Tribhuvan University

Institute of Science and Technology

4 Years Bachelor in Computer science and Information Technology (BSC. CSIT)

Attempt all questions:

Entrance Exam 2078

Mathematics (25*1 = 25)

1. **Let U be the universal set, A and B be two sets.**
   If n(U) = 100, n(A) = 35, n(B) = 60 and n(AUB) = 80, then what is the value of n(AnB)?
   (a) 20 (b) 15 (c) 45 (d) 85

2. **If A = [-3, 1) and B = [-2, 4], then the value of A-B is**
   (a) [-3, -2) (b) [1,4] (c) (-3,-2) (d) [-3,2)

3. **A sentence which is a true statement is:**
   (a) Why are you weeping? (b) 2x + 3 = 5
   (c) Mount Everest is in Nepal (d) Please help me to solve this problem

4. **Let a function f: N→ N be defined by f(x) = 2x for all x E N. Then f is**
   (a) many to one (b) onto (c) one to one (d) one to one and onto

5. **The function f(x) = 12-3x on R is**
   (a) increasing (b) decreasing
   (c) constant (d) Increasing and decreasing

6. **If cosx = -1, then the value of x is**
   (a) 2nπ (b) $(2n + 1)^{\frac{\pi}{2}}$ (c) (n + 1)π (d) (2n + 1)π

7. **If a, b, c be in A.P., b, c, d in G.P., c, d, e in H.P.,then a, c, e are in**
   (a) G.P. (b) H.P. (c) A.P. (d) none

8. **If A = [-7], then the value of Deta is**
   (a) 7 (b) - + 7 (c) - + 7 (d) -7

9. **The system of equations 3x - 2y = 1, and 6x - 4y = 2 is**
   (a) inconsistent and dependent (b) consistent and dependent
   (c) consistent and independent (d) inconsistent and independent

10. **The sum of the three cube roots of one is**
    (a) 0 (b) 1 (c) w^2 (d) w

11. **The value of** $\lim_{x\to 0}\frac{sinx^0}{x}$
    (a) 1 (b) π (c) $\frac{\pi}{180}$ (d) $\frac{\pi x}{180}$

12. **The derivative** $e\sqrt{x}$
    (a) $e^{\sqrt{x}}$ (b) $2\sqrt{x}\, e\sqrt{x}$ (c) $\frac{e^{\sqrt{x}}}{2\sqrt{x}}$ (d) e^$\sqrt{x} - 1$

13. **The value of** $\int \frac{x}{1+x} dx$ **is**
    (a) In |1 + x| (b) x + In [1 + x| (c) x-In |1 + x| (d) $\frac{x}{1+x}$

14. **The value of** $\int_0^2 3(1 + x)^2 dx$ **is equal to**
    (a) 2 (b) 14 (c) 14/3 (d) 2/3

15. **Let A and B be two sets, then AUB complement is**

(a) AUB (b) A complement n B complement

(c) A complement U B complement (d) An B

16. **For any real number x with $|x| < 1$, the value of $\sin^{-1}x$ is equal to**

(a) $\sin^{-1}\sqrt{1-x^2}$ (b) $\cos^{-1}\sqrt{1-x^2}$ (c) $\tan^{-1}\sqrt{1-x^2}$ (d) $\cos^{-1}\sqrt{1-x}$

17. **The inverse of the matrix is $\begin{matrix}2 & 3\\3 & 5\end{matrix}$ is**

(a) $\begin{matrix}2 & -3\\-3 & 5\end{matrix}$ (b) $\begin{matrix}5 & -3\\3 & 2\end{matrix}$ (c) $\begin{matrix}5 & -3\\2 & -3\end{matrix}$ (d) $\begin{matrix}5 & -3\\-3 & 2\end{matrix}$

18. **The remainder of $x^3-2x^2+5x+10$ whendivided by $x+1$ is**

(a) 14 (b) 2 (c) -18 (d) 18

19. **The acute angle between the lines $x-3y-6=0$ and $2x-y+5=0$**

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{4}$ (d) $\frac{2\pi}{3}$

20. **The coefficient of x^2 in $(x^2+\frac{a^2}{x^2})$ is**

(a) 3a (b) $3x^2a^2$ (c) 3 (d) $3a^2$

21. **How many number of three different digitsless than 500 can be formed from the integers 1, 2, 3,4, 5?**

