ENGINEING ADMISSION SAMPLE TEST 02

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

1. 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

2. 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

3. 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

4. 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

5. 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

6. 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

7. 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

8. 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

9. 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

10. 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

11.
(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

12. According to the second law of motion, acceleration is proportional to:
(a) Fores (b) Time (c) Mass (d) Distance

14. 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

15. 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

16. 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

17. Which one of the following properties is not found in both sound and light
A) Interference B) Diffraction C) Polarization D) Reflection

18. 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) $T = v\,\omega$

19. 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

20. Π radians =
(a) 90^0 (b) 180^0 (c) 60^0 (d) 30^0

21. In racing car moving along a circular path the friction at the wheels and banking of roads provides the
(a) Centripetal Force (b) Centripetal Acceleration (c) Centre of Mass (d) Centrifugal Force

22. 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

23. 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

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

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

26. 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

27. 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

28. 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

29. 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

30. The air between the lens and the plate in Newton's ring experiment is replaced by water. The ring pattern
(a) Remains the same (b) Expands (c) Contracts (d) None of the above

CHEMISTRY:

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

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31. Spodumene is the mineral of
(a) Lithium (b) Sodium (c) Potassium (d) None

32. Indicate the most viscous liquids the following.
(a) H_2O (b) CH_3OH (c) $CH_3CH_2OCH_2CH_3$ (d) CH_3OCH_3

33. 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) $NH_4^+ \rightarrow N_2$

34. Which is not the mineral of Silicon
(a) Analcite (b) Asbestos
(c) Dolomite (d) Zircon

35. 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

36. 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

37. 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

38. 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

39. Very small and very large quantities are expressed in terms of
(a) Significant igures (b) Logarithm (c) None of these (d) Exponential notation

40. 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

41. Electrolytes which ionize to a very small extent in a solution are called
(a) Neutral (b) Weak electrolytes (c) Strong electolytes (d) None of the above

42. 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

43. 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

44. The substance through which electricity cannot flow in molten state or solution form is called,
(a) Molecularity (b) Conductor (c) Electrolyte (d) Non electrolyte

45. 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

46. 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

47. The theory which states that a molecule is a collection of positive nuclei surrounded by electrons distributed in bonding and antibonding molecular obrital of different energies is called,
(a) None of the following (b) V.B theory (c) VSEPR theory (d) M.O. theory

48. When a weak electrolyte is dissolved in water only a small amount o molecules is
(a) Remains constant (b) Ionized (c) Deionized (d) Increases

49. The mixture whose constitutes are 50% hydrogen, 35% methane and 8% carbon mono-oxide is
(a) Coal gas (b) Coultar (c) Coke (d) None of the above

50. 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

51. 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

52. The process in which solvent particles surround solute particles is called,

(a) Hydration (b) Hydrolysis (c) Saturation (d) Salvation

53. 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

54. Equilibrium involving reactants and products in more than one phase is called

(a) Heterogeneous (b) Hemogenouss (c) Dynamic (d) None of the above

55. Two double bonds are present between the atoms of the molecule

(a) NH_3 (b) H_2O (c) CO_2 (d) H_2SO_4

56. 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

57. The process in which the electrolytes and molecules are split up into positively and negatively charge ions is called,

(a) Electrolysis (b) Ionization (c) Deionization (d) None of the above

58. 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

59. Symbolic representation of a molecule of substance is called:

(a) Symbol (b) Formula (c) Equation (d) None of the above

60. A substance in which all atoms are chemically identical having same atomic number is called:

(a) Element (b) Compound (c) Matter (d) Mixture

MATHEMATICS:

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

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61. 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

62. 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

63. $k \times \hat{i} = \ldots\ldots\ldots$
(a) j (b) $-j$ (c) k (d) $-k$

64. 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

65. 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

66. A paratrooper jumping out of an airplane is an example of
(a) Equilibrium (b) Static Equilibrium (c) Dynamic Equilibrium (d) None

67. 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

68. 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

69. 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

70. 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

71. 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

72. Simple harmonic motion is mathematically represented as
(a) $.a \alpha - x$ (b) $.a \alpha x$ (c) $V \alpha - x$ (d) $F \alpha - x$

73. The frequency of second pendulum is
(a) 1 hertz (b) 2 hertz (c) 0.5 hertz (d) None of the above

74. 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

75. 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

76. 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

77. 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

78. 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

79. 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) $F^{/} = \frac{F}{\varepsilon_0 \varepsilon_r}$

80. 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

81. 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) $F_m = q\, v^4 \times B$

82. 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

83. 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

84. 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

85. Why should a resistance be introduced in a circuit in series deliberately?
(a) To increase current and decrease Voltage (b) To decrease current and voltage (c) To make current zero (d) To make voltage zero

86. 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

87. 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) $P = \frac{I}{V^2}$

88. Lyman series lies in

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

89. 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

90. 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) $R_n = \frac{he^2}{mv_n^2}$

ENGLISH :

Choose the correct Sentence which give the same meaning of the original sentence:

91. Seeing as how he disliked the camp site. I suggested that we repack and move.

A) Seeing as how he disliked the camp site. I
B) Seeing as how he had disliked the camp site, I
C) Seeing as he had disliked the camp site, I
D) Seeing as how he disliked the camp site. I
E) Since he disliked the camp site, I

92. She plowed through the vast heap of letters of complaint without respite, which pleased the supervisor no end.

A) , which pleased the supervisor no end
B) , to the great satisfaction of her supervisor
C) ,t o the great satisfaction of her supervisor
D) . which pleased the supervisor no end
E) , to the supervisor's complete satisfaction

93. Between you and I, there was no other books on the shelf.

A) Between you and I, there was
B) Between you and me, there was
C) Between us, there could not have been
D) Between you and me, there were
E) Between you and I there was

94. We should like to know whether he is one of the men, who are responsible for this confusion!

A) Whether he is one of the men, who are
B) Whether he is one of the men that has been
C) If he is one of the men which are
D) Whether he is one of the men who are
E) If he is one of the men whose

95. In our city they are very much concerned over the increase in the number of street crimes.

A) In our city they are very much concerned
B) In our city the people are very much concerned
C) In our city people are very concerned
D) In our city they are much concerned
E) In our city, they are very concerned

96. Here come the groups of astronauts who are to led in man's exploration of outer space. No error
A B C D

97. The committee are unable to agree onwhom they should elect to replace Jensen and her. No error
A B C D E

98. Anyone is interested, it has been quite some time since Henry and I had visited the farm. No error
A B C D E

99. Our old apartment is so large in size that we may have give away much of our
A B C
furniture when we move. No error
D E

100. Conception of the work to be done differs so greatly with mine that I am completely perplexed. No error
A B C D E

END OF TEST

For Answer Key: www.entrytest.com/testprep/answers.aspx