

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
KANTIPUR ENGINEERING COLLEGE

Model Questions for B.E. Entrance Test (2074)

Set: 2 (A)

Time: 2 hours

Date: 2074/03/10

Section: I Select the Best Alternative on the answer sheet given

60×1 = 60

1. Which of the following pairs has the same pronunciation?
(A) pull, pool (B) two, too (C) full, fool (D) quiet, quite
2. The word 'deteriorate' has its primary stress on the syllable.
(A) first (B) third (C) second (D) fourth
3. The meaning of the underlined expression in the sentence " I am sure he will show white feather" is
(A) cowardice (B) courage (C) cunningness (D) shrewdness
4. The conceited man was forward and in his attitude.
(A) mundane (B) gratuitous (C) laconic (D) thrasonical
5. The direct speech of "He thanked me" is
(A) I said, "Thank you". (B) I said to him, "Thank you".
(C) You said, "Thank him". (D) He said to me, "Thank you".
6. The passive voice of "The dangerous dog bit me" is
(A) I bit the dangerous dog (B) He was bitten by the dangerous dog
(C) The dangerous dog has been bitten by me (D) I was bitten by the dangerous dog
7. Which of the following is correct?
(A) My uncle who lives in London loves me (B) My uncle lives in London where loves me
(C) My uncle lives in London who loves me (D) My uncle which lives in London loves me.
8. Which one is acceptable?
(A) He asked me where I lived (B) He asked me where I lived?
(C) He asked me where do you live (D) He asked me where do you live?
9. The teacher and the principal arrived.
(A) have (B) was (C) is (D) has
10. He will come soon,?
(A) will not he (B) will he (C) won't he (D) wouldn't he
11. The small baby died pneumonia.
(A) from (B) with (C) of (D) by
12. You can pass the exam
(A) unless you work hard (B) unless you don't work hard
(C) if you work hard (D) if you don't work hard
13. A place where weapons are stored is called
(A) arm-store. (B) arsenal (C) allegory (D) armour
14. I look forward to from you soon.
(A) hear (B) hearing (C) heard (D) be hearing
15. The value of m (magnetic quantum no.) for the valence shell of sodium atom is
(A) 1 (B) 0 (C) 2 (D) 5
16. Which one of the following chemical substances is primary standard?
(A) $\text{Na}_2\text{S}_2\text{O}_3$ (B) Na_2CO_3 (C) KMnO_4 (D) HCl
17. Molecular weight of tribasic acid is 69, its equivalent weight is
(A) 23 (B) 27 (C) 30 (D) 45

