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NATIONAL UNIVERSITY OF SCIENCE & TECNOLOGY (NUST)

Engineering Admission Test 01

MATHEMATICS:

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. Which of the following lists of physical quantities consists only of vectors:

(a) Time, temperature, velocity (b) Force, volume, momentum

(c) Velocity, acceleration, mass (d) Force, acceleration, velocity

2. If $(\vec{a} \times \vec{b})$ points along negative z-axis, then the vectors $\vec{a}$ and $\vec{b}$ must lie in

(a) .zx-plane (b) .yx-plane

(c) .xy-plane (d) None of the above

3. $k \times \hat{i} =$……

(a) j (b) $-j$ (c) k (d) $-k$

4. What must be changing when a body is accelerating uniformly along a straight path?

(a) The force acting on the body (b) The velocity of the body

(c) The mass of the body (d) The speed of the body

5. The horizontal range of a projectile is maximum when it is thrown at what angle with a certain velocity?

(a) 30^0 (b) 45^0 (c) 60^0 (d) 90^0

6. A paratrooper jumping out of an airplane is an example of

(a) Equilibrium (b) Static Equilibrium (c) Dynamic Equilibrium (d) None

7. The torque on a body will be zero if the angle between $\vec{r}$ and F is zero or:

(a) 90^0 (b) 180^0 (c) 270^0 (d) None

8. If we go away from the surface of the earth, a distance equal to the one third of the radius of the earth, the value of g will be multiplied by?

(a) 1/2 (b) 9/16 (c) 1/9 (d) 16/9

9. For certain values F and d, work done is zero when the angle between the force and displacement is:

(a) 0^0 (b) 30^0 (c) 90^0 (d) 180^0

10. The force acting on a body in the gravitational field at any point is equal to its:

(a) Gravitational mass (b) Weight (c) Acceleration (d) Inertia

11. What is kinetic energy of a body of mass 10 kg moving with velocity $1 m/s^2$?

(a) 10 Joules (b) 20 Joules (c) 5 Joules (d) 2.5 Joules

12. Simple harmonic motion is mathematically represented as

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(a) .a α– x (b) .a α x (c) V α– x (d) F α– x

13. The frequency of second pendulum is

(a) 1 hertz (b) 2 hertz (c) 0.5 hertz (d) None of the above

14. A body with frequency f would complete one vibration in

(a) F seconds (b) $\frac{1}{f}$ seconds (c) 1 second (d) $\frac{1}{T}$ seconds

15. The rate of evaporation depends upon:

(a) Nature of liquid (b) The temperature of liquid and air
(c) The area of the exposed surface of the liquid (d) All of the above

16. The saturated vapour pressure of a given liquids:

(a) Increases with rise in temperature (b) Decreases with rise in temperature
(c) May increase or decrease with rise in temperature (d) Remains unchanged with rise in temperature

17. Suppose the co-efficient of linear expansion of copper is 0.000156 per degree C. What will be the co-efficient of volume expansion of copper sphere per degree C?

(a) Same as that of linear expansion (b) Two times as that of linear expansion
(c) Three times as that of linear expansion (d) One half as that of linear expansion

18. Length of metal rod is 100 cm and co-efficient of linear expansion of metal is $0.00002K^{-1}$ By how many centimeters will it contract when cooled through 50^0 C?

(a) 1.001 (b) 0.150 (c) 0.001 (d) 0.01

19. The Coulomb force in a medium of relative permittivity ε_r is given by:

(a) $F^{/} = \frac{\varepsilon_r}{F}$ (b) $F^{/} = \frac{F}{\varepsilon_r}$ (c) $F^{/} = F_{\varepsilon_r}$ (d) $F^{/} = \frac{F}{\varepsilon_0 \varepsilon_r}$

20. Capacity of a capacitor depends upon.

(a) The distance between the plates (b) The nature of the dielectric between the plates
(c) The size of the plates (d) All of the above

