

## **INSTITUTE OF ENGINEERING**

### **Model Entrance Exam**

(Set-7)

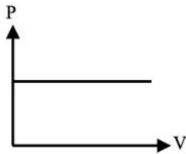
#### **Instructions:**

There are 100 multiple-choice questions, each having four choices of which only one choice is correct.

**Section-A (1 marks)**

- 1) The rival team was all out \_\_\_\_\_ 320.  
a) by                                      b) at                                      c) for                                      d) on
- 2) The statement 'to gatecrash' means:  
a) try to force an agreement favorable to oneself  
b) to end in confusion  
c) to get into difficulties  
d) to attend a party without having been invited
- 3) Augment (Antonym):  
a) prevent                                      b) decrease                                      c) compensate                                      d) surpass
- 4) Enigma (Synonym):  
a) praise                                      b) puzzle                                      c) clear                                      d) elusive
- 5) They will have got their friend \_\_\_\_\_ the furniture.  
a) to fixing                                      b) fix                                      c) fixed                                      d) to fix
- 6) Neither of the three children \_\_\_\_\_ sick.  
a) were                                      b) was                                      c) has been                                      d) is
- 7) Why don't you help the students \_\_\_\_\_ essay now?  
a) wrote                                      b) writing                                      c) to write                                      d) for writing
- 8) He \_\_\_\_\_ in our office before he was transferred to another office nearby.  
a) had worked                                      b) had been working  
c) has worked                                      d) was working
- 9) I asked him, "Will you go to Pokhara tomorrow?"  
a) I asked him whether I would go to Pokhara the next day.  
b) I asked him whether he would go to Pokhara the next day.  
c) I asked him whether you would go to Pokhara the next day.  
d) I asked him whether he will go to Pokhara the next day.
- 10) /kju/ is a phonemic transcription of:  
a) quay                                      b) queue                                      c) you                                      d) knew
- 11) "The letter was posted after it had been written" is a \_\_\_\_\_ sentence.  
a) simple                                      b) complex  
c) compound                                      d) comparative
- 12) The grammatical pattern of the sentence, "A negative mind will never give you a positive life" is:  
a) subject + verb + direct object + objective complement  
b) subject + verb + indirect object + direct object  
c) subject + verb + direct object  
d) subject + linking verb + predicate adjective
- 13) The dimensions of physical quantity X in the equation  $\text{Force} = \frac{X}{\text{Density}}$  is given by:  
a)  $M^1L^4T^{-2}$                                       b)  $M^2L^{-2}T^{-1}$                                       c)  $M^2L^{-2}T^{-2}$                                       d)  $M^1L^{-2}T^{-1}$
- 14) The area under velocity-time graph for a particle in a given interval of time represents:  
a) velocity                                      b) acceleration                                      c) work done                                      d) displacement
- 15) If action and reaction forces are always equal in magnitude, then these forces:  
a) will produce accelerations of equal magnitudes  
b) may not produce accelerations of equal magnitudes  
c) produce velocities of equal magnitudes  
d) will not produce accelerations of equal magnitudes
- 16) The velocity of centre of mass of the system remains constant, if the total external force acting on the system is:  
a) minimum                                      b) maximum                                      c) unity                                      d) zero

- 17) In motion of an object under the gravitational influence of another object, which of the following quantities is not conserved?  
a) angular momentum  
b) mass of an object  
c) total mechanical energy  
d) linear momentum
- 18) The circular motion of a particle with constant speed is:  
a) periodic and simple harmonic  
b) simple harmonic but not periodic  
c) neither periodic nor simple harmonic  
d) periodic but not simple harmonic
- 19) Which of the following process is correct for given P-V diagram?



- a) Adiabatic process  
b) Isothermal process  
c) Isobaric process  
d) Isochoric process
- 20) If  $\lambda_m$  denotes the wavelength at which the radiative emission from a black body at a temperature T K is maximum, then:  
a)  $\lambda_m \propto T$   
b)  $\lambda_m \propto T^{-1}$   
c)  $\lambda_m \propto T^{-2}$   
d)  $\lambda_m$  is independent on T
- 21) The phenomenon of beats can take place for:  
a) longitudinal waves only  
b) transverse waves only  
c) sound waves only  
d) both longitudinal and transverse waves
- 22) The electric field at a point is:  
a) always continuous  
b) continuous if there is no charge at that point  
c) discontinuous if there is a charge at that point  
d) both b and c are correct
- 23) The force between two parallel current carrying wires is independent of:  
a) their distance of separation  
b) the length of the wires  
c) the magnitude of currents  
d) the radii of the wires
- 24) Core of electromagnets are made of ferromagnetic materials which have:  
a) low permeability and low retentivity  
b) high permeability and high retentivity  
c) high permeability and low retentivity  
d) low permeability and high retentivity
- 25) Lenz's law is a consequence of the law of conservation of:  
a) charge  
b) energy  
c) induced emf  
d) induced current
- 26) In Young's double slit experiment, if yellow light is replaced by blue light, the interference fringes become:  
a) wider  
b) brighter  
c) narrower  
d) darker
- 27) For a telescope to have large resolving power:  
a) the focal length of its objective should be large  
b) the focal length of its eye piece should be large  
c) the focal length of its eye piece should be small  
d) the aperture of its objective should be large
- 28) When the velocity of an electron increases, its de Broglie wavelength:  
a) increases  
b) decreases  
c) remains same  
d) may increase or decrease
- 29) To obtain electrons as majority charge carriers in a semiconductor, the impurity mixed is:  
a) monovalent  
b) divalent  
c) trivalent  
d) pentavalent
- 30) If the sum of roots of the equation  $(a + 1)x^2 + (2a + 3)x + 3a + 4 = 0$  is -3, then the product of roots is:  
a) 1  
b) 4  
c) 3  
d) -2