18. 4.8 g of a metal reacts completely with 9.8 g of H_2SO_4 , the equivalent wt. of metal is
 (A) 49 (B) 36.5 (C) 24 (D) 98
19. An example of a lewis acid is
 (A) MgCl_2 (B) NaCl (C) SnCl_4 (D) AlCl_3
20. Bleaching action of sulphur dioxide is due to
 (A) displacement (B) oxidation (C) complex formation (D) reduction
21. In Calgon process hardness is removed by the formation of
 (A) complex (B) precipitate (C) double salt (D) simple salt
22. Which of the salts will produce an acidic solution when dissolved in water?
 (A) NaCl (B) CaCl_2 (C) CuSO_4 (D) ZnCl_2
23. Anode used in Down' cell is
 (A) iron (B) graphite rod (C) carbon rod (D) platinum
24. During the extraction of iron, limestone acts as
 (A) a slag (B) a flux (C) an oxidant (D) a reductant
25. Acetic acid and methyl formate are
 (A) position isomers (B) metamers (C) chain isomers (D) functional isomers
26. Δ is a member of
 (A) closed chain compounds (B) homocyclic compounds
 (C) alicyclic compounds (D) aromatic compounds
27. The dimension of pressure and stress is
 (A) $[\text{ML}^{-1} \text{T}^{-2}]$ (B) $[\text{ML}^{-1} \text{T}^{-1}]$ (C) $[\text{MLT}^{-2}]$ (D) $[\text{ML}^{-1} \text{T}^2]$
28. A person is sitting in a train and is facing the engine. He tosses up a coin and coin falls behind him. It can be concluded that the train is:
 (A) moving backwards with uniform speed (B) moving forward and losing speed
 (C) moving forward with uniform speed (D) moving forward and gaining speed
29. According to the kinetic theory the collisions between the molecules of a gas are
 (A) partially elastic (B) perfectly elastic (C) perfectly inelastic (D) none of the above
30. It is difficult to see through fog because
 (A) light is scattered by it (B) light is absorbed
 (C) light suffers total reflection (D) all of fog is infinity
31. The long-sightedness is corrected by using
 (A) plano-convex lens (B) concave lens (C) convex lens (D) cylindrical lens
32. In the Young's double slit experiment, the distance between screen and slit is doubled and the distance between two slits is reduced to half. The fringe width is
 (A) doubled (B) is halved (C) becomes 4 times (D) remains the same
33. The work done by the string of a simple pendulum during one complete oscillation is equal to
 (A) total energy of the pendulum (B) zero
 (C) potential energy of the pendulum (D) kinetic energy of the pendulum
34. Two charges are at certain distance apart in air. A glass sheet is inserted between them, the force between them will
 (A) increase (B) zero (C) remains same (D) decrease
35. A dip needle in a plane perpendicular to magnetic meridian will remain;
 (A) vertical (B) horizontal (C) in any direction
 (D) at the same angle as in magnetic meridian
36. Work function is the energy required

- (A) to excite an electron
(C) to produce x-rays
- (B) to eject an electron just out of the surface
(D) to study the atomic structure
37. For any real x,
(A) $|x| = x$ (B) $|x| = -x$ (C) $|x| = \min \{ x, -x \}$ (D) $|x| = \max \{ x, -x \}$
38. The general solution of $\tan m\theta - \cot n\theta = 0$ is
(A) $(2n+1)\frac{\pi}{2}$ (B) $n\pi + \frac{\pi}{6}$ (C) $\frac{(2n+1)\pi}{2(m+n)}$ (D) $\frac{(2n+1)\pi}{6(m+n)}$
39. If the angle between two vectors $\vec{i} + \vec{k}$ and $\vec{i} - \vec{j} + a\vec{k}$ is $\frac{\pi}{3}$, then the value of a equals
(A) 0 (B) -3 (C) 2 (D) -1
40. The sum of the distance of a point from two perpendicular axes in a plane is 1, then its locus is
(A) circle (B) square (C) st. line (D) two intersecting lines
41. A plane meets the co-ordinate axes at A, B, C and (α, β, γ) be the coordinates of the centroid of the triangle, then the equation of the plane is
(A) $\frac{x}{\alpha} + \frac{y}{\beta} + \frac{z}{\gamma} = 1$ (B) $x\alpha + y\beta + z\gamma = 1$ (C) $x\alpha + y\beta + z\gamma = 3$ (D) $\frac{x}{3\alpha} + \frac{y}{3\beta} + \frac{z}{3\gamma} = 1$
42. A is square matrix of order 3 and $|A| = 4$ then $|\text{adj } A|$ is
(A) 16 (B) 20 (C) 8 (D) 12
43. If $x = \sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}$ to ∞ , then x is
(A) $\sqrt{2}$ (B) $\frac{1}{2}$ (C) 2 (D) $\sqrt{3}$
44. $\lim_{x \rightarrow 0} \frac{3^x - 2^x}{x}$ is
(A) $\log \frac{3}{2}$ (B) $\frac{3}{2}$ (C) $\log \left(\frac{2}{3} \right)$ (D) 0
45. If $y = \log_{\sqrt{x}} x$, then $\frac{dy}{dx}$ is
(A) 0 (B) 1 (C) $\frac{1}{x \log \sqrt{x}}$ (D) $\frac{1}{x}$
46. $\int_{-1}^1 (\sin x)^{11} dx$ is
(A) $\frac{2}{3}$ (B) $\frac{\pi}{2}$ (C) 0 (D) 1
47. Otto cycle also known ascycle?
(A) Diesel (B) Petrol (C) carnot (D) Breton
48. Which of the following are the solar thermal applications?
(A) solar cooker (B) solar dryer (C) both (A) and (B) (D) none of the above
49. Which of the following is carried out in anaerobic condition?
(A) solar heater (B) Bio gas plant (C) hydroelectricity (D) wind plants
50. The continuous white line in between lanes indicate...the lane.
(A) don't turn (B) carefully cross (C) may cross (D) do-not cross
51. Quartzite is a