21. The magnetic force F_m acting on charge q when it moves with a velocity v through a magnetic field B is given by

(a) $F_m = q\, v \times B$ (b) $F_m = q\, v^2 \times B$ (c) $F_m = q\, v^3 \times B$ (d) $F_m = q\, v^4 \times B$

22. A substance which behaves like a magnet in the presence of a strong magnetic field is called

(a) Magnets (b) Ferro magnets (c) Electromagnets (d) None of the above

23. In a circuit , if a resistance of the conductor is increased then current in the circuit will:

(a) Increase (b) Decrease (c) Remain the same (d) First increase and then decrease

24. The phenomenon that the resistance of a metal falls exactly to zero at a few degrees above absolute zero is called:

(a) Conductivity (b) Low conductivity (c) Super-conductivity (d) Low resistivity

25. Why should a resistance be introduced in a circuit in series deliberately?

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(a) To increase current and decrease Voltage (b) To decrease current and voltage (c) To make current zero (d) To make voltage zero

26. In a house circuit, all electrical appliances are connected in parallel to each other between the line and neutral wires to get:

(a) Same current and different voltage (b) Same current and same potential difference
(c) Different current but same potential difference (d) Difference current and different potential difference

27. Power dissipated in a circuit in the form of 'V' and 'R' can be determine as:

(a) $P = \frac{V}{I}$ (b) $P = \frac{V^2}{R}$ (c) $P = \frac{R}{V^2}$ (d) $P = \frac{I}{V^2}$

28. Lyman series lies in

(a) Visible region (b) Ultra violet region (c) Infra red region (d) Far-infra red region

29. According to Bohr's theory of hydrogen atom, an electron can revolve around a proton indefinitely if its path is

(a) A spiral of increasing radius (b) A circle of constantly decreasing radius
(c) A circle of an allowed radius (d) An ellipse

30. According to Bohr's theory of hydrogen atom, the radii R_n of stationary electron is given by the equation

(a) $R_n = \frac{ke^2}{mv_n^3}$ (b) $R_n = \frac{ke^2}{mv_n^2}$ (c) $R_n = \frac{e^2}{mv_n^2}$ (d) $R_n = \frac{he^2}{mv_n^2}$

31. An interesting application of laser is the production of three dimensional images called

(a) Polygons (b) Holograms (c) Ovals (d) None of the above

32. The laser device used to fragment gallstones and kidney stones is called

(a) Laser beam (b) Laser scanner (c) Laser lithotropter (d) Ruby laser

33. Product of x-rays is a reverse phenomenon of

(a) Photoelectric Effect (b) Compton Effect (c) Pair Production (d) Annihilation of matter

34. The nucleus of hydrogen with symbol $_1H^3$ is called

(a) Proton (b) Deuteeron (c) Triton (d) All of the above

35. Elements with atomic number Z > 82 are

(a) Stable (b) Unstable (c) Small (d) None of the above

36. Which of the following particles has very low penetration power?

(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

37. Which of the following particles move with velocity of light?

(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

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38. A carbon nucleus emits a particle x and changes into nitrogen according to the equation ${}_6C^{14} + {}_7N^{14} \rightarrow x$ What is x?

(a) An electron (b) A proton (c) An α-particle (d) A neutron

39. During Pair-Production which particles are produced?

(a) Proton & Electron (b) Electron & Neutron (c) Electron & Positron (d) Proton & Neutron

40. The Solid-State Detector is basically

(a) A forward biased PN-junction (b) A reversed biased PN-junction
(c) A forward biased transistor (d) A Photocell

41. $\sqrt{35}$ is -------

A) A prime number B) An integer
C) A whole number D) An irrational number

42. $\forall$ a, b, ϵ R a . b = b•a is called

A) Closure law of addition B) Associative law of addition
C) Commutative law of multiplication D) Associative law of multiplication

