

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, LAHORE

ENTRANCE TEST – 2011
For F.Sc and Non-F.Sc. Students
Time Allowed: 100 Minutes
Total MCQs: 100

Instructions:

- (i) Read the instruction on the MCQ Response Form 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.

COMPULSARY QUESTION FOR IDENTIFICATION

Q-ID What is the color of your question Paper?

- A) BLUE
- B) GREEN
- C) RED
- D) YELLOW

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

	A	B	C	D
-ID	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
-1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

circle response form

PHYSICS

1. _____ N force is required to fracture the naked skull.
A) 5 B) 500
C) 50 D) 5000
2. A typical rocket uses 10,000 kgs⁻³ of fuel and ejects the burnt gases at a speed of:
A) 2000 ms⁻¹ B) 4000 ms⁻¹
C) 3000 ms⁻¹ D) 5000 ms⁻¹
3. When a rocket is projected at an angle of 30° with initial speed 980 ms⁻¹, the time is:
A) 10 Sec B) 15 sec
C) 100 sec D) 520 sec
4. All the food that we eat is one day in about the same energy as _____ litter of milk is:
A) $\frac{1}{2}$ B) 1
C) $\frac{2}{3}$ D) 2
5. Solar energy _____ as light passes through atmosphere.
A) Increases B) Constant
C) Decreases D) None
6. Geyser is an interesting phenomenon of _____ energy.
A) Tidal B) Solar
C) Geothermal D) Electrical
7. The flight of an aeroplane is due to _____ on the upper of wings.
A) Increased pressure
B) Decreases velocity
C) Increased velocity and decreased pressure
D) None
8. What is the average translation K.E of molecules in gas at temperature 27°C?
A) 6.2×10^{-12} B) 1.28×410^{-10}
C) 2.34×10^{-10} D) None
9. The maximum percentage efficiency of engine operating between 227°C and 20°C is:
A) 56 % B) 50 %
C) 44 % D) 40 %
10. Centripetal acceleration is a _____ acceleration.
A) Instantaneous B) 4000 ms⁻¹
C) Uniform D) Both A and B
11. The minimum time period for a satellite revolving around the earth is approximately.
A) 54 min B) 52 min
C) 72 min D) 33 min
12. The maximum velocity that can be achieved by a body performing SHM is equal to:
A) Wx^2 B) W^2/x
C) $wx\frac{2}{0}$ D) None

13. The speed of sound in hydrogen is _____ times its speed in oxygen.
 A) Two
 B) Four
 C) Three
 D) Five
14. The near point for human eye is:
 A) 20cm
 B) 30 cm
 C) 25 cm
 D) Infinite
15. Waves transport energy without transporting.
 A) Power
 B) Matter
 C) Work
 D) None
16. The _____ of the light is inversely proportional to the refractive index.
 A) Wavelength
 B) Speed
 C) Frequency
 D) Energy
17. Energy acquired by a charged particle of $2e$ moving through a potential difference of $5v$ is:
 A) 7 ev
 B) 10J
 C) 1.6×10^{-28}
 D) None
18. The device which converts the chemical energy into electrical energy is called:
 A) Thermocouple
 B) Solar cell
 C) Chemical cell
 D) Thermistor
19. If the color code on a carbon resistor from left to right are white, violet and red, then the resistance will be:
 A) 2700 ohm
 B) 97 ohm
 C) 970 ohm
 D) None
20. In step up transform current across secondary:
 A) Increases
 B) Constant
 C) Decreases
 D) None
21. new particles may be discovered with the help of:
 A) Wilsons cloud chamber
 B) Solid state detector
 C) Geiger Muller counter
 D) Geiger counter and fast detector
22. Half-life of radium is 1590 years. In how many years shall the ea4th loss all its radium due to radioactive decay?
 A) 1590×10^6 year
 B) 1590×10^{12} year
 C) 1590×10^{24} year
 D) Never
23. When two identical waves are superposed , the velocity of the resultant wave:
 A) Decreases
 B) Remain unchanged
 C) Increases
 D) Becomes zero
24. The resistance of a conductor depends upon:
 A) Thermal conductivity
 B) Specific heat
 C) Internal energies
 D) Temperature difference
25. The resistance of a conductor depends upon:
 A) Nature of conductor only
 B) Potential difference between its ends
 C) Magnitude of the current flowing through it
 D) Nature, dimension and physical state of conductor
26. When the frequency of oscillator is slightly greater than that of resistance amplitude will be.
 A) Rapidly increases
 B) Rapidly decreases
 C) Remains constant
 D) None
27. Semi-conductor behaves as _____ at ok.
 A) Insulator
 B) Pure conductor
 C) Superconductor
 D) None
28. The value of permittivity of free space is 8.85×10^{-12} :
 A) $C^3N^{-2}m^{-2}$
 B) $C^2N^{-1}m^{-3}$
 C) NC^3m^{-3}
 D) All
29. Which material would provide best shielding for Coulombs' force?
 A) Mica
 B) Glass
 C) Benzene
 D) Paper
30. In alternating current, inductor behaves like.
 A) Battery
 B) Conductor
 C) Resistor
 D) None

