

Kantipur Engineering College

Dhapakhel, Lalitpur Tel: 01-5229204/01-5229005

TRIBHUVANUNIVERSITY INSTITUTE OF ENGINEERING

Model Questions for B.E. Entrance Test (2075)

Set: II (A)

Time: 2 hours

Date: 2075/04/05

Section: I Select the Best Alternative on the answer sheet given. 60×1 = 60

- Which of the following pairs is uttered similarly?
(A) heir, air (B) wait, wet (C) ear, heir (D) get, gate
- A house which is painted white is called a 'White house'. What is the stress pattern for it?
(A) first element gets stressed (B) both elements get stressed
(C) second element gets stressed (D) stress does not fall on any element
- Her manner embarrassed the other on the party.
(A) tractable (B) affable (C) gauche (D) sapid
- The word 'atom' is now being used extensively in advertising: it has captured man's
(A) fortitude (B) opportunities (C) world (D) imagination
- 'This is too good to be expected' - has the same meaning as 'This is be expected'.
(A) as good as can (B) so very good to
(C) very good to (D) so good that it could
- Have you heard the bell.....?
(A) rings (B) rang (C) ring (D) ringing
- Which of the following is acceptable?
(A) Neither he nor his brother is happy. (B) I as well as he am to speak.
(C) Not only John but also his brother has also gone out of station.
(D) None of them has arrived yet.
- We have a new machine but nobody knows what for it is meant.
(A) What it is supposed to do. (B) What it is meant.
(C) What for it meant is. (D) What it was supposed to do.
- I do not regard
(A) him as my friend. (B) him my friend.
(C) him like my friend. (D) him for my friend.
- Pick out correct option.
(A) What sort of businessman is he?
(B) What sort of a businessman is he?
(C) What sort of the businessman is he?
(D) What sort of an businessman is he?

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11. He will not listen to me,?
(A) won't he (B) does he (C) will he (D) doesn't he
12. The king said, "I'm sorry my child."
(A) The king told the child to be sorry.
(B) The king requested him to be sorry.
(C) The king calling him a child apologized.
(D) The king told that he was sorry.
13. The passive voice sentence for "Nobody spoke to me" is
(A) I had not been spoken to (B) Nobody was spoken to me
(C) I had not spoken (D) I was not spoken to me
14. Which of the following is acceptable?
(A) He said. Oh! We are caught. (B) He said, "Oh we are caught".
(C) He said, "Oh! We are caught". (D) He said, "Oh! We are caught."
15. Number of moles of solute dissolved in 1Kg of solvent is called
(A) Normality (B) Molality (C) Molarity (D) Molecularity
16. Molecular weight of a gas if 280 ml of it at NTP weigh 2 gm is
(A) 180 (B) 160 (C) 260 (D) 170
17. pH of 0.2 N H_2SO_4 is
(A) 1.2 (B) 0.56 (C) 0.76 (D) 0.69
18. Atomic No. 27 belongs to which block element?
(A) s (B) p (C) d (D) f
19. How many litres of O_2 at NTP are required to burn completely 4.4 g of propane?
(A) 22.4 L (B) 11.2 L (C) 44 L (D) 84 L
20. In Contact process the arsenic impurity is removed by
(A) $\text{Fe}(\text{OH})_3$ (B) V_2O_5 (C) Pt (D) FeO
21. Catalytic oxidation of ammonia in air forms
(A) NO (B) NO_2 (C) N_2O (D) N_2O_5
22. Water gas is a mixture of
(A) $\text{NH}_3 + \text{N}_2$ (B) $\text{CO} + \text{N}_2$ (C) $\text{CO} + \text{H}_2$ (D) $\text{CO} + \text{N}_2 + \text{CO}_2$
23. Important ore of zinc
(A) Malachite (B) Felspar (C) Azurite (D) Calamine
24. Excess of Cl_2 reacts with ammonia to form
(A) $\text{N}_2 + \text{NH}_3$ (B) $\text{NCl}_3 + \text{HCl}$ (C) $\text{N}_2 + \text{NCl}_3$ (D) $\text{N}_2 + \text{NH}_4\text{Cl}$
25. Benzene has
(A) three pi bonds and twelve sigma bonds
(B) six pi and six sigma bonds
(C) twelve sigma bonds and six pi bonds
(D) three pi and six sigma bonds

