UNIVERSITY OF ENGNEERING AND TECHNOLOGY, LAHORE

ENTRANCE TEST – 2012
For F.Sc and Non-F.Sc. Students
Time Allowed: 100 Minutes
Total MCQs: 100

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Instructions:
    (i)   Read the instruction on the MCQ Response From carefully.
    (ii)   Choose the single best answer for each question.
    (iii) Candidates are strictly prohibited from giving any identification mark except Roll No. & Signature in the specific columns only.

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COMPULSARY QUESTION FOR IDENTIFICATION

Q-ID What is the color of your question Paper?
    A)   BLUE   C)   RED
    B)   GREEN   D)   YELLOW

Ans: Color of your question Paper is green. Fill the corresponding to letter 'B' Against 'ID' in your MCQ circle response form (Exactly as shown in the Diagram).

	A	B	C	D
-ID	○	●	○	○
-1	○	○	○	○
-2	○	○	○	○
-3	○	○	○	○

PHYSICS

1. **The dimensions of force are:**
A) MLT   B) MLT^{-2}
C) MLT   D) MLT

2. **If an object is moving with constant speed then its distance time graph will be straight line:**
A) Along time-axis   B) Parallel to time-exis
C) Along distance axis   D) Inclined to time-axis

3. **High energy photons emitted due to transition of inner shell electrons in heavy atoms are called:**
A) Characteristics x-rays   B) Heavy photons
C) Continuous x-rays   D) K photons

4. **When metal surface is exposed to light it may emit electrons. The maximum energy of these electrons depends are:**
A) Intensity of light   B) Wavelength of light
C) Area of metal surface   D) All of the above

5. **The truth table shown in figure is implemented by:**

A	B	Output
0	0	1
0	1	1
1	0	1
1	1	0

A) NOR gate   B) OR gate
C) AND gate   D) NAND gate

6. **The operational amplifier can be used as:**
A) An inverting amplifier   B) A comparator
C) A non –inverting amplifier   D) All of the above

7. **Material in which there is a very narrow gap between the conduction and valence energy bands are called:**
A) Semiconductor   B) Insulator
C) Conductor   D) Superconductor

8. **In frequency modulation, the amplitude of the carrier waves remains the same but its frequency changes is proportion to:**
A) The amplitude of the modulating signal B) The sing of the modulating signal
C) The frequency of the modulating signal D) All of the above

9. **In circuit C, L = 5mH and C=10pF are connected in series. In circuit Y, L= 10mH and C= pF are connected in parallel. The resonant frequencies f_x and f_y of circuits C and Y respectively, are related by:**
A) $F_x = 50 f_y$ B) $f_x = 0.02 f_y$
C) $f_x = f_y$ D) Connote be determined

10. **An A.C generator produces alternating voltage with peak value of 220 V. the mass value of the alternating voltage is:**
A) $200\sqrt{2}$ volts   B) $200^2\sqrt{2}$ volts

C) 200 $\sqrt{2}$ volts
D) $200^2 / \sqrt{2}$ volts

11. **A transformer has 50 turns on the input side and 3200 turns on the output side. If the mass value of the input voltage and current are 120 va and 3V, then the output power is about:**
A) 480 watts
B) 360 watts
C) 1440 watts
D) 50 watts

12. **A ammeter can be made from a galvanometer by adding a:**
A) Low resistance in parallel
B) Low resistance in series
C) High resistance in parallel
D) High resistance in series

13. **A point charge q produces an absolute potential of 5v at a distance of 1 meter. What will be the absolute potential due to q at a distance of 3 meter?**
A) 15 V
B) 5/9 V
C) 3/5 V
D) 5/3 V

14. **The voltage current graph of a non-ohmic device is:**
A) Usually a straight line
B) Not a straight line
C) Sometimes straight line
D) Always a straight line

