

Tribhuvan University

Institute of Science and Technology

Four Years Bachelor in Computer Science and Information Technology (B.Sc.CSIT)

Entrance Examination Model Question**Full Marks: 100****Time: 2.00 hrs****Attempt all questions.****Mathematics****(25 × 1 = 25)**

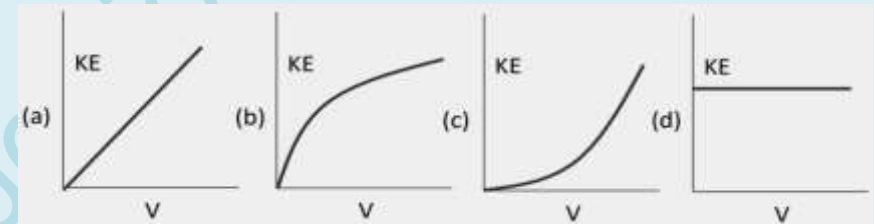
- A sentence $x + 7 = 5$ is
(a) false statement (b) true statement
(c) not a statement (d) a statement
- If P and Q are the nonempty sets and $P \subset Q$ then
(a) $P \subset \bar{Q}$ (b) $\bar{Q} \subset \bar{P}$ (c) $P \cap Q = \emptyset$ (d) $P \supset Q$
- If $|x - 3| = 7$ then $x =$
(a) $\{10, -4\}$ (b) $[10, -4]$ (c) $\{-8, 4\}$ (d) $(10, -4)$
- $\sqrt{-1}$ is
(a) an integer number (b) a prime number
(c) an irrational number (d) a complex number
- The range of the function $f(x) = \sqrt{9 - x^2}$ is
(a) $(-3, 3]$ (b) $[0, 3]$ (c) $(0, 3)$ (d) $\{0, 2\}$
- The function $f(x) = \sin x + x$ is
(a) even function (b) period function
(c) odd function (d) neither even nor odd
- If x, y , and z are in A.P. then
(a) $x + y = z$ (b) $y + z = 2x$ (c) $x - z = 2y$ (d) $x + z = 2y$
- The determinant of the matrix $A = \begin{bmatrix} -3 \end{bmatrix}$ is
(a) 3 (b) not possible (c) -3 (d) 0
- If $x - iy = (5 + 2i)^2$ then (x, y) is
(a) (21, 20) (b) (21, -20) (c) (-21, 20) (d) (-21, -20)
- If in a triangle ABC, the angles are in A.P. then angle B =
(a) 30° (b) 45° (c) 120° (d) 60°
- The area of triangle ABC is
(a) $2bc \sin A$ (b) $bc \sin A$ (c) $\frac{1}{2}bc \sin A$ (d) $\frac{1}{2}ac \sin A$
- Equation of a line perpendicular to the line $2x + 3y + 5 = 0$ is
(a) $3x - 2y + 7 = 0$ (b) $2x - 3y + 7 = 0$
(c) $-3x - 2y - 7 = 0$ (d) $-2x - 3y + 7 = 0$
- The two lines represented by $ax^2 + 4xy + 2y^2 = 0$ are perpendicular to each other for $a =$
(a) 0 (b) -2 (c) 2 (d) 1
- Equation of tangent at (3, 4) to the circle $x^2 + y^2 = 25$ is
(a) $3x - 4y = 25$ (b) $3x + 4y = -25$
(c) $4x + 3y = 25$ (d) $3x + 4y = 25$
- The unit vector along the vector $3\mathbf{i} + 4\mathbf{j}$ is
(a) $\mathbf{i} + \mathbf{j}$ (b) $\frac{1}{5}(3\mathbf{i} - 4\mathbf{j})$ (c) $\frac{1}{5}(3\mathbf{i} + 4\mathbf{j})$ (d) $\frac{1}{5}(\mathbf{i} + \mathbf{j})$
- The scalar product of two vectors $3\mathbf{i} - 4\mathbf{j} + \mathbf{k}$ and $3\mathbf{i} + 4\mathbf{j}$ is
(a) 6 (b) -7 (c) 0 (d) $-7\mathbf{i}$
- Probability of getting an even number while rolling a die is
(a) 0 (b) $1/3$ (c) $1/4$ (d) $1/2$
- $\lim_{x \rightarrow 3} \frac{x^3 - 27}{x - 3} =$
(a) 3 (b) 9 (c) 27 (d) 0/0
- The values of x for which $\frac{dy}{dx} = 0$, for $y = x^3 - 3x^2$ are
(a) 0, 0 (b) 0, 2 (c) 0, -2 (d) 0, $3/2$

