TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING

# KANTIPUR ENGINEERING COLLEGE

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

**Set: 1 (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 is the pronunciation of the word 'reverse'?
(A) /rìva:s/ (B) /rìvɜ:s/ (C) /rìvəs/ (D) /rìvəz/

**2.** Which syllable of the word 'responsible' is stressed?
(A) first (B) third (C) second (D) fourth

**3.** No one wants to jeopardize his career. The synonym of the underlined word is ……...
(A) endanger (B) wear away (C) belittle (D) unbalance

**4.** It is not possible to …….. the suffering.
(A) instigate (B) propitate (C) masticate (D) mitigate

**5.** He has a high enthusiasm. What does the word 'enthusiasm' mean?
(A) popularity (B) salary (C) demand (D) interest

**6.** Which of the following is correct?
(A) Neither Hari nor his brother have a book. (B) Neither Hari nor his brother were a book.
(C) Neither Hari nor his brother are reading a book.
(D) Neither Hari nor his brother has a book

**7.** Which of the following is not acceptable?
(A) eat off (B) get off (C) see off (D) put off

**8.** Which of the following expressions mean 'overflow'?
(A) run over (B) run up to (C) run up (D) run in

**9.** Which of the following is acceptable?
(A) One of them has lost the job. (B) One of them will lost the job.
(C) One of them lose the job. (D) One of them have lost the job.

**10.** Our course ……. by Friday.
(A) has completed (B) was complete
(C) will have been completed (D) will complete

**11.** Ten kilometers …….. a great distance.
(A) were (B) are (C) is (D) being

**12.** You'd better stop, ……?
(A) wouldn't you (B) had you (C) hadn't you (D) would you

**13.** The passive voice of 'she helped me' is …….
(A) I helped her. (B) I was helped by her.
(C) I am helped by her (D) she was helped by me.

**14.** Which of the following is simple sentence?
(A) He finished watching television and went to bed.
(B) The earth revolves round the sun.
(C) He is not only famous but also intelligent.
(D) The students worked hard in order that they might pass.

**15.** For s orbital, the value of l (azimuthal quantum number) is
(A) 1 (B) 0 (C) 2 (D) 3

**16.** The number of molecules in 5 gm of hydrogen is
(A) $5 \times 10^{24}$ (B) $1.505 \times 10^{24}$ (C) $1.505 \times 10^{23}$ (D) $15.05 \times 10^{-23}$

**17.** pH of $10^{-8}$ N HCl is
(A) 6.95 (B) 2.5 (C) 7.95 (D) 4.56

**18.** The O.N of Carbon in $CO_3^{--}$
(A) - 6 (B) - 4 (C) + 4 (D) + 2

**19.** The amount of energy required to remove most loosely bound electron from neutral atom is called
(A) atomic energy (B) ionization energy (C) electro negativity (D) electron affinity

**20.** The oil used in froth flotation process is
(A) coconut oil (B) mustard oil (C) olive oil (D) pine oil

**21.** Thomas slag is
(A) $Ca_3(PO_4)_2$ (B) $MgSiO_3$ (C) $FeSiO_3$ (D) $CaSiO_3$

**22.** Water gas is a mixture of
(A) $NH_3 + N_2$ (B) $CO + N_2$ (C) $CO + H_2$ (D) $CO + N_2 + CO_2$

**23.** Azurite is the ore of
(A) Zn (B) Cu (C) Fe (D) Na

**24.** Ammonia can be dried by
(A) $P_2O_5$ (B) CaO (C) Conc. $H_2SO_4$ (D) $CaCl_2$

**25.** Benzene is polymer of
(A) ethylene (B) ethane (C) ethane (D) ethyne

**26.** A carboxylic acid is the isomer of
(A) a ketone (B) an aldehyde (C) an ester (D) an ether

**27.** Which of the following is vector quantity
(A) surface tension (B) temperature (C) calorie (D) watt

**28.** The electric current passes through a metallic wire produces heat because of
(A) collision of conduction electrons with each other
(B) collision of the atoms of metal with each other
(C) the energy released in the ionization of the atoms of the metal
(D) collisions of the conduction electrons with the atoms of the metallic wire

