UNIVERSITY OF ENGNEERING AND TECHNOLOGY, LAHORE

ENTRANCE TEST – 2015
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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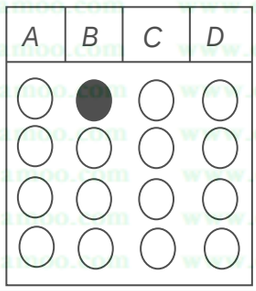
COMPULSARY QUESTION FOR IDENTIFICATION

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 (Exactly as shown in the Diagram).



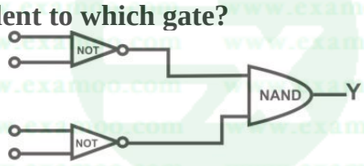
circle response form

PHYSICS

1. A themistor with negative temperature co-efficient is placed in a furnace. When temperature of furnace increases the resistance?

A) Decreases B) Increases
C) Remains Unchanged D) None of above

2. The following system is equivalent to which gate?



A) NOR B) NAND
C) OR D) XOR

3. Reception of particular radio station selected by tuning the tuning knob of radio tuning the tuning knob changes the?

A) Inductance B) Capacitance
C) Impedance D) All

4. AC voltage is passed through single diode rectifier, the output of the bridge rectifier is?

A)Full wave DC voltage B)Double frequency AC voltage
C) Half wave DC voltage D) None

5. In amplitude modulation, the amplitude of carrier wave changes proportion to:

A) The amplitude of the modulating signal B) The frequency of the modulating signal
C) The sign of the modulating signal D) All of the above

6. As the water falls from the tap, the cross sectional area should decrease according to?

A) Bernoulli Equation B) Venturi Relation
C) Equation of continuity D) None

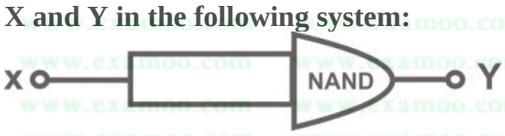
7. Density of oxygen is about 16 times that of hydrogen. Therefore if speed of hydrogen is "x" then speed of oxygen:

A) Greater than x B) The same
C) Less than x D) Depending upon the pressure of gasses

8. A police motor cycle running at 140 km/hr. the apparent frequency heard by the car driver is?

A) Greater than 10 kHz B) The siren will not be heard
C) 10 kHz D) Less than 10 kHz

9. The relationship between X and Y in the following system:



A) $y = x$ B) $y' = x$
C) $y = x'$ D) Both B and C

10. You have 20 inductors available each of 15H. You need an inductor of 1H in a circuit. You achieve it by combination?

A) 15 inductors in parallel
B) 15 inductor in parallel
C) 20 inductor in series
D) 20 inductor in parallel

11. In circuit *X*, *L* = 100 mH and *C* = μF are attached in series. In circuit *Y*, *L* = 100 mH and *C* =10μF are attached in parallel. The resonating frequency f_x and f_y are related as?

A) $f_x = f_y$
B) $f_x = 0.01\ f_y$
C) $f_x = 10\ f_y$
D) Cannot be determined

12. A transformer has 100 turns on the input side 500 turns on the output side. If rms value of input voltage are 220V and 5A respectively. The output power is:

A) 500 watt
B)1100 watt
C) 1440 watt
D) 50 watt

13. When you drop a ball it accelerate at 9.8m/sec^2. If you instead throw it downward then it accelerates immediately after leaving your hand assuming no air resistance:

A) 9.8
B) Less than 9.8
C) More than 9.8
D) Depending throwing speed

14. A truck of mass 5000 Kg are both travelling at a speed at a speed of 36 Km/hr. Assume the time required to stop the truck in 10 sec is *X* Newton and the force required to stop the car in 10 sec us *Y* Newton. The difference *X* and *Y* is equal to?

A) 4 Mega Newton
B) 14.4 Kilo Newton
C) 4 Kilo Newton
D) 14.4 Mega Newton

15. A tight wire is clamped at two points 2m apart. It is plucked near one end, what are the three longest wavelengths produced on the vibrating wire?