43. In R, the multiplicative identity is

A) 0 B) 1
C) -1 D) None

44. The additive inverse of $\frac{2}{3}$ is

A) $\frac{3}{2}$ B) $-\frac{2}{3}$
C) $-\frac{3}{2}$ D) 0

45. The multiplication inverse of 0 is

A) 1 B) -1
C) 0 D) Does not exist

46. The value of i^7 is

A) 1 B) -1
C) i D) -i

47. If $z = 2 + 3i$ then z^{-1} is

A) $\frac{1}{2}+\frac{1}{3}i$ B) $2+\frac{1}{3}i$
C) $\frac{2}{13}+\frac{3}{13}i$ D) $\frac{2}{13}-\frac{3}{13}i$

48. The modulus of 3 is

A) 0 B) 9
C) -3 D) 3

49. The multiplicative inverse of $1 - 2i$ is

A) $\frac{1}{5}+\frac{2}{5}i$ B) $-\frac{1}{5}+\frac{2}{5}i$

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C) $\frac{1}{5}-\frac{2}{5}i$ D) $-\frac{1}{5}-\frac{2}{5}i$

50. The set of integers is a subset of
A) The set of natural numbers B) The set of whole numbers
C) The set of prime numbers D) The set of rational numbers

51. {1,2,3,} is --------
A) An infinite set B) A finite set
C) A singleton set D) Universal set

52. The sets {1,2,4} and {4,6,8,10}are
A) Equal sets B) Equivalent sets
C) Disjoint sets D) Over lapping sets

53. Write down the power set of {9,11}
A) {{9},{11}} B) {Φ,{9},{11}}
C) {{9},{11},{9,11}} D) {Φ,{9},{11},{9,11}}

54. Φ` = -------
A) A B) Φ
C) A` D) U

55. If p and q are two statements then their biconditional 'p iff q' is denoted by
A) P Λ q B) P ν q
C) P → q D) P ↔ q

56. The number of subsets of a set having three elements is
A) 4 B) 6
C) 8 D) None of these

57. If A = {1,2,3} and B= {a,b} then a function from A to B is
A) {(1, a), (2, b), (3, a)} B) {(1, a), (2, B)}
C) {(a, 1), (b, 2)} D) {(1, 1), (2, 2)}

58. A matrix with a single row is called a
A) Column matrix B) Row matrix
C) Null matrix D) Identity matrix

59. A square matrix all of whose elements except the main diagonal are zeros is called a
A) Null matrix B) Singular matrix
C) Symmetric matrix D) Diagonal matrix

60. A square matrix A for which $A^t = A$ is called a
A) Column matrix B) Symmetric matrix
C) Skew-symmetric matrix D) Row matrix

61. Two matrices A and B are conformable for the product AB if
A) Both A and B are square B) Both A and B are symmetric
C) Number of rows of A = number of columns of B D) Number of columns of A = number of rows of B

62. The transpose of a square matrix is a
A) Row matrix B) Column matrix
C) Square matrix D) Null matrix

63. If A is any matrix then its additive inverse is
A) A B) A^{-1}
C) A^t D) -A

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A) Diagonal matrix
B) Scalar matrix
C) Triangular matrix
D) Identity matrix

65. If A is singular then |A| = -----

A) 1
B) 2
C) 0
D) None of these

66. If A and B are non singular matrices then $(AB)^{-1}$ = -------

A) A^{-1}
B) B^{-1}
C) $A^{-1}B^{-1}$
D) $B^{-1}A^{-1}$

67. The transpose of a column matrix is a ------

A) Zero matrix
B) Diagonal matrix
C) Column matrix
D) Row matrix

68. The transpose of a zero matrix is a--------

A) Column matrix
B) Zero matrix
C) Row matrix
D) Scalar matrix

69. Roots of the equation $x^2 - 7x + 10 = 0$ are

A) {2, -5}
B) {-2, 5}
C) {2, 5}
D) {-2, -5}

70. $4^{1+x} + 4^{1-x} = 10$ is called ------

A) Reciprocal equation
B) Exponential equation
C) Radical equation
D) None of these

