

**4 Years Bachelor in Computer Science and
Information Technology (BSc. CSIT)
Entrance Examination 2075**

Full Marks: 100

Time: 2 hrs.

Attempt all questions:

Mathematics (25 × 1 = 25)

- $a/b, a, b \in \mathbb{R}$, is equal to zero if
a. $a \neq 0, b = 0$ b. $a = 0, b = 0$
c. $a = 0, b \neq 0$ d. $a \neq 0, b \neq 0$
- If $x \geq 5$ then x may be
a. -5 b. 6 c. 0 d. $[5, \infty)$
- If $|x-2| = 5$ then the value of x is
a. {5} b. {-2, 5} c. {-2, -5} d. {-3, 7}
- The range of the relation $R = \{(1, 2), (2, 3), (3, 4)\}$ is
a. {1, 2, 3} b. {1, 2, 3, 4} c. {2, 3, 4} d. $\mathbb{R}$
- If $y = a^x$ is the exponential function passing through (4, 81) then the base a is
a. 4 b. 3 c. 81 d. a
Ans: $81 = a^4$ or $3^4 = a^4$ or $a = 3$
- If $\tan^2 x = 1$ then x is
a. $n\pi \pm \pi/4$ b. $n\pi + \pi/4$
c. $n\pi - \pi/4$ d. $\pm \pi/4$
Ans: $\tan^2 x = \tan^2 \frac{\pi}{4}$ or $x = n\pi \pm \pi/4$
- $\sin(2 \sin^{-1} x) =$
a. $\sqrt{1-x^2}$ b. $2\sqrt{1-x^2}$
c. $2x\sqrt{1-x^2}$ d. $\sqrt{2x(1-x^2)}$
- The sum to infinity of the G.P.: $1/4, 1/16, 1/64, \dots$ is
a. 5 b. -5 c. $-1/5$ d. $1/3$
- The value of a so that $8a + 4, 6a - 2$ and $3a + 7$ will form an A.P. is
a. 15 b. 2 c. 9 d. 10
- The value of $\begin{vmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 10 & 12 & 14 \end{vmatrix}$ is
a. 10 b. 15 c. 0 d. 20
- If $A = \begin{pmatrix} 1 & 2 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ then AB is
a. (4) b. (14) c. (0) d. (15)
- The inverse of the matrix $\begin{bmatrix} -1 & 1 \\ 1 & -3 \end{bmatrix}$ is
a. $\begin{bmatrix} -3 & 1 \\ 1 & -1 \end{bmatrix}$ b. $\frac{1}{2} \begin{bmatrix} -3 & -1 \\ -1 & -1 \end{bmatrix}$
c. $\begin{bmatrix} -3 & -1 \\ -1 & -1 \end{bmatrix}$ d. $\frac{1}{2} \begin{bmatrix} -1 & 1 \\ 1 & -3 \end{bmatrix}$
- If ω is the cube root of unity then $(1 - \omega + \omega^2)^3 =$
a. 0 b. -8 c. 1 d. 8
- $\left| \frac{i}{1+i} \right| =$
a. $\frac{1}{2}$ b. $\sqrt{2}$ c. $\frac{1}{\sqrt{2}}$ d. 2
- The quadratic equation whose roots are 3 and 4 is
a. $x^2 - 7x - 12 = 0$ b. $x^2 - 7x + 12 = 0$
c. $x^2 + 7x + 12 = 0$ d. $x^2 + 7x - 12 = 0$
Ans: $x^2 - (3+4)x + 3 \cdot 4 = 0$ or $x^2 - 7x + 12 = 0$
- The perpendicular distance from (-1, -2) to the line $3x + 4y + 12 = 0$ is
a. -1 b. $\frac{1}{5}$ c. 2 d. 3