A) 2m, 1m, 0.67m
B) 4m, 2m, 1.33m
C) 4m, 2m, 1m
D) 1m, 0.5m, 0.33m

16. When using optical fiber in data transmission, the angle of incidence O_i of the light siyrce ib the glass fiber should be?

A) Less than critical angle
B) Less than angle of refraction
C) Greater than critical angle
D) Greater than angle of refraction

17. Consider two spheres A and B if radii r_a and r_b both concentric with point charge Q. If $r_a > r_b$ then the total flux passing normally through the sphere A and B is related as?

A) Flux through A is greater
B) Flux through both sphere is equal
C) Flux through A may be greater or less than Q depending on radius
D) Flux through sphere B is greater

18. A mixture of two gases at constant temperature contains molecules if two kinds. The first kind of mass m^1 and rms speed c^1 and the second molecule has mass m^2 and rms speed c^2. The ratio $\frac{c_1}{c_2}$ is:

A) $\frac{m_1}{m_2}$
B) $\frac{m_2}{m_1}$
C) $\left[\frac{m_1}{m_2}\right]^{\frac{1}{2}}$
D) None of these

19. A particle is moving in a straight line with velocity v = (4 - t^2) where t us the time from fixed point then acceleration of the particle after 4 sec is:

A) -8m/sec^2
B) -8m/sec
C) -4m/sec
D) -4m/sec^2

20. The maximum value if drag forcer on an object is 9.8 N. What will be the value if its mass?

A) 9.8 kg
B)4kg
C) 2kg
D) 1 kg

21. Which of the following should remain constant if no torque acts upon a bofdy:

A) Linear constant
B) Angular momentum
C) Momentum
D) Charge

22. Rocket propulsion is according to law of conservation of:

A) Energy
B) Mass
C) Momentum
D) Charge

23. The time period of pendulum at centre of earth:

A) Zero
B) Maximum
C) Infinite
D) Minimum

24. The wavelength of wave is 5000 A^o. This wave will be in region:

A) U. V
B)Radio
C) Visible
D) Infrared

25. Which of the following friction is self-adjusting force:

A) Static
B) Limiting
C) Dynamic
D) Sliding

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26. A body absorbs heat at constant temperature, then this phenomenon will be:

A) Melting point
B)Boiling point
C) Evaporation
D) Both A and B

27. Speed of sound in vacuum is:

A) 332m sec^{-1}
B)340m sec^{-1}
C) 0m sec^{-1}
D) 350m sec^{-1}

28. Most ideal gas at room temperature is:

A) CO_2
B) NH_3
C) SO_2
D) H_2

29. When spectrum of hydrogen atom is taken in magnetic field, some new lines are created. This is called:

A) Resonance effect
B) Zeeman's effect
C) Stark effect
D) Electric effect

30. Ball pen functions on the principle of:

A)Viscosity
B) Boyle's law
C) Gravitational force
D) Surface tension

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31. **Find all the angles between 0 and 360 degree such that $\sin x = \frac{-1}{2}$?**

A) 210,330
B) 30,150
C) 30,210
D) 330,150

32. **On simplifying the equation $\frac{1+\cos x}{1+\sec x}$, the result is?**

A) $\sin x$
B) $\cos x$
C) $\csc x$
D) $\sec x$

33. **Binomial expansion of an expression A gives $1-8x+24x^2-32x^3-16x^4$. The expression A is given by?**

A) $(1-2x)^4$
B) $(1-4x)^4$
C) $(1+2x)^4$
D) $(1+4x)^4$

34. **Differentiating the equation $(x-1)(x+2)^2$ with respect to x gives?**

A) $2x(x+2)$
B) $2(x-1)(x+2)$
C) $2(x-1)$
D) $3x(x+2)$

35. $2^{2x}-10+2^{x+1}+16=0$ **gives value of x?**

A) (3, 4)
B) (8, 4)
C) (1, 3)
D) (5, 9)

36. **The area enclosed by a curve $y=\cos x$ and x axis from $x=0$ to $x=\frac{\pi}{2}$ is the same as?**