MATHEMATICS

31. $\sin \theta + \sin^2 \left(\frac{\pi}{2} - \theta \right) = ?$
 A) 0
 B) 1
 C) $\cos^2 \theta$
 D) $2\sin^2 \theta$

32. The multiplicative inverse of (1, 5) is:

A) $\left(\frac{1}{\sqrt{26}}, \frac{-5}{\sqrt{26}}\right)$

B) $\left(\frac{-1}{\sqrt{26}}, \frac{5}{\sqrt{26}}\right)$

C) $\left(\frac{-1}{\sqrt{26}}, \frac{-5}{\sqrt{26}}\right)$

D) $\left(\frac{1}{\sqrt{26}}, \frac{5}{\sqrt{26}}\right)$

33. The real part of $(\sqrt{3} + i)^2$ is:

A) 2

B) -2

C) $2\sqrt{31}$

D) None

34. $q \rightarrow p$ is only false when:

A) q true and p false

B) q false and p true

C) Both false or both true

D) None

35. If $A = \begin{bmatrix} 1 & 1 \\ 0 & -1 \end{bmatrix}$ then $A^{-1} = ?$

A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

B) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

C) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$

D) $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$

36. Solution set of $4^{1+x} + 4^{2x} = 10$ is:

A) $\left[\frac{1}{2}, \frac{-1}{2}\right]$

B) $\left(\frac{2}{3}, \frac{1}{2}\right)$

C) $\left(\frac{-1}{2}, \frac{3}{2}\right)$

D) None of these

37. If first term of A.P 6 and 5th term is 14 then 20th term is:

A) 44

B) 46

C) 43

D) 14

38. $\left(\frac{-1 + \sqrt{35}}{2}\right)^2 = ?$

A) $\left(\frac{-2 + \sqrt{35}}{2}\right)$

B) $\left(\frac{-1 - \sqrt{35}}{2}\right)$

C) $\left(\frac{18 - \sqrt{35}}{2}\right)$

D) $\left(\frac{1 + \sqrt{35}}{2}\right)$

39. $\frac{xa}{(a-1)(x+1)} = ?$

A) $\frac{2}{x-1} + \frac{2}{x-1}$

B) $\frac{4}{x-1} + \frac{5}{x-1}$

C) $\frac{5}{x-1} + \frac{1}{x-1}$

D) None

40. The 5th term of $1, \frac{3}{2}, \frac{5}{4}, \frac{7}{8}, \dots$ is:

A) $\frac{13}{12}$

B) $\frac{15}{120}$

C) $\frac{11}{24}$

D) $\frac{9}{16}$

41. The vulgar fraction of $1.24242424242424 \dots$ is:

A) $\frac{124}{89}$

B) $\frac{123}{99}$

C) $\frac{123}{89}$

D) $\frac{122}{99}$