- 31)  $1 + \frac{(\log x)^2}{2!} + \frac{(\log x)^2}{4!} + \dots =$   
 a)  $x$                       b)  $\frac{1}{x}$                       c)  $\frac{x+x^{-1}}{2}$                       d)  $\frac{e^x+e^{-x}}{2}$
- 32) The  $n^{\text{th}}$  term of a G.P, is 128 and the sum of its  $n$  terms is 255. If its common ratio is 2, then its first term is:  
 a) 1                      b) 2                      c) 3                      d) 4
- 33) If  $(1 - i)x + (1 + i)y = 1 - 3i$ , then  $(x, y) =$   
 a) (2, -1)                      b) (2, 1)                      c) (-1, 2)                      d) (-1, -2)
- 34) Let A be a square matrix of order  $n \times n$ . Then A is called a symmetric matrix if:  
 a)  $|A| = 0$                       b)  $|A| \neq 0$                       c)  $A^T = A$                       d)  $A^T = -A$
- 35) In a hall, there are 10 bulbs and their 10 buttons. In how many ways this hall can be enlightened?  
 a)  $10^2$                       b) 1023                      c)  $2^{10}$                       d) 10!
- 36) The period of  $f(x) = \cos 4x + \tan 3x$  is:  
 a)  $\frac{\pi}{3}$                       b)  $\frac{\pi}{2}$                       c)  $\frac{\pi}{6}$                       d)  $\pi$
- 37)  $\lim_{x \rightarrow \infty} \frac{\tan x}{x}$  equals:  
 a) 1                      b) 0                      c)  $\infty$                       d) does not exist
- 38) If  $y = \tan^{-1}(\cot x) + \cot^{-1}(\tan x)$ , then  $\frac{dy}{dx} =$   
 a) 1                      b) 0                      c) -1                      d) -2
- 39) The tangent to a given curve is parallel to x-axis if:  
 a)  $\frac{dy}{dx} = 0$                       b)  $\frac{dy}{dx} = 1$                       c)  $\frac{dx}{dy} = 0$                       d)  $\frac{dx}{dy} = 1$
- 40)  $\int_{\pi/6}^{\pi/2} \frac{\cos x}{\sin^2 x} dx =$   
 a) 0                      b) 1                      c) -1                      d) 2
- 41) The equation of line which passes through the point  $(-2, 5)$  and cuts off equal intercepts on the axes is:  
 a)  $x + y - 3 = 0$                       b)  $x - y + 3 = 0$                       c)  $x + y + 3 = 0$                       d)  $x - y - 3 = 0$
- 42) The equation  $ax^2 + 3xy - 7y^2 = 0$  represents two lines inclined at an angle  $\pi$  if  $a =$   
 a) 7/9                      b) 9/7                      c) 2                      d) 3/7
- 43) If the parabola  $y^2 = 4ax$  passes through  $(3, 2)$ , then length of latus rectum is:  
 a) 2/3                      b) 4/3                      c) 9/2                      d) 4
- 44) If  $5x^2 + \lambda y^2 = 20$  represents a rectangular hyperbola, then  $\lambda =$   
 a) 5                      b) -5                      c) 3                      d) -4
- 45) The equation of a plane through the point  $(1, -1, 2)$  and parallel to the plane  $2x - 3y + z = 0$  is:  
 a)  $2x - 3y + z = 7$                       b)  $2x + 3y - z = 7$   
 c)  $2x - 3y + z = 2$                       d)  $2x + 3y - z = 2$
- 46) The value of  $\tan(180^\circ + \theta) \cdot \tan(90^\circ - \theta)$  is:  
 a) 1                      b) -1                      c) 0                      d) 2
- 47) The number of solutions of  $\sin^2 \theta + 3 \cos \theta = 3$  in  $[-\pi, \pi]$  is:  
 a) 4                      b) 2                      c) 0                      d) 1
- 48) If  $\cos(2 \sin^{-1} x) = \frac{1}{9}$ , then  $x$  is equal to:  
 a) 2/3                      b) -2/3                      c)  $\pm 2/3$                       d) 4/5
- 49) If one side of a square be represented by  $3\vec{i} + 4\vec{j} + 5\vec{k}$ , then the area of square is:  
 a) 12                      b) 13                      c) 25                      d) 50
- 50) Which one of the following pairs of compounds illustrate the law of multiple proportions?  
 a)  $H_2S$  and  $SO_2$                       b)  $NH_3$  and  $NCl_3$   
 c)  $FeCl_2$  and  $FeCl_3$                       d)  $CuO$  and  $Cu_2O$
- 51) If an electron has spin quantum number of  $+\frac{1}{2}$  and a magnetic quantum of -1. It cannot be present in:  
 a) s-orbital                      b) p-orbital                      c) d-orbital                      d) f-orbital