**29.** A body, which emits radiations of all possible wavelengths is known as
(A) good conductor (B) perfectly black body
(C) absorber of photons (D) partial radiator

**30.** It is possible to distinguish between transverse and longitudinal waves by studying the property of
(A) polarization (B) interference (C) diffraction (D) refraction

**31.** A dielectric is introduced between the elements of the condenser kept at a constant potential difference, then the charge on condenser is
(A) remains the same (B) decreases (C) increases (D) none of the above

**32.** A vertical object placed between the pole and the principal focus of a convex mirror produces an image which is
(A) real diminished and invertedreal, (B) virtual, diminished and inverted
(C) magnified and upright (D) virtual, diminished and upright

**33.** The effect of temperature on the value of Young's modulus of elasticity for various substances in general is
(A) it increases with increase in temperature (B) decrease with rise in temperature
(C) remains constant (D) sometimes increases and sometimes decreases with temperature

**34.** When paramagnetic substance is placed in a magnetic field, the magnetic induction inside the substance
(A) remains constant (B) decreases (C) reduces to zero (D) increases

**35.** The maximum energy of the electron released in photocell is independent of
(A) intensity of incident light (B) frequency of incident light
(C) nature of cathode surface (D) none of these

**36.** If yellow light emitted by sodium lamp in Young's double slit experiment is replaced by monochromatic blue light of the same intensity then
(A) fringe width will increase (B) fringe width will decrease
(C) fringe width will remains unchanged (D) fringes will become less intense

**37.** If A = {a, b, c, d, e} and B = { c, d, e, f, g], then the number of element in $(A \times B) \cap (B \times A)$ is equal to
(A) 25 (B) 24 (C) 10 (D) 9

**38.** If $\left|\vec{a} \times \vec{b}\right| = |\vec{a}|\,|\vec{b}|$ then $\vec{a}$ and $\vec{b}$ are
(A) unlike vector (B) like vector (C) perpendicular (D) coincident

**39.** The general solution of sin2x + sin4x + sin6x = 0 is
(A) $\frac{n\pi}{4}$ (B) $n\pi + (-1)^n \frac{\pi}{3}$ (C) $n\pi + \frac{\pi}{6}$ (D) $2n\pi$

**40.** $\lim\limits_{n\to\infty} \frac{1^2 + 2^2 + 3^2 + \ldots\ldots + n^2}{n^3}$ equal to
(A) $\frac{2}{3}$ (B) $\frac{1}{6}$ (C) $\frac{1}{2}$ (D) $\frac{1}{3}$

**41.** If $y = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \ldots\ldots\ldots\ldots$, then $\frac{dy}{dx}$ is
(A) $e^x$ (B) cos h x (C) tan hx (D) sinhx

**42.** $\int e^{-\log x}\, dx$ is
(A) $-e^{-\log x}$ (B) $-x\,e^{-\log x}$ (C) log |x| (D) none

**43.** If A is square matrix such that $A^2 = I$, then $A^{-1}$ is
(A) A (B) A+ I (C) 2A (D) I

**44.** The number of real roots of $|x|^2 + |x| - 12 = 0$ is
(A) 2 (B) 0 (C) 3 (D) 4

**45.** The projection of line on axes are 12, 4, 3, then direction cosines of line are:
(A) $\frac{12}{13}, \frac{4}{13}, \frac{3}{13}$ (B) $\frac{12}{13}, \frac{-4}{13}, \frac{-3}{13}$ (C) $\frac{-12}{13}, \frac{4}{13}, \frac{3}{13}$ (D) $\frac{1}{13}, \frac{2}{13}, \frac{4}{13}$

**46.** The foot of the perpendicular from point (2, 4) upon x + y = 1 is
(A) $\left(\frac{4}{3}, \frac{1}{2}\right)$ (B) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (C) $\left(\frac{-1}{2}, \frac{3}{2}\right)$ (D) $\left(\frac{3}{4}, \frac{-1}{2}\right)$