- (A) argillaceous rock (B) calcareous rock (C) sedimentary rock (D) siliceous rock
52. The electrical energy stored in micro hydropower project is stored in.....
 (A) kinetic energy (B) potential energy (C) geothermal (D) none of the above
53. The efficiency of a transformer is usually in the range of
 (A) 50–60% (B) 65–75% (C) 90–98 % (D) 70–90%
54. Largest hydropower plant is in
 (A) USA (B) Brazil (C) Nepal (D) China
55. What is the unit if electrical energy?
 (A) watt hour (B) ampere (C) watt (D) VAR
56. In binary system, 4 bits is called.....
 (A) Byte (B) Nibble (C) kilo bytes (D) none
57. The full form of ISP is
 (A) internet server provider (B) internet security provider
 (C) internet service provider (D) internet server procedure
58. Which of the following is other than operating system?
 (A) Linux (B) Mac OS (C) windows (D) Google chrome
59. VOIP is used for.....
 (A) video call in internet (B) voice call in internet
 (C) video gaming in internet (D) voice of internet protocol
60. Which of the following is sequential device?
 (A) printer The OR gate (B) mouse (C) pen drive (D) magnetic tape

Section: II Select the Best Alternative on the answer sheet given

40 × 2 = 80

Read the passage and answer the questions from 61 to 64.

The artificial ways of inducing sleep are legion, and are only alike in their ineffectuality. In Lavengro there is an impossible character, a victim of insomnia, who finds that a volume of Wordsworth's poem is the only sure soporific, but that was Borrow's Malice. The famous old plan of counting sheep jumping over a stile has never served a turn. I have herded imaginary sheep until they insisted on turning themselves into white bears or blue pigs, and I defy any reasonable man to fall asleep while mustering a herd of stupid swine.

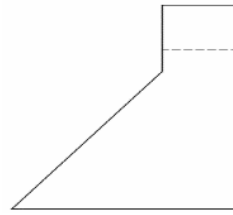
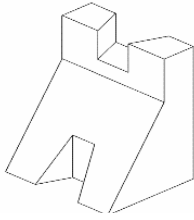
61. The author points out that
 (A) artificial ways of inducing sleep are ineffective
 (B) the artificial means of inducing sleep are not good
 (C) sleep can easily be induced
 (D) artificial ways of inducing sleep are expensive
62. According to the author the character in Lavengro
 (A) resorts to external aids to get some sleep (B) is an admirer of Wordsworth
 (C) is an avid reader of poetry (D) spends sleepless nights reading Wordsworth
63. The author uses "impossible" for the character of Lavengro in the sense of
 (A) funny (B) queer (C) unrealistic (D) imaginary
64. Borrow's malice is most probably directed at
 (A) Wordsworth's poetry (B) the artificial ways of inducing sleep
 (C) sleeplessness (D) poetry in general.
65. The amount of current required to liberate 2.24 liters of Cl₂ gas at NTP in one hour during the electrolysis of NaCl solution is
 (A) 1.56 amp (B) 5.3 6amp (C) 4.56 amp (D) 3.36 amp
66. The volume of water that should be added to 0.6 litres of 0.205N solution to make 0.1N is
 (A) 360 ml (B) 500ml (C) 400ml (D) 630ml