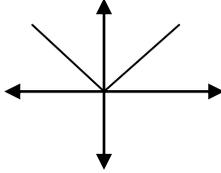
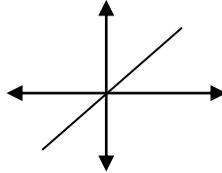
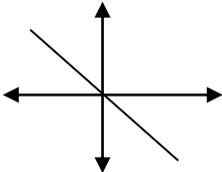
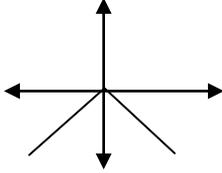
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26. n-pentane and neo-pentane are
(A) functional isomers (B) metamers
(C) position isomers (D) Chain isomers
27. The minimum number of vectors of equal magnitude required to produce zero resultant is
(A) three (B) two (C) four (D) more than four
28. A particle moves with uniform velocity, which of the following statements about the motion of the particle is true?
(A) its speed is zero (B) its acceleration is opposite to the velocity
(C) its acceleration is zero (D) its speed may be variable
29. The means of energy transfer in vacuum is
(A) irradiation (B) convection (C) radiation (D) conduction
30. To hear beats, it is essential that the two sound waves in air should
(A) be travelling in opposite direction
(B) be travelling in the same direction
(C) have slight different wavelengths
(D) have slightly different amplitude
31. What is the main cause of the shining of diamond?
(A) reflection (B) refraction
(C) dispersion of light (D) total internal reflection
32. A virtual image larger than the object can be produced by
(A) convex mirror (B) concave lens
(C) plan mirror (D) concave mirror
33. In an astronomical telescope, the image formed is
(A) inverted and virtual (B) erect and virtual
(C) real and erect (D) real and virtual both
34. Two small spheres each carrying a charge q are placed 1 m apart. The electric force between them is F . If one sphere is taken around the other, the work done is
(A) zero (B) $2\pi F$ (C) $\frac{F}{2\pi}$ (D) F
35. A particle moving in a magnetic field has increase in its velocity then its radius of the circle
(A) decreases (B) increases (C) remains the same (D) becomes half
36. In photo electric effect the number of photo-electrons emitted is proportional to
(A) frequency of incident beam (B) intensity of incident beam
(C) velocity of incident beam (D) work function of photo cathode

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37. In how many different ways can 3 men and 3 women be seated in a row if two persons of the same sex do not sit together?
(A) 24 (B) 36 (C) 96 (D) 72
38. What is the second derivative of $\frac{2}{1-x}$ at $x = -1$?
(A) 1 (B) 3 (C) $1/2$ (D) 0
39. What is the angle between the lines whose direction ratios are 2, -1, 4 and -3, 2, 2?
(A) $\pi/2$ (B) $\pi/3$ (C) $\pi/6$ (D) $\pi/4$
40. If $\tan 3\theta = -1$, what is the value of θ ?
(A) $n\pi - \frac{\pi}{4}$ (B) $\frac{n\pi}{3} - \frac{\pi}{12}$
(C) $n\pi - \frac{\pi}{12}$ (D) $\frac{n\pi}{3} - \frac{\pi}{4}$
41. If $f(x+2) = x^2 + 4x + 8$ what is the value of $f(-2)$?
(A) -2 (B) 0 (C) 5 (D) 8
42. Which of the following is the graph of $y = -|x|$?
(A)  (B) 
(C)  (D) 
43. If $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$ and θ is the angle between \vec{a} and \vec{b} then what is the value of θ ?
(A) $\frac{\pi}{3}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{6}$ (D) $\frac{\pi}{2}$
44. $\begin{bmatrix} 2 & 2k-2 \\ 1-k & 3 \end{bmatrix}$ is a symmetric matrix, what is the value of k ?
(A) 0 (B) 1 (C) -1 (D) 2
45. What is the stationary point of the curve $y = x^2 - 2x - 5$?
(A) (1, 6) (B) (1, -6) (C) (-1, 6) (D) (-1, -6)
46. What is the derivative of $\frac{d}{dx} \log|x|$?
(A) $\frac{1}{|x|}$ (B) $\frac{1}{x}$ (C) $\frac{-1}{|x|}$ (D) $|x|$