15. **An air filled parallel plate capacitor has capacitance of 10 uF. A slab of dielectric of relative permittivity 100 is introduced between thee plate. The capacitance now:**
A) 1000 uF
B) The same
C) 0.1 uF
D) None of the above

16. **Boyle's law states that for ideal gases pressure is inversely proportional to volume, if the temperature is:**
A) Constant
B) Decreasing
C) Increasing
D) All of the above

17. **The efficiency of Carnot engine:**
A) Depends upo0n the sum of temperatures of the hot and cold reservoirs
B) Depends upon the nature of the working substance
C) Can be 100 % if the cold reservoir is at 0 K.
D) None of the above

18. **In a multiple graded index fiber, periphery as compared to the central core has a;**
A) Higher refractive index
B) Same refractive index
C) Lower refractive index
D) Similar refractive index

19. **When sunlight passes through a Polaroid, it becomes:**
A) Un-polarized
B) Polarized
C) Partially polarized
D) Longitudinal

20. **A train travelling at 9 Km/h sounds a whistle of frequency hz. The frequency of the sound heard by the train's driver will be:**
A) 1000 Hz
B) Less than 1000 Hz
C) Greater than 100 Hz
D) Exactly 1079.4 Hz

21. **A tuning fork P producers 12 beats per second with another tuning fork Q. if the frequency of Q is 200 Hz, the frequency of P is:**
A) 212 Hz
B) 2400 Hz
C) 188 Hz
D) Either A or B

22. **The following is an example of longitudinal waves:**
A) Light emitted by a tube light
B) Conduction band
C) Sound emitted by a train
D) None of the above

23. **In a body exiting simple harmonic motion:**
A) The acceleration is constant
B) Maximum displacement from the mean position is constant
C) The velocity is constant
D) The acceleration at the extreme position is zero

24. **Water runs through a pipe with variable cross sectional area. The pressure in the narrow sections of the pipe is:**
A) Lower than in the wider section
B) Same as that in the wider sections
C) Higher than in the wider sections
D) None of the above

25. **The drag force on a sphere of radius r mo0veing slowly with speed v through a viscous fluid is proportional to:**
A) 1/r and 1/v
B) 1/r and v
C) r and 1/v
D) r and v

26. **A satellite communication system can be set up by correctly positioning:**
A) 3 stationary satellites
B)120 geostationary satellites
C) 200 earth stations
D) 3 geo-stationary satellites

27. **The orbital speed of a satellite going round he earth increases if the its distance from the earth is:**
A) Increased
B) Increased or decreased
C) Decreases
D) Unchanged

28. **The SI unit of power is Watt. It is defined as:**
   A) One kilo-joule of work done in one second
   B) One joule of work dne in one hour.
   C) One kilo-joule of work done in one hour
   D) None of the above

29. **A collision in which the kinetic energy of he system is NOT conserved is called:**
   A) Inelastic Collision   B) Non-conserved collision
   C) Elastic Collision   D) Non-conservative collision

30. **According to Newton's first law of motion, the mass of an object is a quantitative measure of its.**
   A) Weight   B) Inertia
   C) Velocity   D) Force

MATHEMATICS

31. **If two sets have no common elements then they are called:**
A) Overlapping sets
B) Disjoint sets
C) Complementary sets
D) Equivalent sets

32. $\begin{bmatrix} 9 & 0 \\ 0 & 9 \end{bmatrix}$ **is a _____ 9 matrix:**
A) Scalar
B) Null
C) Diagonal
D) Identity

33. **If roots of the equation $ax^2 + b = 0$ are real and unequal then:**
A) $a = 0$
B) $ab > 0$
C) $ab = 0$
D) $b > 0$

34. **A square matrix is called _____ matrix if all the elements below the diagonal are 0:**
A) Upper triangle
B) Symmetric
C) Skew information
D) Diagonal

35. **A dice is thrown. What is the probability to get an odd number?**
A) 1
B) 1/2
C) 1/6
D) $\dfrac{2}{\sqrt{3}}$