A) $\int_{\frac{\pi}{2}}^{\pi} \sin x dx$
B) $\int_{\pi}^{\frac{\pi}{2}} \sin x dx$
C) $-\int_{\pi}^{\frac{\pi}{2}} \cos x dx$
D) All of these

37. **A complex number $(1+i\sqrt{3})$ can be expresses as?**

A) $2\cos 30 + i \sin 30$
B) $\cos 60 + i \sin 60$
C) $2(\cos 60 + i \sin 60)$
D) $\sin 30 + i \cos 30$

38. **If matrix $\begin{bmatrix} 0 & 0 \\ 0 & p \end{bmatrix}$ then the value of the expression $A + A^{-1} = KI$ is?**

A) 1, 2
B) -1, 2
C) Cannot valid for any value
D) 0, 1

39. **Given that $y = x^2\sqrt{2x-1}$ then $\frac{dy}{dx} = \frac{x(2x+2)}{\sqrt{2x-1}}$. Then result of $\int_0^5 \frac{x(2x+2)}{\sqrt{2x-1}}$ are:**

A) 78
B) 75
C) 33
D) 36

40. **Which one the valid root of $3x^3-8x^2-5x+6$?**

A) 4
B) 3
C) 8
D) Both A and B

41. **Find the set of value of m for which expression $2x^2-mx+2=0$ have real roots?**

A) $m \le -4$
B) $-4 \le m \le 4$
C) $m \ge 4$
D) None

42. **There are 50 students in the class put of these 38 used desktop computers, 16 out of these used laptop. It is noited that five students neither used laptop or computer. The student having both laptop and computer is A. based on the information find out the greatest value of A :**

A) 36
B) 4
C) 16
D) 30

43. **There are 50 students in the class put of these 38 used desktop computers, 16 out of these used laptop. It is noited that five students neither used laptop or computer. The student having both laptop and computer is A. based on the information find out the greatest value of A :**

A) 16
B) 8
C) 4
D) 0

44. **The slop of the line with inclination 120º is:**

A) 0
B) 1
C) $-\sqrt{3}$
D) Underlined

45. **A line segment whose end points lie on a circle is called the:**

A) Arc of the circle
B) Centre of circle
C) Chord of circle
D) Radius of circle

46. $2x+3<0$ **is:**

A) Inequality
B) Equality

C) Identity
D) None

47. The projection of $-2i+3j+7k$ is:

A) $13/5$
B) $13/4$
C) $\frac{13}{\sqrt{5}}$
D) 13

48. The trigonometric equation contains_____ trigonometric functions:

A) At least one
B) At most one
C) Exactly one
D) None

49. The minimum value of the functions $f(x)=x^2-x-2$ is:

A) $-9/2$
B) $-9/4$
C) -1
D) 0

50. $\int \frac{2x-1}{x^2-x-1}dx =$ _____:

A) In $(2x-1)+c$
B) $(2x-1)+c$
C) 0
D) In $(x^2-x+1)+c$

51. The period of 5 tan $x/3$ is:

A) π
B) 2π
C) 3π
D) 4π

52. The triangle has _____ important elements:

A) 3
B) 4
C) 5
D) 6

53. Find the area between the x axis and the curve $y=4x-x^2$:

A) $\frac{32}{3}$
B) $\frac{27}{4}$
C) $\frac{14}{3}$
D) $\frac{45}{5}$

54. Eccentricity is less than 1 for:

A) Circle
B) Ellipse
C) Hyperbola
D) Parabola

55. If $f(x)=\sin x$ slope of normal to tangent of functions at $x=0$ will be:

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

56. If resistivity of substance will be 10^4. What conductor will be called?

A) Semi-conductor
B) Super conductor
C) Conductor
D) Insulator

57. Which of the following points is a point of intersection of the curve $x^2+y^2=8$ and the straight line $2x-y=2$?

A) -2, 2
B) 2, 2
C) 0.4, 2.8
D) 0.1

58. The straight lines are given as:

$M: y=3x+1$ and $N: y=\frac{-1}{3}x+2$. Which of the following statement is correct?