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47. Ignition quality of Diesel oil is expressed by
(A) Cetane no. (B) Octane no. (C) carburator (D) Renold no
48. Solar PV panel efficiency is proportional to temperature.
(A) inversely (B) directly (C) equally (D) all of the above
49. Which of the following is carried out in anaerobic condition?
(A) bio gas plant (B) solar heater
(C) hydroelectricity (D) wind plants
50. The continuous white line in between lanes indicate the lane.
(A) may cross (B) carefully cross (C) do-not cross (D) don't turn
51. Marble is a
(A) sedimentary rock (B) igneous rock
(C) metamorphic rock (D) granol rock
52. The electrical energy stored in micro hydropower project is stored in.....
(A) geothermal (B) kinetic energy
(C) potential energy (D) none of the above
53. Using transformer following component remains same.
(A) Frequency (B) Voltage (C) Power (D) Frequency & Power
54. Highest coal resources are in
(A) USA (B) Brazil (C) Nepal (D) China
55. Due toside management, we almost do not have load shedding these days.
(A) balance (B) supply (C) demand (D) power
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 Procedure (B) Internet Security Provider
(C) Internet Server Provider (D) Internet Service Provider
58. Which of the following is other than operating system?
(A) Google chrome (B) Linux (C) windows (D) Mac OS
59. VOIP is used for.....
(A) video call in internet (B) video call in portal
(C) voice call in internet (D) voice call in portal
60. Which of the following is sequential device?
(A) mouse (B) magnetic tape
(C) pen drive (D) printer The OR gate

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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 young man has hidden his face and fast asleep again. The old man called Iona sighs and scratches his head. It will soon be a week since his son died, and he has not been able to speak properly about it to anyone. One must tell it slowly and carefully, how he died. One must describe every detail of the funeral and journey to the hospital to fetch the defunct clothes. His daughter Lena remained in the village. One must talk about her, too. Was it nothing he has to tell? Surely, the listener would gasp and sigh, and sympathize with him? It is better, to talk to women; although they are stupid, two worlds are enough to make them sob.

61. Why does the writer think that women are appropriate subject to share feeling?
(A) They are stupid. (B) They weep easily.
(C) They have patience. (D) They are tender-hearted.
62. Iona was trying to tell every detail of his son's death because he wanted.....
(A) to have sympathy (B) to inform others about his son's death
(C) others too fell like himself (D) others to know about his son's death
63. The young man did not listen to Iona because
(A) he was feeling sleepy (B) It was not his duty
(C) he was trying to be indifferent (D) Iona was not his relative
64. What might be the topic of the above paragraph?
(A) Description of old man's life full of struggle.
(B) One more attempt of Iona to tell about his grief.
(C) Description of old man's sick son and his death.
(D) Old man's family and relatives.
65. 25ml of 0.1N caustic soda solution exactly neutralize 20 ml of an acid solution containing 7.875 g of acid per litre. The equivalent weight of the acid is
(A) 53.0 (B) 98.0 (C) 63.0 (D) 49.0
66. A current of 0.75 ampere is passed through a solution of a salt of a metal for 45 min, and the increase in weight of cathode is 0.6662 g, the equivalent weight of the metal is
(A) 32.5g (B) 31.75 g (C) 37.5 g (D) 53
67. IUPAC name of $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-CH(OCH}_3\text{)-COCl}$ is
(A) 3-methoxypentanoyl chloride (B) 5-methoxyhexanoyl chloride
(C) 2-methoxyhexanoyl chloride (D) 2-methoxypentanoyl chloride

