

NATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY (NUST)

Applied Biosciences Admission Test 01

BIOLOGY:

Directions: For each question below you are given four choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER. ALL ANSWER MUST BE GIVEN ON THE ANSWER SHEET.

YOUR ANSWERS MUST BE INDICATED BY LETTERS (A, B, C, D) AND NOT BY THE WORDS THEMSELVES.

1. A largest community primarily determined by climate is a
A) Ecosystem
B) Biodiversity
C) Biome
D) Diversity
2. The molecules with high molecular weight such as starch and proteins are
A) Micromolecules
B) Macromolecules
C) Organic molecules
D) Inorganic molecules
3. If a theory is continuously supported by experimental evidence it becomes a
A) Law
B) Theory
C) Hypotheses
D) Scientific law
4. The most abundant compound in all organisms is
A) Protein
B) Carbohydrate
C) Water
D) Lipid
5. The compound that has two amino acid sub- units is called
A) Polypeptide
B) Peptide
C) Dipeptide
D) None of these
6. The poisons, antibodies and anti-metabolites are examples of
A) Coenzymes
B) Prosthetic groups
C) Activators
D) Inhibitors
7. The soluble part of the cytoplasm is called
A) Cytosol
B) Suspension
C) Collide
D) True solution
8. The flattened vesicles in chloroplasts that arrange themselves to form Grana and intergrana are called
A) Thylakoids
B) Grana

- C) Stroma
D) Cisternae
9. The assembly and disassembly of the spindle structure during mitosis is the role of
A) Microtubules
B) Microfilaments
C) Intermediate filaments
D) All these
- 10 Which of the following is considered self – replicating organelle?
A) Ribosomes
B) Lysosomes
C) Mitochondria
D) Leucoplasts
- 11 A Bacteriophages reproduces by using the metabolic machinery of bacteria cell, i, e chromosomes and
A) Mitochondria
B) Cell membrane
C) Ribosomes
D) Golgi bodies
- 12 Cell wall is absent in one of the following bacteria.
A) Escherichia coli
B) Mycoplasma
C) Pseudomonas
D) Spirochete
- 13 Bacteria lack
A) Mitosis
B) Cell division
C) Traditional sexual reproduction
D) All these
- 14 Trypanosoma is transmitted by the bite of infected
A) House fly
B) Mosquito
C) Tsetse fly
D) All these
- 15 Fungal hyphae that are in the form of an elongated multinucleate large cell are called
A) Septate
B) Aseptate
C) Coenocytic
D) Multinucleate
- 16 An ascus is to ascomycetes as is a to basidiomycetes
A) Basidiospore
B) Basidicarp
C) Basidium
D) Haustorium
- 17 The loose smut of wheat is caused by
A) Puccinia
B) Ustilago
C) Fusarium
D) Morchella
- 18 A small outgrowth present on the upper side of leaves of leaves of sporophylls near the base in selaginella is

- A) Ligule
C) Microphyll
- B) Prophyll
D) Megaphyll

19 When the frond is immature and young it is coiled. This pattern of development is called circinate

- A) Venation
C) Phyllotaxis
- B) Vernation
D) Aestivation

20 Double fertilization is characteristic of which of the following

- A) Thallophytes
C) Spermatophytes
- B) Embryophytes
D) Angiosperms

21 A gelatinous layer present between the body wall layers of the sponges is

- A) Mesenchyme
C) Mesogloea
- B) Mesoderm
D) Mesenchyma

22 Which of the following is host for liver fluke?

- A) Snail
C) Man
- B) Sheep
D) All these

23 A group of ancient fish that modified their breathing system and developed lungs to adapt to terrestrial mode of life is

- A) Pisces
C) Varanope
- B) Dipnoi
D) Cotylsaurs

24. The group of mammal that form connecting link between reptiles and mammals is

- A) Prototheria
C) Eutheria
- B) Metatheria
D) None

25 Which of the following chlorophylls is most abundant and takes part directly, in the light reaction of photosynthesis?