A) M and N are parallel
B) M and N are perpendicular
C) M and N not intersect
D) M and N intersect at multiple points

59. Let the real valued function F and G be defined by $2f(x)=2x+1$ and $2g(x)=x^2-x$.

A) $2x^2-x+1$
B) $2x^2-2x+2$
C) $2x^2-2x+2$
D) x^2-2x+1

60. The y intercept and the slope of the line expressed by $3x-2y+6=0$?

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

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61. **In microwave oven, thhe wave energy produced is absorbed by certain polar molecule, in which molecule out of the given molecules would absorb maximum energy?**

A) SiO_2 B) C_2H_5OH

C) NaCl D) None of these

62. **Which of the following statement regarding CATHODE RAY is correct?**

A) Cathode rays can ionize gas

B) Cathode ray can possess momentum

C) Cathode rays cannot cause chemical changes

D) All of these

63. **Ionization energy does not increase?**

A) With small atomic radius of atom B) Deposition of $PbSO_4$ at cathode

C) In increases in number of electronic shell D) None of these

64. **Which of the following molecule does not exhibit tetrahedral arrangement of electron pairs?**

A) H_2O B) $SiCl_2$

C) NH_3 D) None of these

65. **The change in enthalpy of reaction NaOH+HCl $\longrightarrow$ NaCl + H_2O is:**

A) Heat of reaction B) Heat of neutralization

C) Heat of fusion D) Heat of combustion

66. **In which reaction hydrogen behaves as oxidizing agent?**

A) $H_2 + Cl_2 \longrightarrow 2HCl$ B) $C_2H_2CHO + H_2 \longrightarrow 2HCl$

C) $2Na + H_2 \longrightarrow 2NaH$ D) $C_2H + H_2 \longrightarrow C_2H_6$

67. **How many atoms of carbon are there in 18g of $C_2H_{12}O_6$?**

A) 6.02×10^{23} B) 3.6×10^{23}

C) 6.02×10^{22} D) 3.6×10^{22}

68. **In an experiment 0.10g of gas found to occupy 83.1cm^3 measured at standard pressure. The relative molecular mass is:**

A) $\frac{(1.10)(8.31)(27)}{(1.0\times10^{3})(83.3)}$ B) $\frac{Kr\ (A)(B)}{Kr[C][D]}$

C) $\frac{(0.10)(8.31)(27)}{(1.010^{3}10^{23})}$ D) $\frac{(1.10)(8.31)(300)}{(1.0\times10^{3})(83.1^{-6})}$

69. **Which of the following consist of atoms and molecules and are held together by van der wall's forces?**

A) H_2O B) CU

C) CO_2 D) MgO

70. **Which molecule, out of given molecules will not form hydrogen bond with another of the given molecules?**

A) NH_3 B) CH_3OH

C) $CH_2 - NH_3$ D) CH_2CHO

71. **The strongest reducing agent among the following is:**

A) Cl^- B) K^+

C) Ar D) Ca^{+2}

72. **Which of the following hydride is ionic in nature?**

A) NaH B) NH_4

C) CH_4 D) H_2S

73. **Which of the following equation represents reaction when Lithium nitrate is heated?**

A) $2LiNO_3 \rightarrow Li_2O$ B) $4LiNO_3 \rightarrow 4\ LiO_2 + 4NO_2 + O_2$

C) $4\ LINO_3 \rightarrow 2Li_2O + 4NO_2$ D) $4LINO_3 \rightarrow 2\ Li_2O + 4NO_2 + O_2$

74. **Which compound of the following is used in breathing equipment's as it absorbs CO_2 and gives out O_2 at the same time?**

A) Na_2O_2 B) KO_2

C) MgO D) BaO

75. **The colour of $[Ti(H_2O)_6]^{3+}$**

A) Yellow B) Violet

C) Green D) Orange

76. **The equation of the rate of forward reaction is?**

A) Kf B) Kr (A)(B)

C) $Kf[C][D]$ D) $\frac{Kr\ (A)(B)}{Kr[C][D]}$

77. **The function of salt bridge in galvanic cell is?**

A) To prevent accumulation of uions in tow half

B) To block flow of ions between tow half

C) To add salt ions in two half
D) None of these

78. In the reaction $6NaOH + 3Cl \rightarrow 5\ NaCl + H_2O + NaClO_3$, Chlorine is?
A) Oxidized
B) Both
C) Reduced
D) None

79. Tetrahedral lead added to petrol act as?
A) Auto catalyst
B) Inhibitor
C) Activator
D) All of these

80. The statement regarding effect of catalyst on a reversible reaction is?
A) To increase equilibrium constant for forward reaction
B) To increase yield of product in equilibrium
C) To increase the rate constant for both reactions
D) To increase the rate of only forward reaction.