**47.** The temperature in I.C. engine is about… $^oC$?
(A) 200 (B) 2000 (C) 20 (D) none

**48.** Solar module are measured in…….?
(A) Mill watt per hour (B) Kilowatt (C) Wattpeak (D) HP

**49.** Which country has highest potential of coal?
(A) Nepal (B) USA (C) Japan (D) UK

**50.** A badly mixed cement concrete results in ……
(A) separation (B) bleeding (C) segregation (D) honey combing

**51.** Specific gravity of cast iron is usually
(A) 4.1 (B) 5.8 (C) 6.5 (D) 7.25

**52.** A first class brick immersed in water for 24 hours, should not absorb water (by weight) more than
(A) 10% (B) 15% (C) 22% (D) 25%

**53.** In transformer there is no friction loss due to……
(A) dynamic machine (B) rotating machine (C) static machine (D) none of them

**54.** The largest Hydropower plant Kalagandaki A lies in…….district
(A) Dolakha (B) Syangja (C) Ramechhap (D) Makwanpur

**55.** Transformer humming sound is reduced by the ……..
(A) Proper bracing of transformers assemblies (B) Proper insulation
(C) Proper design (D) Proper design of winding

**56.** The most important part of mouse is……
(A) roller (B) roller & click button (C) USB (D) roller and cord

**57.** No current flows through the diode is
(A) forward bias (B) open circuit (C) reverse bias (D) None of the above

**58.** In PN junction reverse bias, what happens to capacitance
(A) capacitance increases when reverse bias increases
(B) capacitance increases in any condition (C) depends upon material of reverse bias
(D) capacitance increases when reverse bias decreases

**59.** The main purpose of drop box in internet is for…….
(A) back up data (B) share & store data (C) entertainment (D) None of above

**60.** Which operating system is used by i-phone?
(A) Mac OS (B) Android (C) Sambyian (D) iOS

**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.**

Religion is the greatest instrument for so raising us. It is amazing that a person not intellectually bright, perhaps not even educated, is capable of grasping and living by something so advanced as the principles of Christianity. Yet, there is a common phenomenon. It is not, however, in my province to talk about the religion, but rather to stress the power which great literature and the great personalities whom we meet in it and in history have to open and enlarge over minds, and to show us what is first rate in human personality and human character by showing us goodness and greatness.

**61.** In the passage, the author's ultimate intention is to talk about …….
(A) education (B) history (C) religion (D) character

**62.** The phrase "so raising us" means …….
(A) Giving us a sense of spiritual superiority.
(B) Making us feel that we are more important than we really are.
(C) Making us realize that we all are children of God.
(D) Improving our mental abilities.

**63.** What surprises the author is that …….
(A) even educated people are attracted towards Christianity.
(B) Christianity is practiced by a large number of people.
(C) despite being difficult and complex, the principles of Christianity are practiced by so many people.
(D) even very intelligent people cannot understand the principle of Christianity.

**64.** The author hesitates to talk about religion because …….
(A) he does not feel himself competent to talk about it.
(B) nobody around him likes to talk about it.
(C) he does not believe in any religion. (D) he does not fully understand its importance.

**65.** If the hydrogen ion concentration of a fruit juice is $3.3 \times 10^{-2}$ M, its pH is
(A) 1.34 (B) 1.48 (C) 2 (D) 1.56

**66.** How many number of coulombs required to deposit 5 gm of copper by the electrolysis of $CuSO_4$ solution if ECE of Cu is 0.0003294 gm/C
(A) 329450C (B) 96500 C (C) 96450 C (D) 15197C

**67.** IUPAC name of $CH_3$- $CH_2$ - $CH_2$ - $CH_2$ - CN is
(A) pentanenitrile (B) pentane cyanide (C) cyanobutane (D) butane cyanide

**68.** The gas formed by heating ethyl alcohol with conc. $H_2SO_4$ at $165^OC$ when passed into Baeyer's reagent forms……..
(A) ethylene glycol (B) ethyl alcohol (C) acetic acid (D) acetaldehyde

**69.** The angle between two vectors –2i + 3j + k and i + 2j – 4k
(A) 0° (B) 180° (C) 90° (D) 45°

**70.** An object is projected upward with a velocity of 100 m/s. It will strike the ground after
(A) 10 sec (B) 15 sec (C) 20 sec (D) 5 sec

**71.** The relation between orbital kinetic energy $E_0$ and escape kinetic energy $E_e$ is
(A) $E_e = \sqrt{2}\, E_0$ (B) $E_e = E_0/2$ (C) $E_e = E_0/\sqrt{2}$ (D) $E_e = 2E_0$