42. The sum of the $1 \times 3 + 5 \times 3 + 9 \times 3 + 13 \times 3 + \dots + 3(2n+1)$ is:

A) $3n(n-2)$

B) $3(n+2)$

C) $3n(2n-1)$

D) $3n(n+1)$

43. $\sin \frac{\theta}{2} = ?$
 A) $\frac{\sqrt{1 - \cos \theta}}{2}$ B) $\frac{1 - \sqrt{\cos \theta}}{2}$
 C) $\frac{\sqrt{1 + \cos \theta}}{2}$ D) None
44. The principle value of $\sin^{-1}\left(\frac{\sin 2\pi}{3}\right)$:
 A) $-\frac{2\pi}{3}$ B) $\frac{2\pi}{3}$
 C) $\frac{\pi}{3}$ D) $\frac{5\pi}{3}$
45. The area of the triangle with sides 12, 15 and 9.
 A) 35 B) 48
 C) 54 D) 58
46. The lines represented by $ax^2 + 2hxy + by^2 = 0$ are parallel if:
 A) $a + b = 0$ B) $h^2 - ab = 0$
 C) $a - b = 0$ D) $h^2 + ab = 0$
47. If $G(x) = -\sqrt{25x^2}$, then $\lim_{x \rightarrow \infty} \frac{G(x) - G(1)}{x - 1}$:
 A) $\frac{1}{\sqrt{24}}$ B) $\frac{1}{5}$
 C) $-\sqrt{24}$ D) None of these
48. If $\cos x = 1$ then $x = ?$
 A) $n\pi, n \in \mathbb{Z}$ B) $n\pi, n \in \mathbb{E}$
 C) $n\pi, n \in \mathbb{O}$ D) All
49. The equation of straight line through (-5, 4) having slope 7
 A) $7x + 21 = Y$ B) $Y = 7x + 31$
 C) $Y + 4 = x + 5$ D) $Y - 7x = -31$
50. Which of the following points lie on circle $\frac{(x-4)^2}{25} + \frac{(y-3)^2}{25} = 1$
 A) [0, 0] B) [0, 6]
 C) (9, 3) D) All
51. If $x = 3t^2$ and $y = 6t$ then $\frac{dy}{dx} =$
 A) $18t^2$ B) $2t$
 C) t D) $\frac{1}{t}$
52. $\frac{d}{dx}(\sin \lambda^{-1} \cdot x) = ?$
 A) $\frac{2}{\sqrt{(1+x)^2}}$ B) $\frac{2}{\sqrt{(1-x)^2}}$
 C) $\frac{2}{\sqrt{x^2+1}}$ D) $\frac{2}{\sqrt{1+x^2}}$
53. In case of $\sqrt{4-x^2}$, the suitable substitution is $x = ?$
 A) $2 \sin \theta$ B) $2 \cos \theta$
 C) $2 \tan \theta$ D) $2 \sec \theta$
54. $\int x e^{-x} dx = ?$
 A) $-e^{-x}(x+1) + c$ B) $e^{-x}(x-1) + c$
 C) $-e^{-x} x e^{-x} + e$ D) Both b and c
55. The center of ellipse $\frac{(x-2)^2}{25} + \frac{(y+3)^2}{16} = 1$
 A) (2, -3) B) (2, 3)
 C) (-2, -3) D) (-2, 3)
56. The point of intersection of $2x - 3y = 8$ and $3x + 3y = -1$ is:
 A) (1, 2) B) (2, 3)
 C) (-1, 3) D) None