81. In the reaction between chlorine and U.V the propagation step is?
A) $CH_4 + Cl^{\bullet} \rightarrow CH_3^{\bullet} + HCl$
B) $CH_4 + Cl^{\bullet} \rightarrow CH_3Cl + H^{\bullet}$
C) $CH_4 + Cl^{\bullet} \rightarrow CH_3Cl$
D) $H^{\bullet} + Cl_2 \rightarrow Cl + HCl$

82. How many isomers are possible for $C_2H_2Cl_2$?
A) 1
B) 2
C) 3
D) 4

83. The reaction $CH_3Br + OH^- \rightarrow CH_3OH + Br$ – is best described by?
A) Electrophili substitution
B) Nucleophilic substitution bimolecular
C) Nucleopilic substitution unimolecular
D) Addition reaction

84. The common reagent used in oxidation of alcohols is?
A) $K_2Cr_2O_7$
B) H_2SO_4
C) $K_2CrO_4 + H2SO_4$
D) $K_2Cr_2O_7 + H_2SO_4$

85. Complete reduction of acids to alkanes is carried out with?
A) Hydrogen iodide
B) Red phosphorous
C) Lithium ammonium hydride
D) Both B and C

86. Which of the following oxide is unlikely to be dissolved in sodium hydroxide?
A) Al_2O_3
B) MgO
C) SiO_2
D) NO_2

87. Which statement about oxygen and sulphur is not correct?
A) Both have same outer electronic configuration
B) Both are typical non metals
C) Both help in combustion
D) Both exhibit allotropic forms

88. Which of the following is used as dehydrating agent for drying gases?
A) Phosphoric acid
B) Carboxylic acid
C) Sulphuric acid
D) Nitric acid

89. Which of the following product is obtained when chlorine bubbled less hot concentrate aqueous sodium hydroxide?
A) NaCl, Na $ClO_3$and H_2O
B) NaClO and H_2O
C) NaCl, NaClO and H_2O
D) $NaclO_3$ and H_2O

90. A crystalline solid that is used for preparation of yellow oil color due to its solubility is?
A) K_2MnO_4
B) $PbCrO_4$
C) $Al_3(SO_4)_3$
D) None

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91. The passage primarily discusses the pipeline's:

A)Operating costs B)Employees
C) Consumers D)Construction

92. The word "it" inthe line 4 refers to:

A) Pipeline B) Ocean
C) State D) Villiage

93. According to the passage, 84 million gallons of oil can travel through the pipeline each:

A) Day B)Week
C) Month D) Year

94. The phrease "Resting on" in the line 13 is closet in meaning to:

A)Consisting of B) Supported by
C) Passing under D) Protected with

95. The author mentions all of the following as important in determining the piepeline's route except the:

A) Climate B)Local vegetation
C) Lay of the land D) Kind of soil and rock

96. The word "undertaken" in line 26 is closet in meaning to:

A) Removed B)Transported
C) Selected D) Attempted

97. How many companies shared the costs of contracting the pipeline?

A) 3 B) 4
C) 8 D) 12

98. The word "particular" in line 29 is closest in meaning to:

A) Peculiar B) Specific
C) Exceptional D) Equal

99. Which of the following determined what percentage of the construction costs each member of the consortium would pay?

A) How much oil field land each company owned
B) How long each company had owned land in the oil field
C) How many people worked for each company
D) How many oil wells were located on the company's land

100. Which term is used for an earth covering that always remains frozen?

A) Permafrost B) Overcrowded
C) Terrian D) Bents