- A) Chlorophylls a
C) Chlorophylls c
- B) Chlorophylls b
D) Bacteriochlorophyll

26 The process that uses membranes to couple redox reactions to ATP production is known as

- A) Photosystem
C) Chemosmosis
- B) Z – Scheme
D) Glycolysis

27 The products of light reactions ATP and NADPH are used in which of the following phases of Calvin cycle.

- A) Carbon fixation
C) Regeneration of RuBP
- B) Reduction
D) All these

46. If one mole of solute is dissolved in one liter of solution, the solution is called
(a) None of the following (b) One molal (c) One molar (d) One normal
47. If one gram equivalent of a solute is dissolved in one liter of solution, the solution is called
(a) One normal (b) One molal (c) One molar (d) None of the above
48. At constant temperature, volume of a given mass of a gas is inversely proportional to pressure exerted on it is called
(a) Coulomb's Law (b) Boyle's Law (c) General Gas Law (d) Charles Law
49. Very small and very large quantities are expressed in terms of
(a) Significant figures (b) Logarithm (c) None of these (d) Exponential notation
50. The number of atoms or molecules whose concentration determine the rate of reaction is called
(a) Molecularity (b) Rate of reaction (c) Order of reaction (d) None of the above
51. Electrolytes which ionize to a very small extent in a solution are called
(a) Neutral (b) Weak electrolytes (c) Strong electrolytes (d) None of the above
52. The change of concentration of reactants or products is called,
(a) Order of reaction (b) Rate of reaction (c) Molecularity (d) None of the above
53. Reactions which proceed in the forward direction and go to completion are called
(a) Irreversible reaction (b) Equilibrium reaction (c) Reversible reaction (d) None of the above
54. The substance through which electricity cannot flow in molten state or solution form is called,
(a) Molecularity (b) Conductor (c) Electrolyte (d) Non electrolyte

55. The law which states, "The amount of heat evolved or absorbed in a process in the same whether the process takes place in one or several steps is called
- (a) Newton's law (b) First law of thermodynamics
(c) Hess's law (d) Law of conservation of energy
56. The amount of solute dissolved in 100g of solvent to form saturated solution at a given temperature is called,
- (a) Dissolution (b) Solubility (c) Solution (d) None of the above
57. The theory which states that a molecule is a collection of positive nuclei surrounded by electrons distributed in bonding and antibonding molecular orbital of different energies is called,
- (a) None of the following (b) V.B theory (c) VSEPR theory (d) M.O. theory
58. When a weak electrolyte is dissolved in water only a small amount of molecules is
- (a) Remains constant (b) Ionized (c) Deionized (d) Increases
59. The mixture whose constituents are 50% hydrogen, 35% methane and 8% carbon mono-oxide is
- (a) Coal gas (b) Coultar (c) Coke (d) None of the above
60. In common ion effect the degree of ionization is suppressed by the addition of
- (a) A compound (b) Another electrolyte (c) An element (d) None of the above
61. The reaction in which heat is absorbed from the surrounding to the system is called
- (a) Endothermic reaction (b) Fast reaction (c) Slow reaction (d) Exothermic reaction
62. The process in which solvent particles surround solute particles is called,
- (a) Hydration (b) Hydrolysis (c) Saturation (d) Salvation
63. If one mole of solute dissolved in one Kg of solvent, the solution is called
- (a) One normal (b) *One molar* (c) One molar (d) None of the above

64. Equilibrium involving reactants and products in more than one phase is called
(a) Heterogeneous (b) Homogeneous (c) Dynamic (d) None of the above
65. Two double bonds are present between the atoms of the molecule
(a) NH_3 (b) H_2O (c) CO_2 (d) H_2SO_4
66. A change in which chemical composition of a substance does not change is called
(a) Change in shape (b) Physical change (c) Chemical change (d) None of the above
67. The process in which the electrolytes and molecules are split up into positively and negatively charged ions is called,
(a) Electrolysis (b) Ionization (c) Deionization (d) None of the above
68. The average relative mass of one atom of an element compared with atomic mass of one atom of carbon taken as 12 is called
(a) Atomic mass (b) Molecular mass (c) Relative mass (d) Gram-molecular mass
69. Symbolic representation of a molecule of substance is called:
(a) Symbol (b) Formula (c) Equation (d) None of the above
70. A substance in which all atoms are chemically identical having same atomic number is called:
(a) Element (b) Compound (c) Matter (d) Mixture

PHYSICS:

Directions: For each question below you are given four choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER ALL ANSWER MUST BE GIVEN ON THE ANSWER SHEET.

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71. Einstein explained the photo-electric effect making the following assumption as a basis that,
(a) The mass of the electrons increases (b) Light consists of photons or quanta

- (c) The energy of light increases with speed (d) The photo-electrons are identical with atomic electrons
72. An elevator initially accelerates upward from rest and ascends with uniform speed. Time period of a simple pendulum in the elevator will,
- (a) Increase and then decrease (b) Decrease and then increase (c) Increase (d) Decrease
73. A simple arrangement by means of which e.m.f.s. are compared is known
- (a) Voltmeter (b) Potentiometer (c) Ammeter (d) None of the above
74. The physics underlying the operation of a refrigerator most closely resembles the physics underlying,
- (a) The freezing of water (b) The melting of ice (c) The evaporation of water (d) A heat engine
75. Let a certain body of mass 'm' placed on a horizontal surface move down the inclined plane then downward component of weight is
- (a) $.mg\cos\theta$ (b) $.mg\sin\theta$ (c) $.mg\tan\theta$ (d) None
76. The plane faces of two identical plano convex lens, each having focal length 40 cm are pressed against each other to form a usual convex lens. The distance from this lens at which an object must be placed to obtain a real, inverted image with magnification one is.
- (a) 40 cm (b) 80 cm (c) 20 cm (d) 60 cm
77. The law which gives definition of force is
- (a) Newton's law of gravitation (b) Third law of motion
(c) Second law of motion (d) First law of motion
78. Hygrometer is an instrument used for measuring
- (a) The compression of water vapour with temperature (b) The amount of water vapour in the atmosphere
(c) Specific gravity of air (d) The density of air