TUIOST Old Question For B.Sc. CSIT Entrance Preparation

17. If the lines represented by $ky^2 + (2 - k)^2xy - 3x^2 = 0$ are perpendicular if $k =$
a. -3 b. 3 c. 0 d. 1
18. The equation of the tangent to the circle $x^2 + y^2 = 5$ at $(2, 1)$ is
a. $2x + y = 5$ b. $x + y = 5$
c. $2x - y = 5$ d. $x - y = 5$
19. $\lim_{x \rightarrow \infty} \frac{x(x+1)}{x^2} =$
a. 1 b. 0 c. ∞ d. 2
20. $\lim_{x \rightarrow \pi/4} \frac{\sec^2 x - 2}{\tan x - 1} =$
a. 0 b. 1 c. 2 d. -2
21. $\frac{dy}{dx}$ of $t = x^2, y = 1/t$ is
a. 1 b. $-2/x^3$ c. $2/x^2$ d. $2/x^3$
22. The derivative of x^2 with respect to $-x^2$ is
a. 0 b. 1 c. $2x$ d. -1
23. $\int_{-1}^1 \frac{2x}{1+x^2} dx =$
a. 0 b. $\log 2$ c. 2 d. 1
24. $\int \frac{dx}{x(1+\ln x)^2} =$
a. $-\frac{1}{1+\ln x} + c$ b. $\frac{1}{1+\ln x} + c$
c. $\frac{1}{\ln x} + c$ d. $\frac{1}{x(1+\ln x)} + c$
25. Area bounded by the x-axis and the curve $y = 4x^2$ and the ordinate $x = 1$ and $x = 4$ is
a. 64 b. 84 c. 16 d. -84

Physics (25 × 1 = 25)

26. The rate of tension and surface tension has dimension of
a. $[M^0 L^0 T^0]$ b. $[L]$ c. $[L^{-1}]$ d. $[MT^{-2}]$
27. A force of 5N acts on a body of weight 10N the acceleration of body is
a. 50 m/s^2 b. 2 m/s^2
c. 5 m/s^2 d. 0.5 m/s^2
28. The depth from surface of earth at which value of acceleration due to gravity become half of on the earth is
a. R b. $\sqrt{2} R$ c. $R/2$ d. $R/4$
29. Spokes in a bicycle wheel is used to
a. increase mass b. give better mass
c. increase moment of inertia d. drive easily
30. If length of wire is doubled keeping the diameter constant, it's Young's modulus will
a. Increase b. decreases
c. remain same d. depend upon nature of matter
31. A rain drop of radius 0.3mm has terminal velocity 1m/s in air. The viscosity of air is 18×10^{-5} poise, then viscous force is
a. $1.01 \times 10^{-7} \text{ N}$ b. $1.01 \times 10^{-8} \text{ N}$
c. $1.6 \times 10^{-9} \text{ N}$ d. $1.6 \times 10^{-8} \text{ N}$
32. The material of least linear expansively is
a. aluminum b. invar
c. steel d. nickel
33. A glass vessel contains air at 27°C the temperature to which it must be heated so that one-fourth of air is expelled from it at constant pressure is
a. 47°C b. 77°C c. 102°C d. 127°C
34. The efficiency of heat engine will be 100 % if the temperature of sink is
a. 0K b. 0°C
c. equal to source d. none of above
35. A cylinder of 0.6 m long and 6 mm radius is rated at 1.5 KW. The temperature of filament if Stefan's constant is $6 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$
a. 920K b. 1125 K
c. 1025 K d. 1320 K
36. Light of wavelength 550 nm falls normally on a slit of width $22 \times 10^{-7} \text{ m}$, the angular position of second minima from central maxima will be
a. 14.5° b. 30°
c. 42° d. 62°
37. Two lens of power 5D and -7.5D are placed in contact. The equivalent focal length of combination will be
a. -40cm b. +40cm
c. -25cm d. +25cm
38. The length of microscope is 14cm and magnifying power is 25 for relaxed eye the focal length of eyepiece is 5cm than distance of object from objective is
a. 2.4 cm b. 2.1 cm
c. 1.5 cm d. 1.8cm
39. A sound wave has frequency 500 HZ and velocity 360m/s. What is the distance between 2 particles having phase difference 60°
a. 0.7 cm b. 1.2 cm
c. 70 cm d. 12 cm
40. In bringing an electron towards another electron, electrostatic potential energy of the system
a. decreased b. increases
c. remains same d. zero
41. n-equal capacitors are first connected in series and then in parallel. The ratio of maximum to minimum capacitance.
a. n^2 b. $1/n^2$ c. n d. $1/n$
42. A wire of resistance 12Ω is bent to form a circle. The effective resistance between the two points on any diameter of circle is
a. 12Ω b. 9Ω c. 6Ω d. 3Ω
43. The resistance of an ideal ammeter is
a. 0 b. low c. high d. infinite
44. A 10 eV electron is circulating in a plane at right angles to a uniform field of magnetic induction 10^{-4} T , the orbital radius of electron is
a. 18 cm b. 16 cm c. 11 cm d. 9 cm
45. Whenever the magnetic flux linked with a coil changes, there is emf induced in the circuit the emf last
a. for a short time b. for a long time
c. forever d. so long as the change in flux takes place
46. The property of retentivity of material is useful in construction of
a. permanent magnet b. electromagnet
c. transformer d. none of above
47. The color of the positive column in a gas discharge tube depends on
a. type of glass b. glass used for the tube