71. W^{15} = -------

A) 0
B) 1
C) w
D) W^2

72. The quadratic formula is

A) $X = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$
B) $X = \frac{-b \pm \sqrt{b^2 - 4ac}}{a}$
C) $X = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$
D) $X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

73. The roots of the equation $ax^2 + Bx + c = 0$ are real and equal if

A) $B^2 - 4ac < 0$
B) $B^2 - 4ac = 0$
C) $B^2 - 4ac \geq 0$
D) None of these

74. Roots of the equation $x^2 + 5x - 1 = 0$ are

A) Rational
B) Irrational
C) Complex
D) None of these

75. The sum of the four fourth roots of unity is

A) 4
B) 3
C) 1
D) 0

76. The polynomial x – a is a factor of the polynomial f(x) if and only if

A) F(a) is positive
B) F(a) is negative

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C) F(a) = 0 D) None of these

77. If ω is complex cube root of unity then ω^2 = -------

A) 0 B) 1

C) ω^3 D) ω^{-1}

78. If α , β are roots of $2x^2 - 4x + 5 = 0$ then $\alpha^2\beta + \alpha\beta^2$ = ------

A) 1 B) -1

C) 5 D) 2

79. $X^3 + 2x^2 - 3x + 5$ is ------

A) A Quadratic equation B) A polynomial

C) Proper rational fractions D) Improper rational fraction

80. A fraction in which the degree of the numerator is less than the degree of the denominator is called

A) Polynomial B) Equation

C) Proper fraction D) Improper fraction

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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81. Einstein explained the photo-electric effect making the following assumption as a basis that,

(a) The mass of the electrons increases (b) Light consists the photons or quanta

(c) The energy of light increases with speed (d) The photo-electrons are identical with atomic electrons

82. An elevator initially accerlerates 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

83. 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

84. 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

85. Let a certain body of mass 'm' placed on a horizontal surface move down the inclined plane then downward component of weight is

(a) .mgCosθ (b) .mgSinθ (c) .mg Tanθ (d) None

86. 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

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87. 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

88. 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

89. 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

90. 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

91.

(a) When two bodies separate instantaneously after collision, the collision is said to be perfectly elastic.
(b) When to bodies separate instantaneously after collision, the collision is said to be perfectly inelastic

92. According to the second law of motion, acceleration is proportional to:

(a) Fores (b) Time (c) Mass (d) Distance

93. 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

94. 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

95. Which one of the following cannot measure wavelength of X-rays in any way

A) Bragg's law B) Diffraction grating C) Compton effect D) Photo electric effect

96. Which one of the following properties is not found in both sound and light

A) Interference B) Diffraction C) Polarization D) Reflection

97. The relation between time period T and angular velocity ω is given by

(a) $T = 2 \pi\omega$ (b) $T = \omega/2\pi$ (c) $T = 2\pi / \omega$ (d) $T = v\ \omega$

98. When a body moves in a circle, the angle between its linear velocity v and angular velocity ω is

(a) 0^0 (b) 45^0 (c) 90^0 (d) 180^0

99. Π radians =

(a) 90^0 (b) 180^0 (c) 60^0 (d) 30^0

100. In racing car moving along a circular path the friction at the wheels and banking of roads provides the

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(a) Centripetal Force (b) Centripetal Acceleration (c) Centre of Mass (d) Centrifugal Force

101. The time period is defined as the time required to traverse …… by a revolving body.
(a) One radian (b) 180 degrees (c) One revolution (d) 90 degrees

102. Which of the following particles can induce artificial radio-activity in certain nuclei?
(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

103. Identify the alpha-particle?
(a) ${}_1H^1$ (b) ${}_1H^2$ (c) ${}_1H^3$ (d) ${}_2He^4$

104. Which of the following particles move with velocity of light?
(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

105. The torque on a body will be zero if the angle between $\vec{r}$ and F is zero or:
a. 90^0 b. 180^0 c. 270^0 d. None

