levels of proteins is indicated by an association of two alpha and two beta chains in the hemoglobin molecule?

- A. Primary structure**
- B. Secondary structure**
- C. Tertiary structure**
- D. Quaternary structure ✓**

21. The branch of science dealing with the classification of life forms is called:

- A. Genetics**
- B. Taxonomy ✓**
- C. Archeology**
- D. Paleontology**
- E. Biochemistry**

22. Which of the following is NOT a part of the immune system?

- A. Phagocytes**
- B. Complement proteins**
- C. Cytokinesis**
- D. Atherosclerosis ✓**

23. The system responsible for fighting the pathogens is:

- A. Muscular system**
- B. Endocrine system**
- C. Nervous system**
- D. Immune system ✓**

24. Which one of the following organelles is required for aerobic respiration?

- A. Nucleus**
- B. Mitochondria ✓**
- C. Endoplasmic reticulum**
- D. Plasmids**
- E. Cytoskeleton**

25. Please mark the one Kingdom having the most conspicuous living organisms:

- A. Moneta**
- B. Protista**
- C. Animalia ✓**
- D. Plantae**

26. Which of the following phyla of Kingdom Animalia does human belong to?

- A. Mollusca**
- B. Arthropod**
- C. Echinodermata**
- D. Chordata ✓**

27. Carbon dioxide joins the photosynthetic pathway at:

- A. PSI**
- B. PSII**
- C. Light reaction**
- D. Dark reaction ✓**

28. The enzyme found in saliva responsible for the digestion of carbohydrates is:

- A. Lysozyme**
- B. Amylase ✓**
- C. Pepsin**
- D. Trypsinogen**
- E. Lipase**

29. The process by which one molecule of glucose splits up into molecules of pyruvate is called:

- A. Glycolysis ✓**
- B. Oxidative phosphorylation**
- C. Electron transport chain**
- D. Krebs cycle**
- E. Calvin cycle**

30. Which of the following is NOT a viral disease?

- A. AIDS**
- B. Malaria ✓**
- C. Influenza**
- D. Chicken pox**
- E. Rabies**

#CHEMISTRY

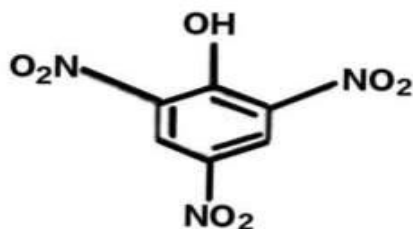
31. In which of the following nitrogen compounds, N has the highest oxidation state?

- A. NH_2OH
- B. N_2H_4
- C. HNO_3 ✓
- D. NH_3

32. Real gases behave ideally at:

- A. Low temperature and low pressure
- B. Moderate temperature and low pressure
- C. High temperature and low pressure ✓
- D. High temperature and high pressure

33. The figure mentioned below is commonly known as:



- A. Resorcinol
- B. Aspirin
- C. Picric acid ✓
- D. Mestizo

34. Which alkyl halide has the lowest reactivity for a particular alkyl?

- A. R-Cl**
- B. R-F ✓**
- C. R-Br**
- D. R-I**

35. Which one of the following vitamins is required for normal growth, vision, and keeping the skin healthy?

- A. Vitamin D**
- B. Vitamin E**
- C. Vitamin A ✓**
- D. Vitamin K**

36. Which one of the following is the pure carbon compound and used as a reducing agent in industries?

- A. Coal tar**
- B. Petroleum**
- C. Coal gas**
- D. Coke ✓**

37. The alloy Duralumin is composed of Al:

- A. 95% ✓**
- B. 90%**
- C. 85%**
- D. 80%**

38. 106 gram of Na_2CO_3 per dm^3 of solution of Na_2CO_3 in water, the concentration of the solution will be:

- A. 1 N
- B. 0.1 M
- C. 1 M ✓
- D. 0.02 M

39. For the first time in 1911, Henry Moseley used X-rays for the determination of:

- A. Atomic number ✓
- B. Atomic mass
- C. Molecular mass
- D. Equivalent mass

40. Which of the following properties depends upon the amount of water present in the system?

- A. Density ✓
- B. Gibbs free energy
- C. Pressure
- D. Temperature

41. Zwitterion is formed when proton goes:

- A. Amino to carboxyl group
- B. Carboxyl to amino group ✓
- C. Carboxyl group only
- D. Amino group only