36. **The period of 5 tan $x/3$ is:**
A) 2π
B) π
C) 3π
D) 4π

37. **A triangle has _____ important elements:**
A) 3
B) 4
C) 5
D) 6

38. **The domain of y = $\sin^{-1} x$ is:**
A) $\left[\dfrac{-\pi}{2}, \dfrac{\pi}{2} \right]$
B) $[-1, 1]$
C) $[-\pi, \pi]$
D) None of these

39. **The directrix of the parabola $x^2 = -By$ is:**
A) $x + 2 = 0$
B) $y + 2 = 0$
C) $y - 2 = 0$
D) $x - 2 = 0$

40. **The midpoint of the line segment joining the focl is the _____ of ellipse:**
A) Vertex
B) Directrix
C) Major axis
D) Centre

41. **(0 , 0) is not in the solution of inequality :**
A) $7x + 2y > 3$
B) $3x - 5y > -7$
C) $7x + 5y \le 7$
D) $x - 3y \ge 0$

42. **The period of $3\sin 5x$?**
A) 2π
B) $\dfrac{5\pi}{2}$
C) 5π
D) $\dfrac{2\pi}{5}$

43. $\cos 15° - \sin 15° = $ **?**
A) $\sqrt{2}$
B) $-\sqrt{2}$
C) $\dfrac{-1}{\sqrt{2}}$
D) $\dfrac{1}{\sqrt{2}}$

44. **Eccentricity is less than 1 for:**
A) Circle
B) Hyperbola
C) Ellipse
D) Parabola

45. **Radius of in circle is equal to:**
A) $\dfrac{\Delta}{s}$
B) $\dfrac{s}{\Delta}$
C) $\dfrac{s}{2\Delta}$
D) $\dfrac{2\Delta}{s}$

46. **Equation of line through A(-5, 5) having slop 7 is:**
A) $7x - y + 47 = 0$
B) $7x + y + 47 = 0$
C) $7x + y - 47 = 0$
D) $x + 7y + 47 = 0$

47. **The maximum no. of roots of a quadratic equation are:**
A) 12
B) 2
C) 3
D) 1

48. The integral $\int_{2}^{2} (\ell ny + y^2 + m\sin y)\, dy$ equal:

A) 15   B) 20

C) 0   D) 25

49. Function $f(x) = \dfrac{\sin x}{x}$ has maximum value of:

A) 1 as $x \to 0$ B) 1 as $x \to \pi$

C) Infinity at $x = 0$ D) $x = \pi$

50. Are under the curve $f(x) = x^2 + x + 1$ between $x = 3$ is:

A) $\dfrac{44}{3}$ B) $\dfrac{22}{3}$

C) $\dfrac{44}{5}$ D) $\dfrac{22}{5}$

51. Function $f(x) = 3x - 7$ is defined for $x \in \Re$ and $g(x) = 12(x - 2)^{-1}$ is also defined $x \in \Re$ except at $x = 2$. The value (s) of for which $fg(x) = x$ is (are):

A) +10   B) -5

C) +10 or -5   D) -10 or +5

52. The set of values of x for which $(x - 6)^2 > x$ are:

A) $x < 4$ or $x > 9$ B) $x > 9$ or $x >$

C) $x < 4$ or $x > -9$ D) $x < -9$ or $x > -4$

53. The function $y = 3x - x3$ for $x \geq 0$ has maximum value at:

A) (1, 2)   B) (2, 1)

C) (3, 4)   D) (2, 2)

54. Solve $2^{x-3} / 8^{-x} = 32 / 4^{x/2}$:

A) 5/8   B) -5/8

C) 8/5   D) -8/5

55. AOB is sector of a circle whose center is O and radius 5cm. if he perimeter of the sector is 14cm then the value of the angle AOB (in radius is):