67. IUPAC name of $\text{CH}_3\text{-CO-CH}_2\text{-CO-CH}_3$ is
 (A) pentane -2,3-dione (B) pentane,2-3- dione (C) butane-2,3-dione (D) pentane-2, 3-diketone
68. The gas formed by hydrolysis of calcium carbide on reaction with ammoniacal cuprous chloride forms
 (A) red ppt. (B) brown ppt. (C) black ppt. (D) yellow ppt.
69. A force has magnitude 20 N. One rectangular component is 12N, the other rectangular component must be
 (A) 8N (B) 14 N (C) 16 N (D) 32 N
70. A spring obeys Hook's law and has a force constant K. Now the spring is cut into two equal parts, the force constant of each part will be
 (A) K (B) K/2 (C) 2 K (D) 4 K
71. A constant torque acting on a uniform circular wheel changes its angular momentum from L_0 to $4L_0$ in 4 second. The magnitude of this torque is
 (A) $12 L_0$ (B) L_0 (C) $4L_0$ (D) $\frac{3}{4} L_0$
72. A car travels at a speed of 20 m/s towards a high wall. The driver sounds a horn of frequency 124 Hz. If the velocity of sound in air is 330 m/s, the frequency of reflected sound heard by driver is
 (A) 109 Hz (B) 280 Hz (C) 148 Hz (D) 140 Hz
73. A faulty thermometer has its fixed point marked 5° and 95° . This thermometer reads the temperature of body 59°C . The correct temperature on Celsius scale is
 (A) 59°C (B) 60°C (C) 58°C (D) 48.6°C
74. A man can melt 60 gm of ice by chewing in one minute. The power of man is
 (A) 80 W (B) 336 W (C) 4800 W (D) 19 W
75. The electric potential in a region is given by $V = 6x - 8xy^2 - 8y + 6y z - 4x^2$ volt. Then electric force acting on a point charge 2C placed at origin will be
 (A) 2N (B) 6N (C) 8N (D) 20 N
76. A condenser is charged through a potential difference of 200 volt and possesses charge of 0.1C. When discharged, it will release energy of
 (A) 1 J (B) 2 J (C) 20 J (D) 20 J
77. Two heater wires of equal length are first connected in series and then in parallel. The ration of heat produced in two case is
 (A) 2:1 (B) 1:4 (C) 4:3 (D) 2:3
78. The strength of the magnetic field at a point distance R near a long straight current carrying wire is B. The field at a distance R/2 will be
 (A) B/2 (B) B/4 (C) 2B (D) 4B
79. In a LCR circuit having $L = 8\text{ H}$, $C = 0.5\ \mu\text{F}$ and $R = 100\ \Omega$ in series, the resonant frequency is
 (A) $500\ \text{rad s}^{-1}$ (B) 250 Hz (C) $2.5 \times 10^5\ \text{rad s}^{-1}$ (D) 600 Hz
80. The angle of prism is 60° for $\mu = \sqrt{2}$ the angle of minimum deviation is
 (A) 30° (B) 60° (C) 45° (D) 90°
81. In Young's double slit experiment, the separation between the slits is halved and the whole apparatus is immersed in water of refractive index $4/3$, the fringe width becomes
 (A) unchanged (B) $3/2$ times (C) doubled (D) $3/8$ times
82. The binding energy of deuteron is 2.2 MeV and that of ${}^4_2\text{He}$ is 28 MeV, then the energy released is
 (A) 30.2 MeV (B) 25.8 MeV (C) 23.6 MeV (D) 19.2 MeV
83. The radio-active substance has a half-life of four months. Three fourths of the substance will decay in
 (A) 3 months (B) 4 months (C) 12 months (D) 8 months