106. What is kinetic energy of a body of mass 10 kg moving with velocity $1m/s^2$?
a. 10 Joules b. 20 Joules c. 5 Joules d. 2.5 Joules

107. Which of the following lists of physical quantities consists only of vectors:
a. Time, temperature, velocity b. Force, volume, momentum
c. Velocity, acceleration, mass d. Force, acceleration, velocity

108. If two forces each of magnitude 5N act along the same line on a body, then the magnitude of their resultant will be
a. 5N b. 10N c. 20N d. 30N

109. Applied force F on a body of mass m, moving with acceleration a is
a. m/a b. a/m c. ma d. m : a

110. The first frontier in fundamental sciences is
A) World of extremely small bodies B) World of extremely large bodies
C) World of middle-sized things D) All of them

111. The third frontier in fundamental sciences is
A) World of extremely small bodies B) World of extremely large bodies
C) World of middle-sized things D) All of them

112. The branch of physics which deals with the atomic nuclei is called
A) Nuclear physics B) Atomic physics
C) Particle physics D) Modern physics

113. The branch of physics in which we study the structure and properties of solids is called
A) Nuclear physics B) Modern physics
C) Particle physics D) Solid state physics

114. The quantities which cannot be defined in terms of other physical quantities are called
A) Scalar quantities B) Vector quantities
C) Base quantities D) Derived quantities

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115. Graphically a vector is represented by an arrow head with a directed line according to a chosen scale which represents

A) The direction B) Orientation
C) Magnitude D) All of them

116. In Cartesian co-ordinate system, usually the x-axis is taken as the (1) vertical axis (11) horizontal axis

A) A only B) B only
C) A & B only D) All of them

117. Sum of the magnitudes of y-components of two vectors which are to be added is equal to the

A) x- component of the resultant B) y-component of the resultant
C) Both of them D) None of them

118. The cross product between two vectors will be maximum if the two vectors are

A) Perpendicular to each other B) Parallel to each other
C) Both of them D) None of them

119. The perpendicular distance from the line of action of force to the pivot point is called

A) Couple arm B) Angular distance
C) Moment arm D) None of them

120. A body is said to be in a state of complete equilibrium if

A) Its translational acceleration is zero B) Its rotational acceleration is zero
C) Its rotational as well as translational acceleration is zero D) Its angular momentum is zero

121. A change in position of a body from its initial position to its final position is known is known as

A) Relative motion B) Displacement
C) distance D) Acceleration

122 Velocity is a

A) Scalar quantity B) Vector quantity
C) Constant quantity D) None of them

123. The velocity of a body at any instant of its motion is known as

A) Average velocity B) Instantaneous velocity
C) Uniform velocity D) None of them

124. The velocity-time graph of a car is a straight line which rises the same height for equal intervals, of time, if it moves with

A) Zero velocity B) Constant velocity
C) Zero acceleration D) Constant acceleration

125. A frame of reference stationed on Earth is approximately an example of

A) Non- inertial frame B) Inertial frame
C) Accelerating frame D) None of them

126. The time of flight of a projectile motion equal to

A) Half of the time to reach maximum height B) Twice the time to reach maximum height
C) One fourth of time to reach maximum height D) Time to reach maximum height

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127. The work done, one a pail of water when a person holding the pail by the force F is moving forward, will be
A) Positive B) Negative
C) Zero D) None of them

128. If the angle θ between the force and displacement is greater than 90, then the work done will be
A) Positive B) Negative
C) zero D) Maximum

129. If work is done at the rate of 1000 joules per second, then the power of machine is
A) One watt B) One kilowatt
C) Half - watt D) One megawatt

130. According to the work-energy principle, work done on a body is always
A) Less than the change in its K. E B) Greater than the change in its K. E
C) Equals to the change in its K. E D) None of them

131. We can obtain bio-gas by rotting of bio-mass in a closed tank called
A) Tanker B) Boiler
C) Container D) Digester

132. A layer of a rock holding water that allows water to percolate through it with pressure is
A) Aquifer B) Deaquifer
C) Both of these D) None of these