**72.** A man stationed between two parallel cliffs fires a gun. He hears first echo after 3 sec and next after 5 sec. What is the distance between two cliffs?
(A) 525 m (B) 875 m (C) 350 m (D) 1400 m

**73.** A faulty thermometer reads melting point if ice as – 10°C. It reads 60° is. Place of 50°C. What is the temperature of boiling point of water in this scale?
(A) 90°C (B) 130°C (C) 125°C (D) 110°C

**74.** The 22 gm of $CO_2$ at 27°C is mixed with 16 gm of $O_2$ at 37°C. The temperature of the mixture is
(A) 27°C (B) 32°C (C) 30°C (D) 37°C

**75.** Two point charges – 3μC and 8μC attract each other with a force of 40N. If a charge of – 5μC is added to each of them, then the force between them will becomes
(A) + 30 N (B) +10 N (C) +20 N (D) +40 N

**76.** Two capacitor of 1 μF and 2 μF are connected is series and the combination is connected across a potential of 6V. The ratio of energies stored by the condenser will be
(A) 1:2 (B) 4:1 (C) 1:4 (D) 2:1

**77.** The temperature coefficient resistance of a wire is $0.00125°C^{-1}$. At 300K its resistance is 1Ω. The resistance of the wire will be 2Ω at
(A) 1154 K (B) 1100 K (C) 1400 K (D) 1127 K

**78.** A charged particle is moving is a uniform magnetic field in a circular path. Radius of circular path is r. When kinetic energy of particle is doubled, then the new radius will be
(A) 2r (B) 3r (C) $r\sqrt{2}$ (D) $r\sqrt{3}$

**79.** The current passing through a choke coil of 5H is decreasing as a rate 0f 2 A/s. The emf developed across the coil is
(A) 10 V (B) – 10V (C) 205 V (D) – 205 V

**80.** A thin prism made of glass is dipped in water, the minimum deviation with respect to air by it will be
(A) 1/4 (B) 1/2 (C) 1/8 (D) 1/16

**81.** An un-polarized beam of intensity $I_0$ falls on a Polaroid. The intensity of emergent light is
(A) $I_0$ (B) $I_0/2$ (C) $I_0/4$ (D) zero

**82.** In a photo-electric cell, the wave length of incident light is charged from 4000Å to 3000Å then change in stopping potential will be
(A) 0.66V (B) 0.33V (C) 1.03V (D) 0.49V

**83.** The work function of a metallic surface is 5.01eV. The photoelectrons are emitted when light of wave length 2000Å falls on it. The potential difference applied to stop the fastest photoelectrons is ($h = 4.14 \times 10^{-15}$ eV sec)
(A) 4.2eV (B) 2.24 eV (C) 2.4 eV (D) 1.2 eV

**84.** The domain and range of $\sqrt{16-x^2}$ are
(A) R, [0, 4] (B) [-4, 4], [0, 4] (C) [-2, 2], [0, 2] (D) [2, 4], [0, 2]

**85.** In $\Delta ABC$, if a = 2, b = 4 and C = 60°, then the value of A equals
(A) 20° (B) 60° (C) 90° (D) 30°

**86.** If $|\vec{a}| = 3, |\vec{b}| = 4$ and $|\vec{a} + \vec{b}| = 5$, then $|\vec{a} - \vec{b}|$ equals
(A) 5 (B) 6 (C) 4 (D) 3

**87.** If the pair of lines $x^2 - 2pxy - y^2 = 0$ and $x^2 - 2qxy - y^2 = 0$ are such that each pair bisects the angle between the other pair, then
(A) p + q = 0 (B) pq – 1 = 0 (C) pq + 1 = 0 (D) p + q + 1 = 0

**88.** Equation of the common tangent to the circle $(x - 1)^2 + y^2 = 9$ and the parabola $y^2 = 4x$ above the x – axis is
(A) $\sqrt{3}\,y = 3x + 1$ (B) $\sqrt{3}\,y = -(x + 3)$ (C) $\sqrt{3}\,y = x + 3$ (D) $\sqrt{3}\,y = -(3x + 1)$