84. If $\vec{a} + \vec{b} + \vec{c} = 0$, $|\vec{a}| = 3$, $|\vec{b}| = 5$, $|\vec{c}| = 7$ then the angle between \vec{a} and \vec{b} is:
 (A) $\frac{\pi}{6}$ (B) $\frac{2\pi}{3}$ (C) $\frac{5\pi}{3}$ (D) $\frac{\pi}{3}$
85. The domain and range of $\sqrt{4x - x^2}$ are
 (A) \mathbb{R} , $[0, 2]$ (B) $[-2, 2]$, $[0, 2]$ (C) $[2, 4]$, $[0, 2]$ (D) $[0, 4]$, $[0, 2]$
86. In ΔABC , if $\left(1 - \frac{r_1}{r_2}\right)\left(1 - \frac{r_1}{r_3}\right) = 2$, then the Δ is
 (A) rt. Angled (B) equilateral (C) isosceles (D) scalene
87. If the sum of the slopes of the lines $x^2 + kxy - 3y^2 = 0$ is twice the product of the slopes, then k is
 (A) 1 (B) 2 (C) -2 (D) 0
88. The line $y = mx + c$ is a tangent to the parabola $y^2 = 4a(x + a)$, then
 (A) $c = ma - \frac{a}{m}$ (B) $c = \frac{a}{m}$ (C) $c = ma + \frac{a}{m}$ (D) $c = a^2 m - \frac{a}{m}$
89. The circles $x^2 + y^2 - 6x + 5 = 0$ and $x^2 + y^2 - 8x + 7 = 0$ are:
 (A) touch each other internally (B) touch each other externally
 (C) concentric (D) do not touch each other
90. The direction cosines of the line which is perpendicular to the lines with direction cosines proportional to 3, -1, 1 and -3, 2, 4 is:
 (A) $\frac{-3}{\sqrt{30}}, \frac{2}{\sqrt{30}}, \frac{1}{\sqrt{30}}$ (B) $\frac{2}{\sqrt{30}}, \frac{5}{\sqrt{30}}, \frac{-1}{\sqrt{30}}$ (C) $\frac{-2}{\sqrt{15}}, \frac{-3}{\sqrt{15}}, \frac{5}{\sqrt{15}}$ (D) 1, 2, 3
91. The number of ways of arranging 6 players to throw the cricket ball so that the oldest player may not throw first is:
 (A) 120 (B) 720 (C) 1050 (D) 600
92. The coefficient of x^9 in the expansion of $\log(1 + x + x^2)$ is
 (A) $-\frac{2}{9}$ (B) $\frac{2}{9}$ (C) $\frac{9}{2}$ (D) $-\frac{9}{2}$
93. The value of $\left(\frac{-1 + \sqrt{-3}}{2}\right)^{40} + \left(\frac{-1 - \sqrt{-3}}{2}\right)^{40}$ is
 (A) -1 (B) 1 (C) 2 (D) 0
94. Three consecutive terms of a progression are 30, 24, and 20. The next term of the progression is:
 (A) $\frac{16}{5}$ (B) 12 (C) $\frac{120}{7}$ (D) $\frac{50}{3}$
95. The differential coefficient of $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$ with respect to $\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$ is
 (A) $2 \tan^{-1}x$ (B) $\frac{1}{1+x^2}$ (C) 1 (D) $\frac{1-x^2}{1+x^2}$
96. $\int_0^\infty \operatorname{sech}x \, dx$ is
 (A) π (B) 1 (C) $\frac{\pi}{2} + 1$ (D) $\frac{\pi}{2}$

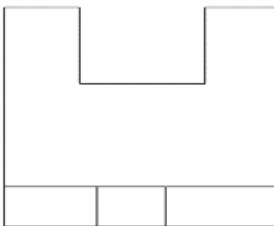
97. The area bounded by $y = e^x$, $y = e^{-x}$ and x-axis is
 (A) 1 (B) $\frac{3}{2}$ (C) $\frac{1}{2}$ (D) 2
98. If $h(x) = f(x) + f(-x)$, then $h(x)$ has got an extreme value at a point where $f'(x)$ is:
 (A) odd function (B) even function (C) constant (D) periodic

99. Which line is missing in right side view of the following solid?



- (A) horizontal solid line (B) vertical hidden line
 (C) vertical solid line (D) horizontal solid line

100. Select the correct Isometric view of the solid for the given orthographic view.



- (A) (B) (C) (D)
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