20. If $y = e^{\log x^2}$ then $\frac{dy}{dx} =$
 (a) $2x$ (b) yx (c) $2x/y$ (d) $e^{\log x^2}$
21. The point of inflection of $y = x^3 - x^2$ is
 (a) 3 (b) 0 (c) $1/3$ (d) 1
22. $\int_0^1 3x^2 e^{x^3} dx =$
 (a) $e - 1$ (b) e (c) 0 (d) e^3
23. Area bounded by x-axis axis and the curve $y = x^2$ and the lines $x = 0$ and $x = 4$ is
 (a) 64 (b) 16 (c) $16/3$ (d) $64/3$
24. If $f(x) = x^2 + 5$, then the approximate value of $f'(2)$ with $x = 0.1$ is
 (a) 6 (b) 4.1 (c) 4.2 (d) 2
25. If two forces P and Q, $P > Q$, are acting at a point of a body, in the same direction, then the resultant force is
 (a) $P - Q$ (b) $P + Q$ (c) PQ (d) $Q - P$

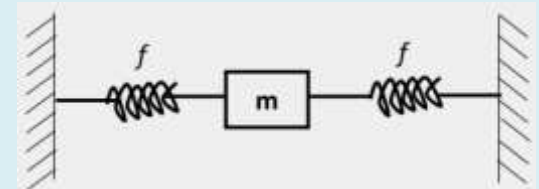
Physics**(25 × 1 = 25)**

26. A quantity x is related by $x = \frac{\pi}{3}(a^2 - b^2)h$ where a, b and h are lengths, then quantity x is
 (a) length. (b) velocity. (c) area. (d) volume.
27. A vector is multiplied by -2 then
 (a) direction reverses and unit changes.
 (b) direction reverses and magnitude is doubled.
 (c) direction remains unchanged but unit changes.
 (d) neither direction reverses nor unit changes but magnitude is doubled.
28. A stone is dropped from a height of 45 m. The distance travelled by it during its last second is
 (a) 5 m. (b) 10 m. (c) 25 m. (d) 50 m.

29. A projectile is broken into two pieces at the maximum height. Then its
 (a) momentum increases. (b) momentum decreases.
 (c) kinetic energy increases. (d) kinetic energy decreases.
30. Jet plane is based on the conservation of
 (a) mass. (b) energy. (c) linear momentum. (d) angular momentum.
31. Which of the following possesses highest viscosity?
 (a) water. (b) blood (c) glycerine (d) honey
32. The graph of kinetic energy (KE) of a body versus velocity (v) is represented as



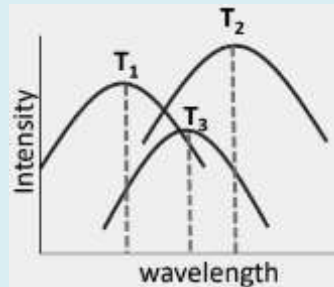
33. A mass m is attached with two identical spring as shown in the figure, has frequency f. If one of the spring is removed, then frequency will be
 (a) f
 (b) 2f
 (c) $f\sqrt{2}$
 (d) $f/\sqrt{2}$



34. A metal sheet has a circular hole in it. When it is heated, diameter of the hole
 (a) increases (b) decreases
 (c) remains unchanged (d) First increases and then decreases
35. The mean free path of a gas varies with pressure P as
 (a) P (b) P^{-1} (c) P^{-2} (d) P^2
36. A body initially at 100°C in 5 minutes and to 40°C in 10 minutes. The temperature of the body at the end of 15 minutes will be
 (a) 35°C (b) 30°C (c) 25°C (d) 20°C