TUIOST Old Question For B.Sc. CSIT Entrance Preparation

- c. the gas in the tube
d. pressure inside the tube
48. The kinetic energy carried by emitted electron depends on
a. Frequency b. intensity
c. work function d. momentum
49. A nucleus reactor has a power of 16KW if the energy per fission is 200 MeV then number of fission per second is
a. 5×10^{17} b. 5×10^{16} c. 5×10^{15} d. 5×10^{14}
50. To obtain p-type silicon semiconductor, pure silicon may doped with
a. aluminum b. oxygen
c. phosphorus d. copper

English (25 × 1 = 25)

51. I promise that I won't to anyone.
a. Let up b. Let off c. Let on d. Let down
52. Henry Because of the heat and stuffy atmosphere.
a. Passed on b. Let off
c. pass off d. pass over
53. I don't want you to feel by my presence – please go out whenever you like
a. tie down b. tie in with
c. tie up d. throw out
54. Jenny is unpredictable, she always when you least expect her.
a. show off b. shut up
c. settle up d. show up
55. Don't go out. Mahesh is this evening.
a. call for b. call by
c. call on d. call up
56. Select the right synonym to the word "magniloquent".
a. dismal b. hazy
c. precept d. inflated
57. Give the opposite meaning of "vivacious".
a. gay b. offence
c. depressed d. faint
58. Give the opposite meaning of "mendacious".
a. false b. veracious
c. obstinate d. venal
59. One who remains silent while others talk continuously is
a. taciturn b. tarnish
c. blemish d. hot
60. There is no cause anxiety but you should take care your health.
a. for, in b. for, of
c. of, after d. of, in
61. I have no sympathy the musicians as I have no taste music.
a. to, for b. for, in
c. with, for d. for, to
62. The boy acted contrary my order and he had deaf ear my suggestions.
a. to, on b. for, to
c. by, to d. to, to
63. Most of street children are addicted drugs and are not anxious their future.
a. to, for b. to, to
c. for, for d. on, at
64. A poet touches a subject and turn it a poem.
a. at, to b. upon, into c. on, to d. at, in
65. An abnormal dread of being shut up in a small room:
a. zoophobia b. hydrophobia
c. claustrophobia d. pedophobia
66. Correct meaning of "magnum opus" is:
a. precious b. a great work
c. miraculous d. significant
67. The killing of one's wife is called :
a. uxoricide b. homicide c. filicide d. sorricide
68. Bees are kept in whereas fishes are kept in
a. aviary, zoo b. apiary, aquarium
c. cemetery, depot d. dispensary, garage
69. Swear like trooper
a. swear sometimes
b. speak very fast
c. use swear words frequently
d. use harsh words
70. As right as rain
a. one in best emotional and physical condition
d. secure and stable
c. quick and intelligent
d. reserved and shy
71. do/ serve time
a. a bad time b. be in prison / serve a prison sentence
c. present time service
d. pleasant time
72. Call it a night
a. go out for entertainment
b. sleep well
c. stop some activity, work etc. to go to bed
d. drink before night
73. Play it by ear
a. ignore unwelcome things
b. listen attentively
c. play an instrument from memory
d. Act according to the situation
74. Be in the red
a. important occasion
b. have no money in one's bank account, owe money to the bank
c. a sign of welcome
d. very angry
75. The indirect of: he said, 'Congratulation'.
a. He said that congratulations.
b. He congratulated me.
c. He congratulated that I Passed.
d. He said that I deserved congratulations.