(a) 48 (b) 180 (c) 80 (d) 20

22. **The coordinates of focus of the parabola $y^2=8x$ is**

(a) (2,0) (b) (2,4) (c) (4,0) (d) (0, 2)

23. **The relation between direction cosines of a line is given by**

(a) $a^2+b^2+c^2=1$ (b) $a^2+b^2+c^2=0$ (c) $l^2+m^2+n^2=1$ (d) $l^2+m^2+n^2=0$

24. **The unit vector in the direction of $i+j-2k$ is**

(c) $\frac{1}{\sqrt{6}}$ (b) $\frac{1}{6}$ (c) $\frac{i+j-2k}{6}$ (d) $\frac{i+j-2k}{\sqrt{6}}$

25. **The center of the circle $x^2+y^2-2ax-2ay+a^2=0$ is**

(a) (a,0) (b) (a, a) (c) (0, a) (d) (-a, -a)

English (25x1 = 25)

26. **The word "Glissando" gets main stress on**

(a) 1st syllabus (b) 2nd syllabus (c) 3rd syllabus (d) None

27. **Which of the following words does get itsprime stress on the second syllable?**

(a) Investigate (b) Introverted (c) Intimate (d) Intricate

28. **Pick out the word or group of words which has nearly the same meaning as the word "Magnitude"?**

(a) Attraction (b) Assesment (c) Gravity (d) Weight

29. **Give an appropriate synonym to the word "Outpaced"**

(a) occupied (b) nullified (c) ruled out (d) surpassed

30. **Give an appropriate antonym to the word "Impulsive"**

(a) Cautious (b) innocent (c) insipid (d) interesting

31. **Give a suitable opposite word to the word "Reputation"**

(a) restrain (b) reluctant (c) notoriety (d) prudence

32. **One who abandons religious faith is**
(a) insolvent (b) apostate (c) veteran (d) fatal

33. **An office which has no work and responsibility but high salary**
(a) sinecure (b) conjurer (c) expert (d) indelible

34. **In the incident of fire, we should warn the house owner ..... Danger but to a student a teacher should warn .... errors.**
(a) for, to (b) of, against (c) to, against (d) about, for

35. **I am sympathetic..... those students who are noits not satisfied..... their marks.**
(a) on, for (b) to, with (c) with, with (d) to, fro

36. **..... I had that book with me I did not give it to him.**
(a) However (b) unless. (c) Although (d) But

37. **Pick up the correct feminine gender of the word "Gander"**
(a) Ganderess (b) Gantry (c) Gandma (d) Goose

38. **Give the exact meaning of the idiom "Go through the roof"**
(a) price rise or increase quickly (b) walking on the roof from corner to corner
(c) cross the roof of a house quickly (d) take no time to walk on the roof

39. **Pick up the exact meaning of the word "Hellenism"**
(a) Belief that God in unknowable
(b) Conformity to or imitation of ancient Greek thought, customs or styles
(c) Belief that there is no God
(d) Strong adherence to one's community

40. **Pick up correct phrasal verbs for theexpression "When he was passing through the door the dogs suddenly..... him**
(a) set out (b) set to (c) set on (d) set off

41. **Pick up correct phrasal verbs for the expression "would you like to help me..... the writing desk?"**
(a) clear up (b) clear out (c) clear off (d) clear on

42. **Give exact meaning of the idiom "a stick in the mud"**
(a) A person with liberal ideas
(b) A person desiring for improvement
(c) A person with high ideals and values
(d) A person with fixed views and ideas and not ready for change

43. **We must be early..... we won't get seats**
(a) otherwise (b) however (c) then (d) therefore

44. **Some people waste food ..... Others haven't enough.**
(a) when (b) while (c) but (d) if

45. **If you interfere with ..... Nature you will suffer for it.**
(a) the (b) a (c) an d.none

46. **Some one had recognized him,.....?**
(a) hadn't they? (b) didn't they? (c) did they? (d) had they?