13 The direction associated with the angular displacement is
A) Along the radius B) Perpendicular to radius
C) Along the axis of rotation D) All of them

134. Which of the following quantity has direction along the axis of rotation
A) Angular displacement B) Angular velocity
C) Angular acceleration D) All of them

135. The three angular equations hold true in the case when
A) There is no fixed axis of rotation B) There is a axis of rotation
C) There is no axis of rotation D) All of them

136. The force which is needed to move the body in circular path is known as
A) Centrifugal force B) Centripetal force
C) Gravitational force D) None of them

137. The moment of inertia depends upon
A) Mass of the object B) Square of the radius
C) Both of them D) None of them

138. Who says that gravity follow an inverse square law (except in strong gravitational fields)?
A) Einstein B) Newton
C) Plank D) Maxwell

139. Einstein's theory was hailed as
A) Natural triumph B) Scientific triumph
C) Both of them D) None of them

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140. A change in position of a body from its initial position to its final position is known is known as

A) Relative motion
B) Displacement
C) distance
D) Acceleration

CHEMISTRY:

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

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141. Spodumene is the mineral of

(a) Lithium (b) Sodium (c) Potassium (d) None

142. Indicate the most viscous liquids the following.

(a) H_2O (b) CH_3OH (c) $CH_3CH_2OCH_2CH_3$ (d) CH_3OCH_3

143. 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) $NH_4^+ \rightarrow N_2$

144. Which is not the mineral of Silicon

(a) Analcite
(b) Asbestos
(c) Dolomite
(d) Zircon

145. 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

146. 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

147. 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

148. 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

149. Very small and very large quantities are expressed in terms of

(a) Significant igures (b) Logarithm (c) None of these (d) Exponential notation

150. 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

151. Electrolytes which ionize to a very small extent in a solution are called

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(a) Neutral (b) Weak electrolytes (c) Strong electolytes (d) None of the above

152. 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

153. 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

154. The substance through which electricity cannot flow in molten state or solution form is called,

(a) Molecularity (b) Conductor (c) Electrolyte (d) Non electrolyte

155. 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

156. The natural source of CO is

A) Bacterial action B) Volcanoes
C) Automobiles D) Oxidation of CH_4 in the atmosphere

157. The major source of CO in the atmosphere is

A) Combustion of fossil fuel B) Motor vehicles (fuel burning)
C) Both a & b D) None

158. Which of the following statement about the organic chemical is wrong

A) At high conc. they cause nausea, & blindness B) At low conc. These compounds become tasteful
C) They also related with carcinogenic D) It also effects the central nervous system

159. The process of coagulation can remove the suspended solids in the raw water more than

A) 70% B) 80%
C) 90% D) None of above

160. Ground water becomes hard when it contains the

A) Calcium B) Sodium
C) Sulphur D) None

161. Organic compounds resemble to those of inorganic compounds having same

A) Ionic properties B) Carbon forming long chain or rings
C) Chemical forces D) Isomerism

162. Rates of organic reactions are

A) Fast B) Very fast
C) Slow D) Non-reactive

163. Hybridization explain the--- of orbitals

A) Shapes B) Type of Bonding

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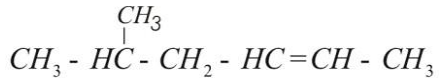
C) Both a & b
D) None of above

164. The rotation of two carbon atoms joined by double bond would happened only if
A) Pi bond is broken
B) Sigma bond is broken
C) Both bonds are broken
D) None of above

165. Isomerism is only possible when the compound contains more than
A) Two carbon atoms
B) Three carbon atoms
C) Four carbon atoms
D) Five carbon atoms

166. Write the name of following compound 
A) 5 – methyle – 2 – hexene
B) 2- methylehexene
C) 4 – ethyle – 2 – methylehexene
D) 3 – ethyle – 3 – methyl hexene