57. If $A = 7i2j - k$ and $B = 4i + 2j + 3k$ then find a unit vector perpendicular to plane containing A and B .

A) $\frac{1}{\sqrt{245}}(7i + 40j) - 6k$

B) $\frac{1}{\sqrt{185}}(-5i + 40j + 7k)$

C) $\frac{-1}{\sqrt{125}}(7i + 10j) - 6k$

D) $\frac{1}{\sqrt{185}}(7i + 6j + 10k)$

58. When $x^4 + 2x^2 + kx^2 + 3$ is divided by $x - 2$, the remainder is 1. Then the value of k will be

A) 13

B) -8.5

C) 12.4

D) 6

59. $\frac{a^{12} + b^n}{4^{-1}b^{n-5}}$ is GM. Between a and b if n :-

A) 1

B) 0

C) 0.5

D) -0.5

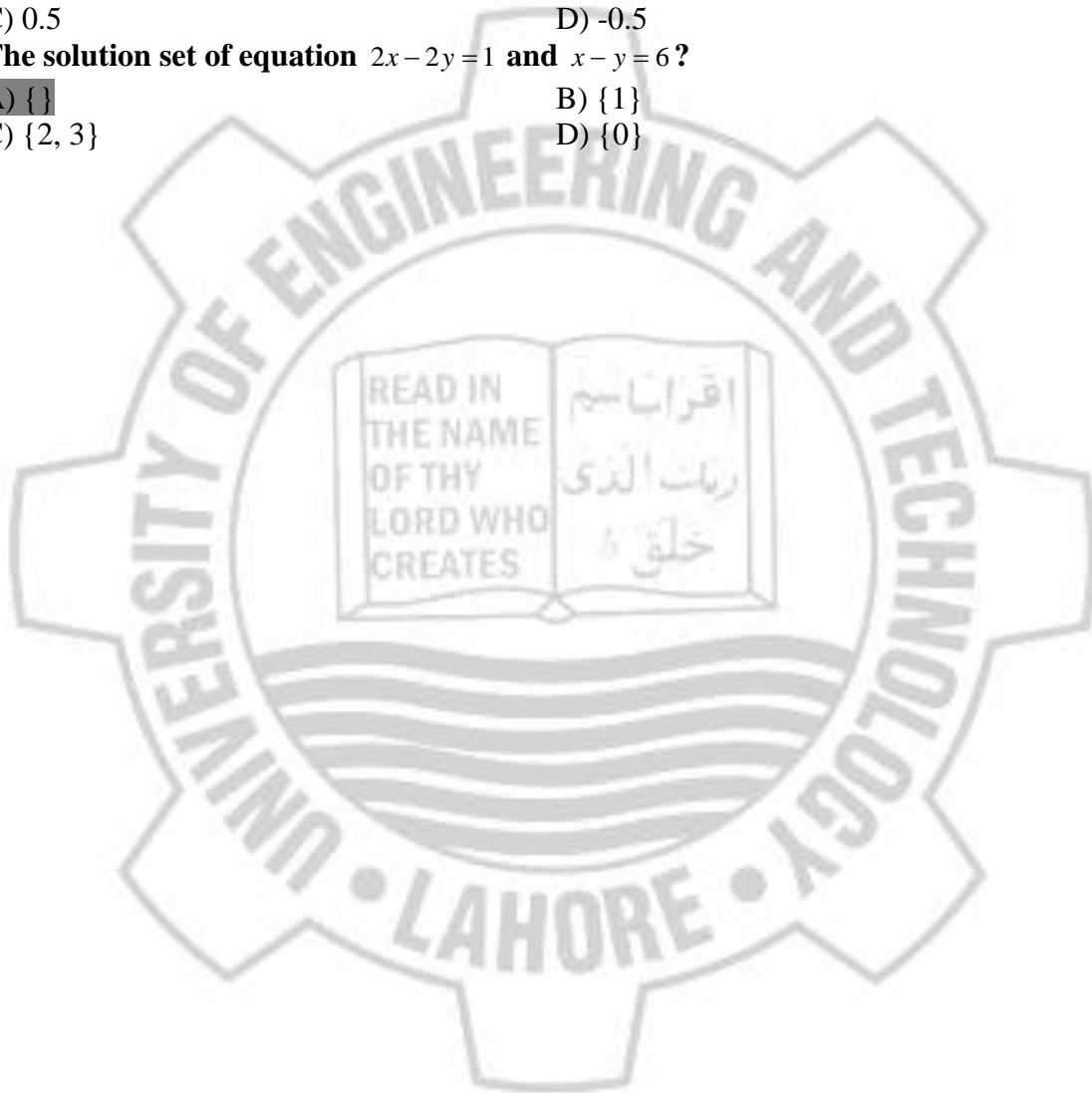
60. The solution set of equation $2x - 2y = 1$ and $x - y = 6$?