A) 0.6 radians   B) 0.8 radians

C) 0.5 radians   D) 1.0 radians

56. The slope (gradient) of the curve $y = x^3 - 3x^2 - 9x + 11$ is 15 when x coordinates are:

A) +2, -2   B) 3, 4

C) -2, +4   D) +5, -5

57. If $\sqrt{a + b\sqrt{3}} = 13(4 + \sqrt{13})^{-1}$ then the value of integer a and b are:

A) -19 and +8   B) +19 and -8

C) -19 and -8   D) +19 and +8

58. The derivative of a function e^{5-2x} is:

A) $2e^{5-2x}$ B) e^{2x}

C) e^5 D) e^{5-2x}

59. The solution of $125^x = 25(5^y)$ and $7^x = -49^y = 1$ is:

A) (2/5, 4/5)   B) (4/5, 2/5)

C) (2/5, -4/5)   D) (-2/5, 4/5)

60. The solution of $\log_4 y + \log_2 y = 9$ is:

A) 6   B) 40

C) 50   D) 64

CHEMISTRY

61. **The larger molecules which are formed by the monomers are called as:**
A) Micromolecules
B) Macromolecules
C) Both A and B
D) None

62. **Which of the following has lightest vapor pressure at 20ºC?**
A) Chloroform
B) Glycerol
C) Mercury
D) Isopentane

63. **The shape of Py atomic orbital is:**
A) Spherical
B) Dumb-bell with collar
C) Sausage shaped
D) Demb-bell

64. **Which of the following is not colligative property :**
A) Osmotic presure
B) Elevation of boiling point
C) Freezing point
D) All of these

65. **The element with highest ionization energy:**
A) Boron
B) Nitrogen
C) Oxygen
D) Carbon

66. **The fertilizer which cannot be used in paddy rice field:**
A) NH_3
B) $(NH_2)_2CO_2$
C) NH_4NO_3
D) $(NH_4)_2HP_4$

67. **The reagent which can be used to distinguish between ethane and ethene:**
A) Bromine water
B) Bayer's reagent
C) Tollen's reagent
D) Both A and B

68. **The alcohol which is a dihydric but not a glycol:**
A) Ethane-1,2- diol
B) Butane-1,3- diol
C) Butane-2,3- diol
D) Propane-1,2- diol

69. **Rancidity of butter is due to the smell of:**
A) Methanoic acid
B) Formaldehyde
C) Butanoic acid
D) Ethanoic acid

70. **Collagen and albumin are:**
A) Derived
B) Polysaccharides
C) Simple proteins
D) Polyamides

71. **Tyrosine was first isolated from:**
A) Cheese
B) Chocolate
C) Milk
D) Sugar

72. **Which of the following is not an alkyl halide:**
A) Cl-CH- Cl
B) CH - Cl
C) CH_3-CH_2-Br
D) CH_3-CH_2-OH

73. **The oxidation of …………… always gives carboxylic acid:**
A) Aldehydes
B) Phenols
C) Esters
D) Propanoic acids

74. **Alkanes or parafins are made up of:**
A) Carbon, hydrogen and oxygen only
B) Carbon, hydrogen and nitrogen only
C) Carbon, hydrogen and
D) Carbon and hydrogen only

75. **Phenol can be prepared by:**
A) C_6H_5Cl
B) C_6H_5
C) $C_6H_5SO_3Na$
D) Both A and C

76. **Platinum gauze catalyzes the oxidation of ammonia to nitric oxide. This an example of:**
A) Homogenous
B) Heterotropic catalysis
C) Both
D) None

77. **In an alkaline battery the anode, the cathode and electrolyte and respectively:**
A) Mangnase dioxide, zinc, sodium hydroxide
B) Zinc, magnase dioxide, sodium hydroxide
C) Zinc, magnaese dioxide, potassium hydroxide
D) Manganese dioxide zinc, potassium hydroxide

78. **18 g of glucose is dissolved in 1kg of pure water. The solution will have:**
A) Lower vapour pressure
B) Lower boiling point
C) Higher freezing point.
D) Both A and C