42. For the following exothermic reaction, decrease in temperature will shift the equilibrium towards: $2\text{NO (g)} + \text{O}_2 \text{ (g)} \rightleftharpoons 2\text{NO}_2 \text{ (g)}$:

- A. Left
- B. The point of equilibrium
- C. Both directions
- D. Right ✓

43. How many significant figures are there in 00.4793?

- A. 3
- B. 4 ✓
- C. 5
- D. 6

44. Which one of the following is NOT a meta-directing group?

- A. COOH
- B. SO_3H
- C. CHO
- D. OH ✓

45. The rate of a chemical reaction is directly proportional to the product of active masses of the reactants, it is referred to as:

- A. Law of conservation of energy
- B. Law of mass action ✓
- C. Law of conservation of mass
- D. Active mass law

46. Which one of the following does NOT give the Iodoform test?

- A. CH_3OH ✓**
- B. $\text{CH}_3\text{CH}_2\text{OH}$**
- C. CH_3CHO**
- D. CH_3COCH_3**

47. The boiling point of water is highest than other hydrides because water molecules can form:

- A. 4 hydrogen bonds ✓**
- B. 3 hydrogen bonds**
- C. 2 hydrogen bonds**
- D. 1 hydrogen bond**

48. When electricity is passed through water in the presence of an acid, oxygen is produced.

- A. Carbon**
- B. CO**
- C. CO_2**
- D. Hydrogen ✓**

49. The reaction $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$ proceeds slower because of _____ activation energy of CO.

- A. Equilibrium**
- B. Constant**
- C. Low**
- D. High ✓**

50. Lithium and beryllium are unique in such a way that they have higher charge densities, which produce strong polarizing effects due to:

- A. Nonmetal**
- B. Solubility**
- C. Small size ✓**
- D. Large size**

51. The neutron was discovered by:

- A. Goldstein**
- B. Rutherford**
- C. J.J. Thomson**
- D. Chadwick ✓**

52. The normal pH of blood is:

- A. 7.75**
- B. 7.35 ✓**
- C. 7.25**
- D. 7.05**

53. Which of the following reactions is NOT shown by ketones?

- A. Reaction with HCN**
- B. Reaction with Fehling solution ✓**
- C. Reaction with NaHSO_3**
- D. Reaction with 2,4-dinitrophenylhydrazine**

54. The melting point of NaCl is very high (801°C). It is reduced to 600°C by the addition of _____ in Down's process.

- A. Calcium chloride ✓
- B. Magnesium chloride
- C. Aluminum chloride
- D. Potassium chloride

55. The phenomenon in which certain elements emit invisible radiations is called:

- A. Spectroscopy
- B. Radioactivity ✓
- C. Gravimeter
- D. Chromatography

56. The number of bond(s) between carbon and nitrogen atoms in a nitrile is:

- A. One sigma and one pi
- B. Two sigma and one pi
- C. Only sigma
- D. One sigma and two pi ✓

57. The transparent plastic used to make combs and hairbrushes is called:

- A. PVA
- B. PVC
- C. Bakelite
- D. Perspex ✓

58. In the electrochemical series, elements are arranged in order of their standard electrode potentials. The correct decreasing reactivity order for metals is:

- A. Gold, silver, magnesium, aluminum
- B. Mercury, calcium, sodium, magnesium
- C. Sodium, aluminum, lead, copper ✓
- D. Potassium, silver, magnesium, aluminum

59. Methyl orange is _____ in acidic solutions.

- A. Yellow
- B. Pink
- C. Orange
- D. Red ✓

60. How many chain isomers are shown by C_5H_{12} ?

- A. 5
- B. 4
- C. 3 ✓
- D. 2

61. If in a circuit, 2-ampere current is drawn from the battery in 10 minutes, how much charge will flow through the circuit in this time?