A) {}

B) {1}

C) {2, 3}

D) {0}



CHEMISTRY

61. The state of hybridization in $[\text{Cu}(\text{NH}_4)_2]^{3+}$
 A) sp^3 B) dsp^2
 C) ds^3p^2 D) sp^2
62. Which of the following reaction of HNO_3 is true?
 A) $3\text{Cu} + 8\text{HNO}_3 \longrightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
 B) $3\text{Cu} + 8\text{HNO}_3 \longrightarrow 3\text{Cu} + \text{NO} + 3\text{H}_2\text{O}$
 C) $3\text{Cu} + 8\text{HNO}_3 \longrightarrow 3\text{CuNO}_3 + 2\text{NO} + 4\text{H}_2\text{O}$
 D) $\text{Cu} + 4\text{HNO}_3 \longrightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
63. Acetylene under pressure over an organo-nickel catalyst at 70°C converts into:
 A) Benzene B) Benzoic acid
 C) Toluene D) Phenol
64. The mode of hybridization in alkane is _____ and three hybrid orbital is formed.
 A) Sp^2 B) sp
 C) Sp^3 D) sp^4
65. Which of the following agent oxidized the aldehydes to carboxylic acid?
 A) Alcohol B) Tollen's reagent
 C) Grignard reagent D) Both A and C
66. The IUPAC name of formic acid is _____ acid.
 A) Methanoic acid B) Propanoic acid
 C) Ethanoic acid D) Pentanoic acid
67. Iodine gives deep blue color with:
 A) Amyloectane B) Polysaccharides
 C) Amylase D) Oligosaccharides
68. The part of fourdrinier table apparatus which discharges a uniform jet of pulp suspension is:
 A) Head box B) Press section
 C) Fourdrinier table D) Flow
69. The gas used to predict earthquake:
 A) Helium B) Neon
 C) Radon D) Krypton
70. The enzyme which is used in the treatment of blood cancer in children is:
 A) Asparaginase B) Alkaline phosphate
 C) Thrombin D) LHD-1
71. Which of the following test in the treatment of blood cancer in children is:
 A) Sodium nitroxide B) Benedict solution
 C) Fehling solution D) Teller solution
72. Sodium reacts with alkyl halides in ether to form alkanes, the reaction is known as:
 A) Wurtz synthesis B) Grignard reagent
 C) Both D) None
73. When the solute has gone in the ether layer then it is separated by _____ the ether.
 A) Boiling B) Evaporating
 C) Heating D) Mixing with H_2O
74. Oxidation state of manganese in KMnO_4 is:
 A) +6 B) +8
 C) +7 D) +9
75. Which of the following forms ideal solution?
 A) Ethyl iodide and propyl-benzene B) Water and alcohol
 C) Benzene and ether D) Water and hydrochloric acid
76. Determine the mole fraction of $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ in 1.8 Kg of water
 A) 1.3 B) 0.77
 C) 0.92 D) 0.67
77. Density of methane at 0.20 525 atm and 127°C is:
 A) 2.5 B) 0.1
 C) 0.4 D) none
78. Which of the following gas has maximum value of e/w .
 A) H_2 B) O_2
 C) N_2 D) CO_2
79. The phenomena in which the substance exists in more than one crystalline form is called:
 A) Polymorphism B) Allotropy
 C) Isomorphism D) Habit of crystal
80. The crystalline form of AgNO_3 are:
 A) Rhomboidal and Orthorhombic B) Trigonal and Orthorhombic
 C) Rhombohedral and Trigonal D) None
81. Which of the following is used in the sterilizing the medical equipment.
 A) Plasma B) Chlorine

- C) Liquid crystal
D) None
82. Photosynthesis is a _____ order chemical reaction.
A) 0th
B) 2nd
C) 1st
D) third
83. Black background is obtained in the:
A) Atomic emission spectrum
B) Atomic absorption spectrum
C) Continuous spectrum
D) Discontinuous spectrum
84. The wavelength of electron moving in Bohr's first orbit is similar to that of:
A) X-rays
B) α - rays
C) Cathode rays
D) γ - rays
85. Which process is used to separate solute from solution?
A) Solvent extraction
B) Sublimation
C) Filtration
D) Crystallization
86. Calorie is equivalent to:
A) 0.4184 J
B) 4.181 J
C) 41.84 J
D) 4184 J
87. Which of the following is not a state function?
A) Internal energy
B) Pressure
C) Volume
D) Work
88. The molarity of 20% w/w solution of ca in water is:
A) 4.32
B) 2.03
C) 6.25
D) 9.75
89. The solubility of _____ is decreased by increasing temperature:
A) KO
B) $K_2Cr_2O_7$
C) $Pb(NO_3)_2$
D) Na_2SO_4
90. The unit of rate constant is the same as that of the rate of reaction in _____ order reaction:
A) 1st
B) 2nd
C) 3rd
D) 4th

Spot the error in the following sentences.

91. When chips remembered things like this, he often felt that he will writethem
 A B C D
down and Make a book of them.
92. They were daughters of a hardworking washermen who went about from house to House
 A B C D
93. What is meant by birth rate and death rate and how do they affect the population?
 A B C D
94. They did not guess how closely he had kept in touch with across the road.
 A B C D
95. A) She drenched of herself with perfume.
 B) She drenched herself by perfume.
 C) She drenched herself into perfume.
 D) She drenched herself in perfume.
96. A) A day later he reached his first glimpse of Lahore
 B) A day later he took his first glimpse of Lahore.
 C) A day later he found his first glimpse of Lahore
 D) A day later he caught his first glimpse of Lahore.
97. A) This has a bad impact on economy.
 B) This has a bad impact to the economy.
 C) This has a bad impact for the economy.
 D) This has a bad impact over the economy.
98. A) He saved him from dying of thirst
 B) He saved him for dying of thirst
 C) He saved im form dying from thirst
 D) He saved him for dying from thirst
99. A) They try to pacify him for kindness and affection
 B) They try to pacify him in kindness and affection.
 C) They try to pacify him by kindness and affection.
 D) They try to pacify him with kindness and affection.
100. A) Why did you disagree with me?
 B) Why did you disagree to me?
 C) Why did you disagree on me?
 D) Why did you disagree by me?