37. 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) 42° (c) 30° (d) 62°

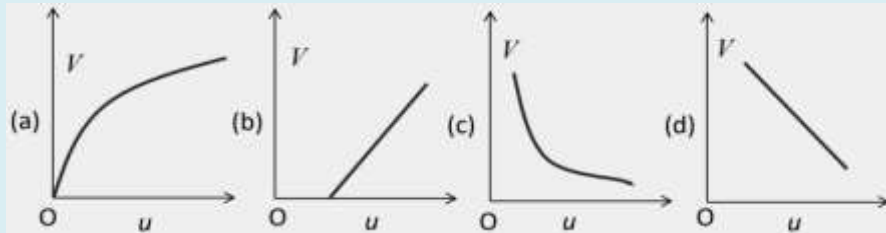
38. The variation of intensity with wavelength at different temperatures as shown in the figure will be



- (a) $T_1 > T_2 > T_3$
 (b) $T_1 > T_3 > T_2$
 (c) $T_2 > T_3 > T_1$
 (d) $T_3 > T_2 > T_1$

39. A completely transparent material will be invisible in vacuum when refractive index (μ) is
 (a) unity (b) more than unity (c) less than unity (d) infinity

40. For a convex mirror, the variation of u and v is given by



41. Sweetness of sound depends upon its

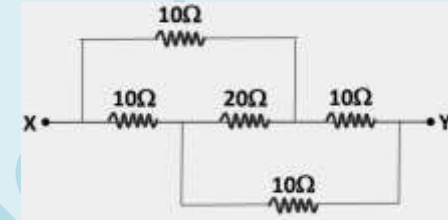
- (a) wavelength (b) periodicity
 (c) periodicity and regulatiry (d) amplitude

42. A parallel plate capacitor is charged and the charging battery is then disconnected. If the plates of capacitors are removed further apart by means of insulating handles

- (a) The charge on the capacitor increases
 (b) The voltage across the plate increases
 (c) The capacitance increases
 (d) The energy stored decreases

43. The equivalent resistance between the points X and Y is

- (a) 10 W
 (b) 20 W
 (c) 30 W
 (d) 40 W



44. A magnetic needle kept in a non-uniform magnetic field. It experiences
 (a) torque but not a force (b) neither a force nor a torque
 (c) force and a torque (d) a force but not a torque

45. A source of 34 V and 50 Hz is connected in series with coil of 17 mH and resistor of 10W. The potential difference across the coil is
 (a) 12 V (b) 16 V (c) 28 V (d) 32 V

46. A strong argument for particle nature of cathode rays is that they

- (a) Produce fluorescence
 (b) Travel through vacuum
 (c) Get deflected by electric and magnetic fields
 (d) Cast shadow

47. When objects placed in a room are exposed to X-rays, they appear
 (a) invisible (b) yellow (c) blue (d) red

48. Which series of Hydrogen atom lies in the infrared region?

- (a) Lyman (b) Balmer (c) Pfund (d) H-alpha

49. When Boron (${}_{5}\text{B}^{10}$) is bombarded by neutron, alpha particles are emitted. The resulting nucleus has the mass number

- (a) 11 (b) 7 (c) 6 (d) 15

50. In P-type semiconductor, the majority and minority charge carriers are respectively

- (a) Protons and electrons (b) Electrons and protons
 (c) Electrons and holes (d) Holes and electrons