**89.** The equation $k\dfrac{(x+1)^2}{3} + \dfrac{(y+2)^2}{4} = 1$ represents a circle if
(A) $k = \dfrac{3}{4}$ (B) $k = \dfrac{1}{2}$ (C) $k = \dfrac{4}{3}$ (D) $k = \dfrac{-3}{4}$

**90.** A plane meets the co-ordinate axes at A, B, C such that centroid of $\Delta ABC$ is (a, b, c). The equation of plane is $\dfrac{x}{a} + \dfrac{y}{b} + \dfrac{z}{c} = k$ where k equals
(A) 1 (B) 3 (C) 2 (D) -1

**91.** Let a, b, c be in A.P. and |a| < 1, |b| < 1, |c| < 1 if, $x = 1 + a + a^2 + \ldots\ldots\ldots\ldots$, $y = 1 + b + b^2 + \ldots\ldots\ldots\ldots$, $z = 1 + c + c^2 + \ldots\ldots$ then x, y, z are in
(A) A-G.P. (B) G.P. (C) H.P. (D) A.P.

**92.** If |z| = 1, then $\dfrac{1+z}{1+\bar{z}}$ is
(A) z (B) $\bar{z}$ (C) $z + \bar{z}$ (D) $\dfrac{1}{2}(z + \bar{z})$

**93.** There are n students in a class. Everybody shakes hand with each other. If the total number of hand shaken in a class is 66, then the number of students are
(A) 12 (B) 11 (C) 10 (D) 13

**94.** $\sqrt{1 + 2x + 3x^2 + 4x^3 + \ldots\ldots}, |x| < 1$ is
(A) $1 - x^2 + x^4 + \ldots\ldots\ldots\ldots$ (B) $1 + x^2 + x^4 + \ldots\ldots\ldots\ldots$
(C) $1 + x + x^2 + x^3 + \ldots\ldots\ldots\ldots$ (D) $1 - x + x^2 - x^3 \ldots\ldots\ldots\ldots$

**95.** If $y = e^{x + e^{x + e^{x + \ldots\ldots\ldots\ldots}}}$, then $\dfrac{dy}{dx}$ equals
(A) $\dfrac{2y}{1+y}$ (B) $\dfrac{1}{1-y}$ (C) $\dfrac{y}{1-y}$ (D) $\dfrac{y+1}{2y}$

**96.** The area bounded by |x| + |y| = 1 is
(A) 4 (B) 1 (C) $\sqrt{2}$ (D) 2

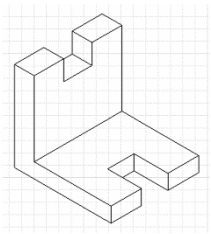
**97.** A spherical balloon is inflated at a rate of 10 cubic inches/sec. At what rate is the radius increasing when the radius is 1 inch?

(A) $\frac{3\pi}{5}$ inch/sec (B) $\frac{2}{9\pi}$ inch/sec (C) $\frac{2}{\pi}$ inch/sec (D) $\frac{5}{2\pi}$ inch/sec

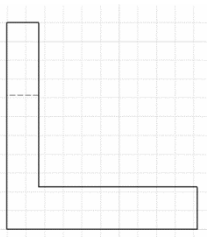
**98.** $\int_{-1}^{1} |1-x|dx$ is

(A) -2 (B) 2 (C) 4 (D) 0

**99.** Which line is missing in the front view of the following solid?

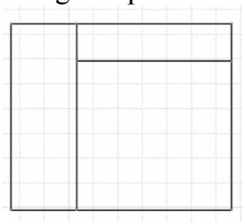


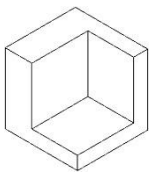
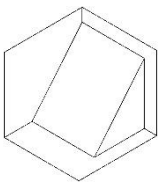
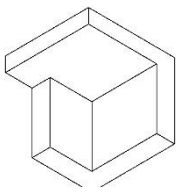
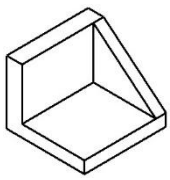
Front view



(A) Vertical solid line (B) Vertical hidden line
(C) Horizontal hidden line (D) Horizontal solid line

**100.** The given plan view is of fig……



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

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