47. **The photographs in the papers bore no ..... at all to the original**
(a) nearness (b) resemblance (c) comparison (d) identify

48. Although they are not rich, they always wear ..... clothes.
(a) respectful (b) respective (c) respectable (d) respected

49. This is ..... chosen for the school complex to be build next year.
(a) site (b) area (c) locality (d) sight

50. Work for which no regular salary is paid
(a) honorable (b) honorary (c) temporary (d) ad hoc

Physics (25x1 = 25)

51. The velocity of a body is given by the equation $v = \frac{b}{t} + ct^2 + dt^3$. The dimensional formula of c is
(a) $[M^0LT^3]$ (b) $[ML^0T^{-3}]$ (c) $[M^0L^0T]$ (d) $[M^0LT-3]$

52. If magnitudes of two vectors be 3 and 4 and value of their scalar product is 6, the angle between them is
(a) 30 Degree (b) 45 degree (c) 60 degree (d) 90 degree

53. Star appears to move from east to west because
(a) all stars move from east to west (b) the earth rotates from west to east.
(c) the earth rotates from east to west (d) the background of the stars moves from west to

54. To avoid the slipping while walking on ice one should take smaller steps because of the east.
(a) larger friction (b) smaller friction
(c) larger normal reaction (d) smaller normalreaction

55. A scooter of mass 120kg is moving with a uniform velocity of 108km/hr. the force required to stop the velocity in 10 sec is
(a) 360N (b) 720N (c) 180N (d) 90N

56. In young's double slit experiment the distance of tenth bright fringe from the center of interference pattern on either side is 3.44 cm the slit separation if the screen is at 2m fromwave length 589 nm is
(a) 0.24mm (b) 0.44mm (c) 0.34mm (d) 0.64mm

57. Up thrust depends upon
(a) shape of the body (b) depth from liquid surface
(c) volume of liquid displaced (d) mass of the body

58. Two copper rods of equal lengths and unequaldiameters are heated through the same range of temperature. Its increase in length will be
(a) more in thin rod (b) more in thick rod (c) same in both rods (d) uncertain

59. The mean free path of a gas varies with pressure (P) as
(a) P (b) P^{-1} (c) P^2 (d) $p.^{-2}$

60. The boiling of water inside the pressure cooker in degree Celsius is
(a) 0 degree Celsius (b) 100 degree (c) 120 degree (d) -120 degree

61. The path of a ray of light coming from air passing through a rectangular slab traced by four students are shown as A, B, C and D in figure. Which of them is correct?

a.  (b)  (c)  (d) 

62. **The image of a distant object formed by a far sighted person is**

(a) at the retina (b) behind the retina
(c) infront of retina (d) no image is formed

63. **The charge in uniform motion produces**

(a) an electric field only (b) magnetic field only
(c) both electric & magnetic (d) neither electric nor magnetic

64. **In order to increase the capacity of parallel plate capacitor one should introduce between the plates a sheet of**

(a) tin (b) copper (c) steel (d) mica

65. **The self inductance of a coil is 5 mH. If a current of 2A is flown, what will be the magnetic flux through the coil.**

(a) 1 Weber (b) 0.100 Weber (c) 1.010 Weber (d) 0.001 Weber

66. **A 100W/220V bulb is used in a line of 440V. Its power will be**

(a) 50W (b) 100W (c) 200W (d) 400W

67. **The electric field intensity at the surface of charged conductor is**

(a) Zero (b) directed tangentially to the surface
(c) directed normally to the surface (d) infinite

68. **In a non-resonant circuit, what will be the nature of the circuit for frequencies higher than the resonant frequency?**

(a) resistive (b) capacitive (c) inductive (d) passive

69. **The material used for permanent magnet has**

(a) high resistivity, high coercivity (b) low retentivity, low coercivity
(c) low retentivity, high coercivity (d) high retentivity, high coercivity

70. **The angle of dip is the angle of**

(a) between the vertical component of earth's magnetic field and magnetic meridian.
(b) between the vertical component of earth's magnetic field and geographic meridian.
(c) between earth's magnetic field direction and horizontal direction
(d) between the magnetic meridian and geographic meridian

71. **If an electron has initial velocity in a direction perpendicular to the direction of electric field, the path of an electron is**

(a) straight line (b) parabola (c) circle (d) ellipse

72. **The plank's constant can be experimentally determined by**

(a) spectroscopic experiment (b) tangent galvanometer experiment
(c) compound pendulum experiment (d) photo-electric experiment

73. **When electrons are accelerated bv 50 kV and 0.4% of energy of cathode is converted into X-Rays and heat is evolved at 600W. the current is**

(a) 0.12 A (b) 0.012A (c) 0.024A (d) 2.4A

74. **The difference between 92U235 & 92U238 atom is**

(a) 92U238 contain 3 more protons
(b) 92U235 contains 3 more protons
(c) 92U238 contains 3 more neutrons
(d) 92U238 contains 3 more neutrons & 3 more electrons

75. In the depletion layer of an unbiased p-n junction diode, there are

(a) only electrons (b) only holes
(c) both electrons and holes (d) only fixed ions.