Chemistry**(25 × 1 = 25)**

51. The weight of sodium carbonate required to prepare 100 mL of its decinormal solution is
 (a) 0.53 g (b) 5.3 g (c) 0.053 g (d) 5.6 g
52. The concept of pH was introduced by
 (a) Arrhenius (b) Lewis (c) Bronsted (d) Sorensen
53. The rate of a chemical reaction increases with
 (a) increase in particle size of the reactants
 (b) increase in temperature
 (c) decrease in temperature
 (d) decrease in concentration of reactants
54. A spontaneous change is one in which the system has
 (a) an increase in internal energy (b) lowering of entropy
 (c) lowering of free energy (d) no energy change
55. Which of the following is an example of transition metal?
 (a) cobalt (b) potassium (c) magnesium (d) silicon
56. Which of the following compound is called blue vitriol?
 (a) Cu_2O (b) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (c) CuCl_2 (d) Cu_2Cl_2
57. Silver is extracted from its sulphide ore by
 (a) Contact process (b) Down's process
 (c) Cyanide process (d) Ostwald's process
58. 2,4-Dichlorophenoxyacetic acid (2,4-D) is generally used as
 (a) a herbicide (b) an insecticide
 (c) a fungicide (d) none of the above
59. A class of organometallic compounds of magnesium with the general formula RMgX (where, R is an organic group and X is a halogen atom) is known as
 (a) Tollen's reagent (b) Nessler's reagent
 (c) Schiff's reagent (d) Grignard reagent
60. Aldehydes can be distinguished from ketones by
 (a) Fehling's solution (b) conc. H_2SO_4
 (c) Grignard's reagent (d) pyragallol
61. Picric acid is obtained by the nitration of
 (a) aniline (b) phenol (c) benzene (d) benzoic acid
62. Which of the following compound is used as an anaesthetic?
 (a) ethylene (b) ethyl alcohol (c) chloroform (d) acetylene
63. Aromatic carboxylic acid is
 (a) formic acid (b) acetic acid (c) stearic acid (d) cinnamic acid
64. Which of the following compound is called urea?
 (a) NH_2CONH_2 (b) $\text{NH}_2\text{COONH}_4$
 (c) $\text{H}_2\text{NNHCONH}_2$ (d) $\text{H}_2\text{NCONHC}_2\text{H}_5$
65. Ethyne reacts with alkaline KMnO_4 solution to give
 (a) glyoxal (b) oxalic acid (c) ethanoic acid (d) acetic acid
66. IUPAC name of acetaldehyde is
 (a) methanal (b) propanal (c) ethanal (d) butanal
67. Which is the most toxic chemical forms of mercury?
 (a) Hg (b) Hg_2^{2+} (c) Hg^{2+} (d) CH_3Hg^+
68. The number of molecules in 32 g of oxygen is
 (a) 6.02×10^{23} (b) 6.02×10^9 (c) 3.2×10^{23} (d) 3.2×10^{16}
69. The outermost electronic configuration of chromium is
 (a) $3d^4 4s^2$ (b) $3d^5 4s^1$ (c) $3d^5 4s^2$ (d) $3d^6 4s^2$
70. Which of the following has the lowest ionic radius?
 (a) O^{2-} (b) F^- (c) Al^{3+} (d) Na^+
71. Which of the following hydrogen halides has the lowest dipole moment?
 (a) HF (b) HCl (c) HBr (d) HI
72. The value of universal gas constant (R) in SI unit is
 (a) $8.314 \text{ joule } \text{K}^{-1} \text{ mol}^{-1}$ (b) $5.314 \text{ joule } \text{K}^{-1} \text{ mol}^{-1}$
 (c) $3.501 \text{ joule } \text{K}^{-1} \text{ mol}^{-1}$ (d) $8.314 \times 10^7 \text{ ergs } \text{K}^{-1} \text{ mol}^{-1}$
73. An example of acidic oxide is
 (a) NO (b) N_2O_5 (c) N_2O (d) Al_2O_3

74. The ionic character in H-X bond is highest in
 (a) HCl (b) HBr (c) HF (d) HI
75. Which of the following compounds is called magnesia?
 (a) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ (b) $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ (c) MgCl_2 (d) $\text{Mg}(\text{OH})_2$