- A. 1200 Coulombs ✓
- B. 600 Coulombs
- C. 500 Coulombs
- D. 20 Coulombs

62. If a car collides with a housefly, what will be the magnitude of the force experienced by the housefly?

- A. Much greater than the car experienced by the housefly**
- B. Much less than the car experienced by the housefly**
- C. Same as the car experienced by the housefly ✓**
- D. 10 times less than the car experienced by the housefly**

63. In the photoelectric effect, a photon of energy " $h\nu$ " is incident on the metal surface. The energy required to eject the valence electron from the surface of the metal is expressed as:

- A. Wave nature of the light**
- B. Compton scattering**
- C. Melting point of the metal**
- D. Work function of the metal ✓**

64. Bimetallic thermostat is an example of:

- A. Electric field**
- B. Thermal expansion ✓**
- C. Heat engine**
- D. Isobaric process**

65. Let B be the magnetic field and a conductor of length L is moved across this field. Due to this activity, a potential difference appears across the ends of the conductor. This type of potential difference is termed as:

- A. Self-induction**
- B. Mutual induction**
- C. Motional E.M.F ✓**
- D. Electrostatic potential**

66. If a dielectric material is placed between two plates of a capacitor, the net capacitance of the capacitor:

- A. Decreases**
- B. Increases ✓**
- C. Remains constant**
- D. Zero**

67. In free states, the mass of the nucleus is always:

- A. Greater than the mass of its constituents**
- B. Equal to the mass of its constituents**
- C. Less than the mass of its constituents ✓**
- D. Far greater than the mass of its constituents**

68. A solar day is the time interval between two successive appearances of the sun overhead. The time that is referred to the rotation of the earth about its axis is called:

- A. Universal time ✓**
- B. Length of the day**
- C. Time interval**
- D. Solar day**

69. If the sunlight is incident on the photocell, the number of electrons emitted from the surface of the cell increases with the:

- A. Increase of light frequency**
- B. Increase of light intensity ✓**
- C. Decrease of light frequency**
- D. Decrease of light intensity**

70. In electronic circuits, a PN junction diode is used to convert alternating current into direct current. This process is called:

- A. Rectification ✓**
- B. Amplification**
- C. Doping**
- D. Integrated circuit**

71. The process in which light bends around an obstacle is called:

- A. Diffraction of light ✓**
- B. Interference of light**
- C. Reflection of light**
- D. Polarization of light**

72. Let X be a radioactive element having N_0 nuclei. The time required to decay this element to one-half of its initial number N_0 is known as:

- A. Law of radioactive decay**
- B. Decay constant**
- C. Half-life ✓**
- D. Decay time**

73. When an electron and its anti-particle positron come close enough to each other, they completely convert into radiation energy in the form of photons. This process is called:

- A. Photoelectric effect**
- B. Pair production**
- C. Annihilation of matter ✓**
- D. Compton effect**

74. There are different types of waves that exist in this universe. Which of the following waves do NOT need any material medium to travel?

- A. Sound waves**
- B. Waves produced on a string**
- C. Electromagnetic waves ✓**
- D. Waves produced on the water surface**

75. A cyclist moving towards the right with an acceleration of 4 m/s^2 . At $t=0$, he has traveled 5m moving towards the right at 15 m/s. What will be his position at $t=2$ seconds?

- A. 36**
- B. 38**
- C. 41**
- D. 43 ✓**

76. In pure semiconductor materials, some impurities are added to change the properties of these semiconductors. This process is called:

- A. Crystallography**
- B. Rectification**
- C. Intrinsic defects**
- D. Doping ✓**

77. Two forces equal in magnitude but opposite in direction and not acting along the same line constitute a couple. The movement of this couple will be:

- A. Dependent on the location of the origin**
- B. Independent of the location of origin ✓**
- C. Zero**
- D. Scalar product**

78. In electromagnetic spectrum of radiations, the wavelength spectrum that is visible to humans lies in the range of:

- A. 100-400 nm**
- B. 400-700 nm ✓**
- C. 700-1000 nm**
- D. 1000-1500 nm**

79. Equations of kinetics are valid only when the acceleration is:

- A. Increasing**
- B. Decreasing**
- C. Constant ✓**
- D. Vary with time**

80. The process of natural decay of some heavy nuclides is because of the __ phenomenon:

- A. Emission spectra**
- B. Nuclear fusion**
- C. Nuclear fission**
- D. Radioactivity ✓**

81. If constant temperature conditions are applied to a gas container, then the volume of the mass of that gas tends to increase by:

- A. Decreasing the applied pressure ✓**
- B. Increasing the applied pressure**
- C. Increasing applied pressure with double force**
- D. Increasing the weight**

82. The atomic number Z of an atom represents the:

- A. Number of protons ✓**
- B. Number of electrons and protons**
- C. Number of neutrons**
- D. Sum of protons and neutrons**

83. If constant current is flowing through a coil, then flux through that coil will become constant. In such types of arrangements, the electromotive force (emf) induced in the coil will be:

- A. Self-Inductance**
- B. Zero ✓**
- C. Mutual-Inductance**
- D. Back emf**

84. In simple harmonic motion, a particle is oscillating in such a way that its total energy remains conserved. When this particle reaches its two extreme positions, its potential energy at extreme positions becomes:

- A. Minimum**
- B. Maximum ✓**
- C. Zero**
- D. Greater than its kinetic energy**

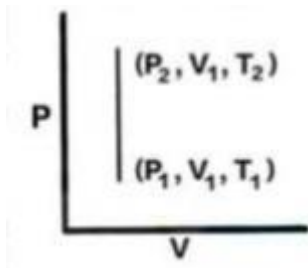
85. If we increase the area of a cross-section of a conductor having a length, the resistance of that conductor will be:

- A. Zero**
- B. Constant**
- C. Increasing**
- D. Decreasing ✓**

86. The efficiency of the Carnot engine working between temperatures 177°C and 77°C will be:

- A. 22.22% ✓
- B. 23.23%
- C. 25.25%
- D. 30.30%

87. Which process is shown in the graph between pressure and volume?



- A. Adiabatic
- B. Isobaric
- C. Isochoric ✓
- D. Isothermal

88. Which of the following phenomena represents the wave nature of light?

- A. Photoelectric effect
- B. Compton scattering
- C. Interference of light ✓
- D. Pair production

89. Law of heat exchange is used to determine:

- A. Coefficient of linear expansion**
- B. Coefficient of volume expansion**
- C. Ideal gas constant**
- D. Specific heat of substance ✓**

90. During radioactive decay of a nucleus , beta emission takes place along with the daughter nucleus. Because of this beta particle emission, the mass number of the parent nucleus:

- A. Remains constant ✓**
- B. Decreases by 1**
- C. Increases by 1**
- D. Decreases by 2**

#ENGLISH

91. Identify the word or phrase that needs to be changed for the sentence to be correct.

"It's too late to go for a walk now; besides, it's beginning to rain."

- A. It's**
- B. Go**
- C. Besides**
- D. Beginning**
- E. No error ✓**

92. Identify the word or phrase that needs to be changed for the sentence to be correct.

"The guests broke a dozen glasses at the party."

- A. The guests**
- B. Broke ✓**
- C. Glass**
- D. No error**

93. Complete the sentence by choosing the most appropriate option:

"He would like ____ have a job in the same office as his brother."

- A. Too**
- B. To ✓**
- C. Of**
- D. Get**

94. The road is wet. It must ____ raining.

- A. Have been ✓**
- B. Had**
- C. Has**
- D. Have**

**95. Choose the word most similar in meaning to the capitalized one:
SHABBY:**

- A. Organized**
- B. Untidy ✓**
- C. Reluctant**
- D. Sensible**

**96. Choose the word most similar in meaning to the capitalized one:
FORBID:**

- A. Prohibit ✓**
- B. Chide**
- C. Permit**
- D. Constraint**

**97. Television is typical of many new scientific words, which are deliberately invented from old Greek and Latin words. In this case, the prefix “tele” is Greek and means “far” (as in telephone, telegram), while the root “vision” is derived from the Latin verb meaning “to see.”
The word “Television” is invented from:**

- A. English and Spanish**
- B. French and Arabic**
- C. Dutch and German**
- D. Greek and Latin ✓**

98. Which of the following gives the meaning of the prefix “tele”?

- A. Near**
- B. Close**
- C. Far ✓**
- D. Away**

99. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters:

SUPREMACY:

- A. Excellent**
- B. Sovereignty**
- C. Inferiority ✓**
- D. Influence**

100. Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters:

PATRIOTISM:

- A. Nationalism**
- B. Socialism**
- C. Obsession**
- D. Disloyalty ✓**