79. An inertial frame of reference is one whose:
- (a) Acceleration is zero
 - (b) Velocity is changing with time
 - (c) Acceleration is uniform
 - (d) Inertia is not zero
80. A moving car whose engine is switched off, comes to rest after some time due to:
- (a) Inertia
 - (b) Its mass
 - (c) Friction
 - (d) Earth's gravitation
- 81.
- (a) When two bodies separate instantaneously after collision, the collision is said to be perfectly elastic.
 - (b) When two bodies separate instantaneously after collision, the collision is said to be perfectly inelastic
82. According to the second law of motion, acceleration is proportional to:
- (a) Force
 - (b) Time
 - (c) Mass
 - (d) Distance
83. When the object is placed at $2f$ of convex lens then the image formed behind the lens will be
- A) At the focus
 - B) At $2f$
 - C) Beyond $2f$
 - D) Between f and $2f$
84. When the object is placed at principal focus of a convex lens then the image is formed at
- A) Same distance
 - B) Infinity
 - C) Same side of lens
 - D) Centre of curvature
85. The physics underlying the operation of a refrigerator most closely resembles the physics underlying,
- (a) The freezing of water
 - (b) The melting of ice
 - (c) The evaporation of water
 - (d) A heat engine

ENGLISH:

Directions: For each question below you are given choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER

SENTENCE COMPLETION

Directions

Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath in sentence are five lettered words or sets of words. Choose the word or set of words that best fits the meaning of the sentence as a whole.

86. Miss Watson termed Hock's behavior _____ because in her opinion noting could excuse his deliberate disregard of her commands.
- A. devious
B. intolerant
C. Irrevocable
D. indefensible
E. Boisterous
87. Either the surfing at Maui is _____, or I went there on an off day.
- A. Consistent
B. Thrilling
C. Invigorating
D. Overrated
E. Scenic
88. Your _____ remarks spoil the effect of your speech; try not to stray from your subject.
- A. innocuous
B. Digressive
C. Derogatory
D. Persistent
E. Enigmatic

ANALOGIES

Direction: Each question below consists of a related pairs of words or phrases, followed by five lettered pairs of words or phrases, Select the lettered pair that best expresses a relationship similar to that expressed in the original pair.

89. TELLER : BANK ::
- (a) Artist : museum
(b) Cashier : check
(c) Waiter : restaurant
(d) Borrower : loan
(e) Mourner : funeral

90. INNING : BASEBALL ::

- (a) round : boxing
- (b) puck : hockey
- (c) touchdown : football
- (d) serve : tennis
- (e) outing : hiking

91. DEGREE : TEMPERATURE ::

- (a) ounce : weight
- (b) fathom : volume
- (c) mass : energy
- (d) time : length
- (e) light : heat

92. PICK : GUITAR ::

- (a) peg : ukelele
- (b) string : banjo
- (c) pipe : organ
- (d) bow : violin
- (e) head : tambourine

ANTONYM

Direction: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

93. NERVOUS:

- (A) Courageous (B) Puzzle (C) Bold (D) Trainee

94. NOTORIOUS:

- (A) Renowned (B) Invincible (C) Inactive (D) Fashionable

95. NOCTURNAL:

- (A) Patrolling (B) Daily (C) Harsh (D) Marauding

96. OBDURATE:

- (A) Fleeting (B) Finite (C) Yielding (D) Permanent

READING COMPREHENSION

Direction: Please read the passage below and answer the questions on the basis of what is stated or implied.

Passage:

To be happy and really safe, one ought to have at least two or three hobbies and they must all be real. It is no use starting late in life to say "I will take an interest in this or that". A man may acquire great knowledge of topics unconnected with his daily work and yet hardly get any benefit or relief.

QUESTIONS

97. The writer argues that for real happiness
- A) More than one hobbies are preferable
 - B) Two or three hobbies are essential
 - C) Hobbies are quite important
 - D) Hobbies should be interesting
98. The phrase 'ought to' in the first sentence suggests
- A) Liking
 - B) Likelihood
 - C) Compulsion
 - D) Preference
99. The words 'this or that' in the second sentence refer to
- A) Hobbies
 - B) Topics
 - C) Daily work
 - D) None of the above
100. Select the choice closest in meaning to the word 'hardly' in the last sentence
- A) Rarely
 - B) Never
 - C) Infrequently
 - D) Scarcely