English**(15 × 1 = 15)**

76. The word "headhunter" gets its prime stress on:
 (a) 1st syllable (b) 2nd syllable (c) 3rd syllable (d) none
77. Pick out the word or group of words which has nearly the same meaning as the word "headland",
 (a) highland (b) flat land (c) promontory (d) marshy land
78. .. Pick out the word or group of words which has nearly the same meaning as the word "remarkable",
 (a) good (b) astonishing (c) commendable (d) notable
79. Pick out the word or group of words which has nearly the opposite meaning as the word "pompous",
 (a) showy (b) wealthy (c) convincing (d) humble
80. Pick out the word or group of words which has nearly the opposite meaning as the word "reciprocal",
 (a) obstinate (b) unilateral (c) mutual (d) imaginary
81. Writing with correct spelling is :
 (a) orthography (b) homograph (c) telegraphy (d) lithography
82. Choose the correct word order in the expression
 "We... cruelty, ...tyranny and ... a flatterer."
 (a) hate, abhor, loathe (b) abhor, hate, loathe
 (c) loathe, hate, abhor (d) abhor, loathe, hate
83. Belief that God is nature :

- (a) Henotheism (b) Polytheism (c) Pantheism (d) Deism

84. Choose correct prepositions for the given expression "For a week she lived ... banana and milk as she believed....the prescription of her doctor."
 (a) at, on (b) on, in (c) in , on (d) on ,on
85. Choose correct prepositions for the given expression "I am scared.... loss ...my business but keen ...gambling."
 (a) in, of, on (b) on, in,of (c) in,on,of (d) of, in, on
86. Pick up the correct phrasal verb for the expression: "I was the son of sailors andstories of the sea."
 (a) reared on (b) reared off (c) brought on (d) put on
87. Pick up the correct phrasal verb for the expression: "when does school...for the summer vacation?"
 (a) break out (b) break up (c) break off (d) break in
88. Give the exact meaning of the idiomatic expression "Bright and breezy"
 (a) in very sad mood (b) in very active mood
 (c) in a cheerful mood to do things quickly (d) in decisive mood
89. Give the exact meaning of the idiomatic expression: "Go by the board"
 (a) plans discontinued and abandoned (b) plans in action
 (c) with a new plane (d) no plan for sometime
90. Use correct conditional expression in the expression : "You must go tomorrow ...you are ready or not."
 (a) if (b) even if (c) unless (d) whether

Computer Related GK**(10 × 1 = 10)**

91. MS-Word is an example of
 (a) An operating system (b) A processing device
 (c) Application software (d) An input device
92. A computer cannot "boot" if it does not have the
 (a) Compiler (b) Loader (c) Operating system (d) Assembler

93. By default, your documents print in mode.
(a) Landscape (b) Portrait (c) Page Setup (d) Print View
94. Ctrl, Shift and Alt are called keys.
(a) modifier (b) function (c) alphanumeric (d) adjustment
95. Storage which stores or retains data after power off is called
(a) Volatile storage (b) Non-volatile storage
(c) Sequential storage (d) Direct storage
96. What are the four things needed to connect to the internet?
(a) telephone line, modem, computer, and an ISP
(b) modem, computer, PDA, and ISP
(c) telephone line, modem, computer, and PDA
(d) computer, ISP, modem, and communication software
97. Which process refers to the starting up of a computer and the loading of the required parts of the operating system into the RAM?
(a) Booting (b) Tagging (c) Swipping (d) Mapping
98. In the context of a word document, the term *gutter* stands for
(a) the blank page inserted in between two filled pages
(b) the space left on the left side for rough work
(c) the space between two paragraphs
(d) the space left on one side for stitching and binding
99. Programs stored in ROM are called as
(a) Fireware (b) Formware (c) Farmware (d) Firmware
100. Select the correct statement from the following statements.
A. MS-Excel creates workbooks, and each workbook may contain more work sheets.
B. A worksheet in MS-Excel 2000 package has a maximum of 256 columns and 65536 rows.
C. Columns are identified by a number and rows are identified by a letter.
D. Cells are identified by the column letter and the row number.

(a) A, B, C (b) B, C, D (c) C, D, A (d) A, B, D