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68. A gas formed by heating copper turnings with concentrated sulphuric acid when passed through acidified KMnO_4 solution,
(A) KMnO_4 is turned yellow (B) SO_2 is oxidised
(C) KMnO_4 is oxidised (D) KMnO_4 solution is turned green
69. "Pascal-second" has the dimensions of
(A) force (B) energy (C) pressure (D) coefficient of viscosity
70. The half life of radium is 1620 years and its atomic weight is 226 kg per kilomol. The number of atoms that will decay from its 1 gm sample per second will be (Avogadro's number $N = 6.02 \times 10^{26}$ atom/kilomol)
(A) 3.61×10^{10} (B) 31.1×10^{15}
(C) 3.11×10^{15} (D) 3.6×10^{12}
71. The energy of the ground electronic state of hydrogen atom is -13.6 eV. The energy of the first excited state will be
(A) -54.4 eV (B) -6.8 eV (C) -27.2 eV (D) -3.4 eV
72. In a simple pendulum, if kinetic energy is one-fourth of total energy, then displacement (x) is related to amplitude (R) as
(A) $x = \frac{\sqrt{3}}{2} R$ (B) $x = 2R$ (C) $x = \frac{\sqrt{3}}{4} R$ (D) $x = R$
73. A stone falls from rest. The total distance covered by it in the last second of its motion is equal to the distance covered in the first three seconds of its motion. What is the height from which the stone was dropped? ($g = 10\text{m/s}^2$)
(A) 125 m (B) 100 m (C) 25 m (D) 200 m
74. The ratio of the secondary to the primary turns in a transformer is 3:2 and the output power is P. Neglecting all power losses, the input power will be
(A) P (B) $\frac{3}{2}P$ (C) $\frac{P}{2}$ (D) $\frac{2}{3} P$
75. At a certain given place on the earth's surface, the horizontal component of earth's magnetic field is 3×10^{-5} T and resultant magnetic field is 6×10^{-5} T. The angle of dip at this place is
(A) 30° (B) 60° (C) 50° (D) 40°
76. An electron is accelerated through a potential difference of 200 volt. If e/m for the electron be 1.6×10^{11} C/kg, the velocity acquired by the electron will be
(A) 8×10^5 m/s (B) 5×10^6 m/s (C) 8×10^6 m/s (D) 5.9×10^5 m/s
77. The critical angle of a certain medium is $\sin^{-1} (3/5)$. The polarizing angle of the medium is
(A) $\sin^{-1} (4/5)$ (B) $\tan^{-1} (3/4)$ (C) $\tan^{-1} (5/3)$ (D) $\tan^{-1} (4/3)$

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78. A man with defective eyes cannot see distinctly object at the distance more than 60 cm from his eyes. The power of the lens to be used will be
(A) + 60 D (B) -60 D (C) $\left(\frac{1}{1.66}\right)$ D (D) - 1.66 D
79. The temperature of the sink of a carnot engine is 27^0 C. If the efficiency of the engine is 25%, the temperature of the source is
(A) 227^0 C (B) 127^0 C (C) 327^0 C (D) 27^0 C
80. A rectangular block is heated from 0^0 C to 100^0 C. The percentage increase in its length is 0.10%. What will be the percentage increase in its volume?
(A) 0.30 % (B) 0.10 % (C) 0.03% (D) 0.45%
81. Two equal drops are falling through air with a steady velocity of 5 cm/sec. If the drops coalesce, the new terminal velocity will be
(A) $5 \times (4)^{1/3}$ cm/s (B) $5 \times \sqrt{2}$ cm/s
(C) 5×2 cm /s (D) $5 / \sqrt{2}$ cm/s
82. If the change in the value of g at the height h above the surface of the earth is the same as at a depth x below it, then (both x and h being much smaller than the radius of the earth)
(A) $x = h$ (B) $x = h^2$ (C) $2x = h$ (D) $x = 2h$
83. A block slides from an inclination of 45^0 . If it takes time twice with friction that to that without friction, then coefficient of friction for surface is given by
(A) 0.25 (B) 0.5 (C) 0.75 (D) 1
84. If \vec{a} and \vec{b} are two vectors of unit length and θ is the angle between them then the value of $|\vec{a} - \vec{b}|$ is
(A) $\sin\theta$ (B) $2\sin\frac{\theta}{2}$ (C) $2\cos\frac{\theta}{2}$ (D) $\cos\frac{\theta}{2}$
85. What is the value of $\int(1 - \cos x + \cos^2 x - \cos^3 x + \cos^4 x - \dots) dx$?
(A) $\frac{1}{2} \tan \frac{x}{2} + c$ (B) $\tan \frac{x}{2} + c$ (C) $\frac{1}{2} \tan x + c$ (D) $\frac{1}{2} \cot \frac{x}{2} + c$
86. In the expansion of $(1 + ax)^4$ the coefficient of x^3 is 1372. What is the value of a?
(A) 6 (B) 8 (C) 7 (D) 9
87. What is the modulus and argument of the complex number $-1 + \sqrt{3} i$?
(A) 2 and $\frac{\pi}{3}$ (B) 2 and $-\frac{\pi}{3}$ (C) -2 and $\frac{\pi}{3}$ (D) 2 and $\frac{2\pi}{3}$
88. What are the values of a and b if $x^2 - 10x + 17$ is expressed in the form of $(x - a)^2 + b$?
(A) 5 and -8 (B) 5 and 8 (C) - 5 and 8 (D) -5 and -8