76. The number of molecules

(a) 3.2×10^{23} (b) 6.02×10^{23} (c) 3.2×10^{6} (d) 6.02×10^{10}

77. In a given atom no two electrons can have the same values for all the four quantum numbers. This is called

(a) Pauli's exclusion principle (b) Hund's rule
(c) Aufbau principle (d) Uncertainty principl

78. The shape of SF molecule based on VSEPR theory is

(a) linear (b) square planar (c) octahedral (d) trigonal biprymidal

79. Which is not the isotope of hydrogen?

(a) protium (b) deuterium (c) tritium (d) fullerene

80. The composition of brown ring in nitratetest is

(a) $FeSO_4.NO$ (b) $FeSO4.NO_22$ (c) $FeSO_4.NO_3$ (d) $FeSO4.N_20$

81. The formula of hypo is

(a) $H_2S_2O_3$ (b) $Na_2S_2O_3.5H_2O$ (c) $Na_2S_40_6$ (d) Na_2SO3

82. $MgSO4.7H_2O$ is known as

(a) bleaching powder (b) quick lime (c) Epsom salt (d) plaster of paris

83. Minamata disease was caused by consumption of fish containing.

(a) zinc (b) cadmium (c) arsenic (d) mercury

84. Which element can not be detected by lassaigne's test?

(a) fluorine (b) sulphur (c) chlorine (d) nitrogen

85. Which of the following reagents can distinguish alkyne from alkane?

(a) Fehling's solution (b) ammoniacal silver nitrate
(c) Bayer's reagent (d) Lucas reagent

86. The catalyst used in Friedel Craft's alkylation reaction is

(a) finely divided nickel (b) Cuprous Halide
(c) anhydrous $AlCl_3$ (d) Conc. H_2SO_4

87. Urea is a

(a) nitrogenous fertilizer (b) phosphatic fertilzer
(c) potash fertilizer (d) none

88. IUPAC name of acetone is

(a) 2-butanone (b) 3-pentanone (c) propanone (d) ethanal

89. Equivalent weight of sulphuric acid is equal to its

(a) mol. Wt/5 (b) mol. Wt./4 (c) mol. Wt/3 (d) mol. Wt/2

90. The rate of reaction is independent of

(a) molecularity (b) temperature
(c) particle size of rectant (d) concenteration of reactants

91. **Which law of thermodynamics is illustrated by the statement "The total amount of energy in the universe remains constant"?**

(a) second law (b) first law (c) third law (d) none

92. **An example of organophospate insectides is**

(a) DDT (b) BHC (c) malathion (d) dieldrin

93. **Which of the following is not true for aniline?**

(a) gives coupling reaction (b) reacts with aldehyde
(c) typical aromatic anime (d) does not nice coupling reactions.

94. **Ethyl alcohol is 100 percent purity is called**

(a) absolute alcohol (b) rectified sprit (c) denatured alcohol (d) all of above

95. **Haloalkanes when heated with sodium metal in presence of ether as solvent give alkanes. This reaction is known as**

(a) Reimer-Tiemann reaction (b) Wurtz reaction
(c) Carbyalmine reaction (d) Kolbe's reaction

96. **which is not true for ketones**

(a) do not reduce tollen's reagent (b) do not reduce fehling solution
(c) reduce tollen's reagent (d) do not reduce benedict solution.

97. **CO_2 is a**

(a) lewis base (b) Bronsted acid
(c) Bronsted base (d) Lewis acid

98. **Metal used for galvanizing** iron sheet is

(a) zinc (b) copper (c) cadmium (d) cobalt

99. **Which of the following compound is called Lunar caustic?**

(a) Ag_2S (b) Ag_2S (c) AgCl (d) Ag_2O

100. **Which of the following is the strongest acid?**

(a) CH_3COOH (b) $ClCH_2COOH$ (c) Cl_3CCOOH (d) Cl_2CHO