79. **We can completely separate the components of a liquid mixture by frictional:**
A) Non volatile
B) Zeotropic
C) Both A and C
D) None of the above

80. **When a small amount of an acid or a base is added to a buffer solution, its pH value will change:**
A) Drastically
B) Not at all
C) Rapidly
D) A little

81. **The strength of a strong acid depends on:**
A) Its dissociation
B) Moinarity of the acidic solution
C) Percentage ionization of the acid
D) All of the above

82. **The equilibrium of a reversible reaction is disturbed by**
   A) The addition of a catalyst
   B) Shaking the reaction container
   C) Recovering a product of the reaction
   D) All of the above

83. **In an endothermic reaction, the enthalpy or heat contents of the products is:**
   A) Greater than that of the reactants
   B) The same as that of the reactants
   C) Less than that of the reactants
   D) Usually greater than that of the reactants

84. **When one mole of nitrogen combines with one mole of oxygen to yield nitrogen oxide, the temperature of the system falls below initial temperature. This is an example of:**
   A) Exothermic reaction
   B) Spontaneous reaction
   C) Enthalpic reaction
   D) Endothermic reaction

85. **The covalent bond length between two atoms can be experimentally determined by:**
   A) A microscope
   B) A covalent meter
   C) Electron diffraction
   D) All of the above

86. **The ionization energy of an atom depends upon the:**
   A) Shielding effect of inner electrons
   B) Atomic mass
   C) Number of ions in the atom
   D) None of the above

87. **All the d-orbitals have:**
   A) Spherical shape
   B) Dumb bell shape
   C) Four lobe shape
   D) None of the above

88. **Which of the following substances do NOT have a hexagonal structure:**
   A) Zinc
   B) Graphite
   C) Gold
   D) Zinc oxide

89. **Which of the following is a characteristic of plasma:**
   A) lons are present
   B) It is not macroscopically neutral
   C) It does not respond to electric and magnetic fields
   D) None of the above

90. **The atomic weight of magnesium is twice that of carbon. if 1g of Magnesium contains x atoms, the number of atoms in 4g of carbon is:**
   A) 8x
   B) 4x
   C) 1x
   D) 2x

ENGLISH

Spot the Error in the following segment. Some segments of each sentence are underlined. Your task is to identify that underlined segments of the sentence which contains the mistake that needs to be corrected. Fill the bubble corresponding to that letter under the segment in the MCQ response form.

91. Diabetesare anillness caused by to much sugar in the blood:
   A)   B)   C)   D)

92. An inflation rate of only 2 percent make a big difference:
   A)   B)   C)   D)

93. The sun , it is one of the million stars, is our only source of heat and light:
   A)   B)   B)   D)

94. What have you donewith all the moneywhichI gave you last week:
        A)   B)   C)   D)

95. The latest film about that there is a alloy of cont has been banned.
   A)   B)   C)   D)

In each of the following questions four alternate tenses are given. Choose the correct one a bubble/ circle corresponding to that letter in the response form.

96. A) A fifty rupees he gave me where soon spent.
   B) A fifty rupee he gave me was soon spent.
   C) The fifty rupees he gave me was soon spent.
   D) The fifty rupees he gave me was soon spent.

97. A) Some of our staff in the USA is being asked to move back home.
   B) Some of our staff in the USA is being asked to me back home.
   C) Some of our staff in the USA are being asked to move back home.
   D) Some of our staff in the USA being asked to move back home.

98. A) The majority of primary school teachers are women.
   B) The majority of primary school teachers is women.
   C) A majority of school teacher are women.
   D) A majority of primary school teacher is women

99. A) The Pakistan of the Quaid is struggling for its survival.
   B) Pakistan of the Quaid is struggling for its survival.
   C) The Pakistan of Quaid is struggling for its survival.
   D) Pakistan of Quaid is struggling for its survival.

100. A) She has several off spring.
    B) She has several off spring.
    C) She has many off spring.
    D) She has several many off spring.