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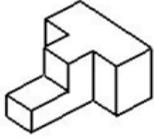
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89. Which of the following is the solution of $|3x - 2| < 5$?
(A) $-1 < x < \frac{7}{3}$ (B) $2 < x < 5$
(C) $1 < x < \frac{7}{3}$ (D) $-\frac{7}{3} < x < \frac{7}{3}$
90. What are the three arithmetic means between x and y ?
(A) $-\frac{3x+y}{4}, \frac{x+y}{2}, -\frac{x+3y}{4}$ (B) $\frac{y-x}{4}, \frac{y-x}{3}, \frac{y-x}{2}$
(C) $\frac{y-x}{4}, \frac{y-x}{3}, \frac{x+y}{4}$ (D) $\frac{3x+y}{4}, \frac{x+y}{2}, \frac{x+3y}{4}$
91. What is the range of the function $f(x) = \frac{x}{|x|}$?
(A) \mathbb{R} (B) $\mathbb{R} - \{0\}$
(C) $\{-1, 1\}$ (D) $\mathbb{R} - \{-1, 1\}$
92. What is the value of $f(x)$ if $\int \frac{1}{f(x)} dx = \log[f(x)]^2 + c$?
(A) $x + k$ (B) $\frac{1}{2}x + k$
(C) $2x + k$ (D) $3x + k$
93. For the conic $x^2 - 4x - 12y - 32 = 0$, (i) Vertex is $(2, -3)$ (ii) length of the latus rectum is 12, then which of the following is true?
(A) both (i) & (ii) are correct (B) (i) is incorrect and (ii) correct
(C) (i) is correct and (ii) incorrect (D) both (i) & (ii) are incorrect
94. What is the angle between the lines represented by $xy + 2x - y - 2 = 0$?
(A) $\frac{\pi}{2}$ (B) 0 (C) $\frac{\pi}{3}$ (D) $\frac{\pi}{4}$
95. Which of the following exists for the function $f(x) = x + \sin x$?
(A) A maximum but no minimum (B) A minimum but no maximum
(C) Neither maximum nor minimum (D) Both maximum and minimum
96. What is the area bounded by the curve $y = \ln x$, the x -axis and the straight line $x = e$?
(A) e (B) 0 (C) 1 (D) $1/e$
97. If the curve $y = ax^2 - 2x + b$ passes through $(1, 2)$ and the tangent is parallel to x axis at $x = -1$, what are the values of a and b ?
(A) $(1, -5)$ (B) $(1, 5)$
(C) $(-1, -5)$ (D) $(-1, 5)$
98. What is the value of x if $3\cos^{-1}x + \sin^{-1}x = \pi$?
(A) $\frac{1}{2}$ (B) 1
(C) 0 (D) $\frac{1}{\sqrt{2}}$

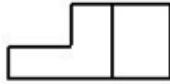
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99. Which orthographic projection is incorrect?

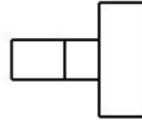


(A)



FV

(B)



TV

None

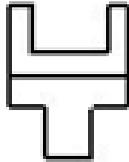
(C)



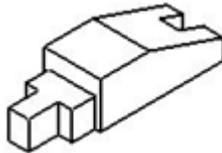
LSV

(D)

100. Which is the correct solid object for the given orthographic projection?



(A)



(B)



(C)



(D)

