Tribhuvan University
Institute of Engineering
B.E./ B.Arch. ENTRANCE EXAMINATION- 2076

SAMPLE QUESTIONS

Full Marks :140   **Time :**2 hour

A. Number of Questions: (60 ×1 = 60)
Select the Best Alternative
1.   Which of the following word is accented on its third syllable?
      a) cosmology   b) cosmopolitan   c) cosmetic   d) cosignatory
2.   The word 'corrupt' is pronounced as:
      a) /k∂r∧pt/   b) /k∧r∂pt/   c) /kor∧pt/   d) /k∂rupt/
3.   The number of atoms of oxygen present in 11.2 litre of oxygen gas at NTP will have

      a) $\dfrac{1}{2} \times 6.023 \times 10^{23}$ b) $2 \times 6.023 \times 10^{23}$

      c) 6.023×10^2 d) 1.6×10^{24}
4.   The oxidation number of sulphur in H_2SO_4 will be
      a) 8   b) 7   c) 6   d) 4.5
5.   The equivalent weight of $KMnO_4$ in basic medium is
      a) Mol wt/6   b) Mol wt/5   c) Mol wt/3   d) Mol wt/1
6.   The dimension of permittivity of a medium is
      a) $M^{-1}L^{-3}I^2$ b) $M^1L^3TI^2$ c) $MLTI^{-2}$ d) $MLT^{-2}I$
7.   An object of mass m is revolving in a vertical circle of radius r. The tension in the object at the top of the vertical circle will be

      a) mg   b) $\dfrac{mv^2}{r} + mg$ c) $\dfrac{mv^2}{r}$ d) $mg - \dfrac{mv^2}{r}$
8.   When a metal sphere is heated, the percentage expansion is maximum for its
      a) area   b) diameter   c) volume   d) length
9.   The latent heat energy of a substance signifies
      a) decrease in the internal energy of the substance
      b) increase in the temperature of the substance
      c) to produce the chemical changes in the substance
      d) increase in the internal energy of the substance
10.   Let A = (-3, 2) and B = (-2, 3) then A – B =
      a) [-3, 3]   b) (-3, 3)   c) [-3, -2]   d) (-2, 2)

11.   If $\sin x = \dfrac{1}{2}$ and $\cos x = -\dfrac{\sqrt{3}}{2}$ then x =

      a) $2n\pi + \dfrac{\pi}{6}$ b) $2n\pi - \dfrac{\pi}{6}$ c) $2n\pi + \dfrac{\pi}{3}$ d) $2n\pi + \dfrac{5\pi}{6}$

12.   If $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$ then adj. A =

      a) $\begin{bmatrix} -2 & -3 \\ -5 & 2 \end{bmatrix}$ b) $\begin{bmatrix} -2 & 3 \\ 5 & 2 \end{bmatrix}$

      c) $\begin{bmatrix} 2 & -3 \\ -5 & -2 \end{bmatrix}$ d) $\begin{bmatrix} -2 & -3 \\ -5 & -2 \end{bmatrix}$

13.   If the equation $x^2 + 2(k+2) x + 9k = 0$ has equal rools then k =
      a) 1 or 4   b) – 1 or -4   c) 1 or -4   d) -1 or 4
14.   The eccentricity of a hyperbola is
      a) less than 1   b) equal to 1
      c) greater than 1   d) equal to zero

B. Number of Questions :$(40 \times 2 = 80)$

Read the passage and answer the questions.

Most people may think it's hard to follow a weight – loss diet and exercise regime. But people with diabetes ignore the risks at their peril! all diabetes is serious, and can lead to devastating complications that are usually irreversible and often fatal. Too much sugar in your blood damages the vascular system and organs. That means people with diabetes are much more pone to cardiovascular disease and are three times more likely than most people to have high cholesterol, high blood pressure or obesity. Many people with diabetes end up dying as a result of a heart attack or stroke.

Blood glucose can also damage the small blood vessels, which causes problems in the eyes, kidneys, feet and nerves. That means that if the diabetes isn't well-controlled, people are looking at kidney failure or lower limb damage requiring amputation.

Exercising losing weight can reduce the risk of all of these complications, but what many people don't realize is that their diabetes is a progressive disease. "Only about 10% of patients are able to maintain normal glucose levels with lifestyle modifications, and that too only up to one or two years, says Dr. Makkar. "Most patients will eventually require lifelong medication."

15. This passage is mainly about ……….
    a) Cure of diabetes   b) cause of diabetes
    c) effect of diabetes   d) problem of diabetes

16. The term 'obesity' means …………
    a) curiosity   b) observation
    c) unhealthy weight growth   d) healthy weight growth

17. 100cc of centimolar H_2SO_4, 50 ml of decimolar HCl and 500cc of 0.012 molar KOH is mixed, the resultant solution will be
    a) acidic   b) basic   c) neutral   d) amphoteric

18. A young boy requires 12000 KJ energy per day. The amount of energy evolved from 1 more of glucose is 2808 KJ. What weight of glucose be needs for a week?
    a) 769.64 gms   b) 2.694 kg   c) 5.39 kg   d) 10.78 kg

19. A reversible Carnot cycle engine operates between temperature of 1000 K and 250 K. If 16 kJ of heat is transferred to the engine at 1000 K in one cycle, the heat transferred from the engine at 250 K in kJ is
    a) 2   b) 4   c) 6   d) 8

20. Two identical electric bulbs rated 1 KW; 220V are connected in series and the combination is connected to 200V supply line. The power dissipated in each bulb is around.
    a) 50W   b) 100W   c) 200W   d) 250W

21. If α and β are imaginary cube roots of unity then $\alpha^4 + \beta^4 + \dfrac{1}{\alpha\beta}$ is

    a) 3   b) 0   c) 1   d) 2

22. The principal value of $\sin^{-1}\left[\sin\left(\dfrac{2\pi}{3}\right)\right]$ is

    a) $-\dfrac{2\pi}{3}$ b) $\dfrac{\pi}{3}$ c) $\dfrac{4\pi}{3}$ d) $\dfrac{5\pi}{3}$

23. An isometric view of an object is as shown below. When looking to the direction of arrow X, which of the following elevation is correctly drawn?

a)   b)   c)   d)