167. Kolb's method has limited synthetic applications due to
A) Expensive catalysis
B) Slow reaction
C) Number of side products produced
D) Salts used are very expensive

168. The unreactivity of alkanes is based upon
A) Inertness of sigma-bond
B) Non-polarity of the bonds
C) Both a & b
D) None of above

169. Complete combustion of alkane yields
A) $CO_2 + H_2O$
B) CO_2 + heat
C) $CO + H_2O$ heat
D) $CO_2 + H_2O$ + heat

170. The major reaction occurring in the engines of automobiles is
A) Oxidation
B) Reduction
C) Combustion
D) Decomposition

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.

171. 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

172. Either the surfing at Maui is_____, or I went there on an off day.
A. Consistent
B. Thrilling

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C. Invigorating
D. Overrated
E. Scenic

173. 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

174. We need both ornament and implement in our society; we need the artist and the_____.
A. beautician
B. Writer
C. politician
D. Artisan
E. Model

175 When such_____remarks are circulated, we can only blame and despise those who produce them.
A. adulatory
B. Chance
C. reprehensible
D. redundant

176. The stereotypical image of masculinity assumes that weeping is_____" unmanly" behaviour, and not simply a human reaction which may be_____by either sex.
A. Inexplicably. repented
B. Excessively…discerned
C. Essentially…defined
D. Inherently…adopted

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.

177. FRAGILE : BREAK ::
(a) vital : destroy
(b) hostile : invite
(c) vivid : grow
(d) flexible : bend
(e) fertile : smell

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

179. INNING : BASEBALL ::
(a) round : boxing
(b) puck : hockey
(c) touchdown : football
(d) serve : tennis
(e) outing : hiking

180. DEGREE : TEMPERATURE ::
(a) ounce : weight

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(b) fathom : volume
(c) mass : energy
(d) time : length
(e) light : heat

181. 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.

182. OMNIPOTENT:
(A) Weak (B) Strong (C) Sour (D) Safe

183. NERVOUS:
(A) Courageous (B) Puzzle (C) Bold (D) Trainee

184. NOTORIOUS:
(A) Renowned (B) Invincible (C) Inactive (D) Fashionable

185. NOCTURNAL:
(A) Patrolling (B) Daily (C) Harsh (D) Marauding

186. 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

187. 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

188. The phrase 'ought to' in the first sentence suggests
A) Liking
B) Likelihood
C) Compulsion
D) Preference

189. The words 'this or that' in the second sentence refer to
A) Hobbies
B) Topics
C) Daily work
D) None of the above

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190. Select the choice closest in meaning to the word 'hardly' in the last sentence

A) Rarely
B) Never
C) Infrequently
D) Scarcely

INTELLIGENCE:

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

191. Look at this series: 2, 1, (1/2), (1/4), ... What number should come next?

A. (1/3)
B. (1/8)
C. (2/8)
D. (1/16)

192. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?

A. 7
B. 10
C. 12
D. 13

193. Look at this series: 36, 34, 30, 28, 24, ... What number should come next?

A. 20
B. 22
C. 23
D. 26

194. Look at this series: 31, 29, 24, 22, and 17, What number should come next?

A. 15
B. 14
C. 13
D. 12

195. A man is facing west. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 270 degree in the anticlockwise direction. Find which direction he is facing now ?

A. South-West
B. West
C. South
D. East-South

196 A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now ?

A. North
B. East

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C. West D South .

197. The earth consists of three main zones; hydrosphere; lithosphere and
A) Atmosphere B) Ionosphere C) Photosphere D) None of these

198. What is called flow of a body of water, air, of heat, moving in a definite direction?
A) Mantel B) Current C) Core D) Crater

199. By which name Lahore is famous?
A) City of Market B) City of people C) City of Colleges D) None of these

200. In a certain case GIGANTIC is written as GIGTANCI. How is MIRACLES written in that code?
A. MIRLCAES B. MIRLACSE
C. RIMCALSE D. RIMLCAES

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