

**NATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY (NUST)****Applied Biosciences Sample 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 characteristics 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 an 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

- 28 Digestive system in man is associated with which of the following glands.  
 A) Salivary glands  
 B) Liver  
 C) Pancreas  
 D) All these
- 29 A blind sac that project from the large intestine between ileum and colon is  
 A) Caecum  
 B) Jejunum  
 C) Rectum  
 D) Appendix
- 30 The glycoiate produced during photorespiration enters  
 A) Mitochondria  
 B) Ribosomes  
 C) Peroxisomes  
 D) Glyoxysomes
- 31 The pulmonary disorder associated with breakdown of alveoli is referred to as  
 A) Cancer  
 B) Tuberculosis  
 C) Asthma  
 D) Emphysema
- 32 One of the following is considered to act as multisensory hydraulic valves and respond to environment stimuli.  
 A) Stomata  
 B) Guard cells  
 C) Lenticels  
 D) Hydathodes
- 33 In embryonic life blood cells are formed in the  
 A) Bone marrow  
 B) Liver  
 C) Spleen  
 D) Liver and spleen
- 34 One of the following phenomenon is responsible for the loss of liquid water through water secreting glands or Hydathodes  
 A) Bleeding  
 B) Gutlation  
 C) Transportation  
 D) Imbibition
- 35 Which of the following type of cells are produced by the spleen thymus tonsils and adenoids  
 A) Platelets  
 B) Agraulocytes  
 C) Erythrocytes  
 D) Lymphocytes
- 36 The elimination of wasteful metabolites, mainly of the nitrogenous nature is called  
 A) Osmoregulation  
 B) Excretion  
 C) Pyrexia  
 D) Regulation strategies
- 37 The excretory structures in animal kingdom that are associated with digestive tract are  
 A) Nephridia  
 B) Malpighian tubules

- C) Flame cells  
D) Nephrons
- 38 Bats use one of the following for evaporative cooling in warm temperatures  
A) Sweet  
B) Saliva  
C) Urine  
D) Saliva and urine
- 39 Nutation is because of  
A) Growth on opposite side of contact  
B) Alternate changes in growth  
C) Loss of turgor in the cells of pulvinus  
D) Movement of K ions from the cells of pulvinus
- 40 Epinasty is because of  
A) Auxins  
B) Gibberellins  
C) Abscisic acid  
D) Ethylene

## CHEMISTRY:

**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.

41. Spodumene is the mineral of  
(a) Lithium (b) Sodium (c) Potassium (d) None
42. Indicate the most viscous liquids the following.  
(a)  $H_2O$  (b)  $CH_3OH$  (c)  $CH_3CH_2OCH_2CH_3$  (d)  $CH_3OCH_3$
43. In which of the following processes nitrogen is reduced?  
(a)  $NO_2^- \rightarrow NO_3^-$  (b)  $NO_2^- \rightarrow NO_2^-$  (c)  $NO_2^- \rightarrow NO_3^-$  (d)  $NH_4^+ \rightarrow N_2$
44. Which is not the mineral of Silicon  
(a) Analcite (b) Asbestos  
(c) Dolomite (d) Zircon
45. Substance that affects the rate of reaction but remains unaltered at the end of the reaction is called  
(a) Catalyst (b) Acid (c) Base (d) None of the above

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) Homogenous (c) Dynamic (d) None of the above
65. Two double bonds are present between the atoms of the molecule  
(a)  $\text{NH}_3$  (b)  $\text{H}_2\text{O}$  (c)  $\text{CO}_2$  (d)  $\text{H}_2\text{SO}_4$
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 ANSWERS 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 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. 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 nothing 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

## END OF TEST

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