Chemistry (25 × 1 = 25)

76. The mass of one atom of hydrogen is approximately
a. 1.0 g b. 0.5 g
c. 1.6×10^{-24} g d. 3.2×10^{-24} g
77. Which property of an element is always a whole number
a. Atomic weight b. equivalent weight
c. atomic volume d. atomic number
78. Azimuthal quantum number specifies
a. Size of the orbital
b. Shape of the orbital
c. Energy of orbitals

TUIOST Old Question For B.Sc. CSIT Entrance Preparation

- d. Orientation of the orbital in space
79. Which of the following statement is correct for pure water? With increase in temperature
 a. pH increases but pOH decreases
 b. pH decreases but pOH increases
 c. both pH and pOH increases
 d. both pH and pOH decreases
80. Which has the highest first ionization potential?
 a. Ne b. Mg c. Cl d. Na
81. The aqueous solution of which of the following salt will be neutral?
 a. Na_2SO_4 b. $(\text{NH}_4)_2\text{SO}_4$
 c. FeSO_4 d. ZnSO_4
82. A first order reaction is 50% completed in 50 minutes, when will 75% of the reaction be completed?
 a. 75 minutes b. 100 minutes
 c. 200 minutes d. 300 minutes
 Ans: In 50 minutes 50% of reaction completes and in next 50 minutes another half of 50%=25% gets completed so total time=100 minutes.
83. Malachite is an ore of
 a. Fe b. Zn c. Cu d. Hg
84. In the extraction of iron from hematite using blast furnace, iron oxide is reduced by
 a. Silica b. Coal c. Limestone d. CO
85. Equal volume of 1.0M HCl and 1.0 M NaOH are mixed together. The concentration of the NaCl produced would be
 a. 1.0 M b. 0.5 M c. 2.0 M d. 0.1 M
86. Catalyst used in the oxidation of SO_2 to SO_3 in the manufacture of sulfuric acid by contact process is
 a. Fe Powder b. Ni Powder c. ZnO d. V_2O_5
87. In a reaction $2A + B \rightarrow C + D$ the molecularity of the reaction is
 a. 1.0 b. 0.0 c. 2.0 d. 3.0
 The no. of molecules involved in a reaction =3
88. Heavy water is
 a. Deuterium oxide (D_2O)
 b. Water in which heavier salts are dissolved
 c. H_3O
 d. Water formed by the combination of hydrogen and heavier isotope of oxygen
89. Coating of Zn on iron for the prevention of rusting is known as
 a. Surface coating b. Electroplating
 c. Sherardizing d. Galvanizing
90. The pair of compounds which cannot exist together in solution is
 a. NaHCO_3 and NaOH b. Na_2CO_3 and NaHCO_3
 c. Na_2CO_3 and NaOH d. NaHCO_3 and NaCl
91. In benzene all the C-C bonds have same length because of
 a. Tautomerism b. Inductive effect
 c. Metamerism d. Resonance
92. The organic acid which do not contain -COOH group is
 a. Ethanoic acid b. Oxalic acid
 c. Lactic acid d. Picric acid
93. The action of NaNO_2/HCl on primary amine gives
 a. Alcohol b. alkyl nitrite
 c. Secondary d. Nitro alkane
94. In which of the following reactions, both oxidized and reduced forms of the same compound are obtained.
 a. Wurtz reaction b. Riemer-Tiemann reaction
 c. Cannizaro reaction d. Aldol condensation
95. Nitrating of benzene by the use of nitrating mixture is an example of
 a. Electrophilic addition
 b. Electrophilic substitution
 c. Nucleophilic addition
 d. Nucleophilic substitution
96. Antiseptic action of Dettol is mainly due to
 a. Ampicillin b. Acetyl salicylic acid
 c. Paracetamol d. Chloroxyenol
97. D.D.T is a
 a. Insecticide b. dye
 c. synthetic polymer d. antiseptic drug
98. An example of Zwitter ion is
 a. Glucose b. DNA
 c. Soap d. Glycine hydrochloride
99. Fructose is an example of
 a. Aldose b. Ketose c. Pentose d. Hexose
100. The unit of rate constant for first order reaction is
 a. Sec^{-1} b. mol Sec^{-1}
 c. $\text{mol}^{-1} \text{Sec}^{-1}$ d. $\text{liter}^2 \text{mol}^{-2} \text{S}^{-1}$