- 52) Which of the following species is paramagnetic?  
a)  $CN^-$                       b)  $NO$                       c)  $O_2^{2-}$                       d)  $CO$
- 53) Oxygen has an oxidation state of +2 in:  
a)  $H_2O_2$                       b)  $H_2O$                       c)  $OF_2$                       d)  $SO_2$
- 54) A smuggler could not carry gold by depositing iron on the gold surface because:  
a) gold is denser  
b) iron rusts  
c) gold has higher reduction potential than iron  
d) gold has lower reduction potential than iron
- 55) Beryllium shows diagonal relationship with:  
a) Mg                      b) Al                      c) Si                      d) Li
- 56) Froth flotation process is used for the metallurgy of:  
a) chloride ores                      b) oxide ores                      c) sulphide ores                      d) amalgams
- 57) Which of the alkaline earth metal hydroxides is least soluble?  
a)  $Be(OH)_2$                       b)  $Mg(OH)_2$                       c)  $Sr(OH)_2$                       d)  $Ba(OH)_2$
- 58) When ammonia is passed over heated  $CuO$ , it is oxidized to:  
a)  $N_2$                       b)  $NO_2$                       c)  $N_2O$                       d)  $HNO_2$
- 59) Which of the following has the highest nucleophilicity?  
a)  $F^-$                       b)  $OH^-$                       c)  $CH_3^-$                       d)  $NH_2^-$
- 60) Acidic hydrogen is present in:  
a) Ethane                      b) Ethyne                      c) Ethene                      d) Benzene

### Section-B (2 marks)

Read the following passages and answer the questions given below (61-64):

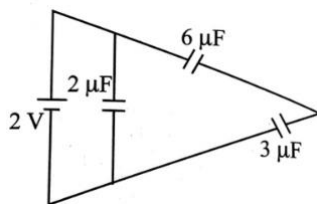
Dogs and cats should never be permitted to eat chocolate, because chocolate works like a poison in their bodies. Chocolate contains a chemical called theobromine, which is similar to caffeine. Human bodies are able to process the theobromine without any ill side effects, but dogs and cats cannot.

Different types of chocolate contain different amounts of theobromine. It would take 20 ounces of milk chocolate to kill a 20-pound dog, but only two ounces of baker's chocolate or six ounces of semisweet chocolate. The amounts, of course, are much smaller for a cat, whose body weight is typically less than that of a dog.

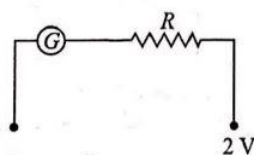
Most cats are not naturally attracted to eating chocolate, but many dogs are. Dogs by nature will sample nearly anything that they see their masters eating, so pet owners must take care to keep all chocolate products well out of reach of their dogs and cats.

- 61) According to the passage, why is chocolate poisonous for dogs and cats?  
a) It contains caffeine.                      b) Chocolate is made from processed cocoa.  
c) It gets stuck in their intestines.                      d) They cannot process theobromine.
- 62) How much milk chocolate would be poisonous to a cat, according to the passage?  
a) substantially less than 20 ounces                      b) substantially more than 20 ounces  
c) approximately one pound                      d) half a Hershey bar
- 63) Why might a dog eat chocolate, according to the passage?  
a) Because it tastes good.                      b) Dogs won't eat chocolate.  
c) They can smell the theobromine.                      d) Dogs like to imitate their owners.
- 64) What best summarizes this passage?  
a) Look before you leap.                      b) Pet food for pets, people food for people.  
c) Monkey see, monkey do.                      d) A penny saved is a penny earned.

- 65) An aeroplane flying horizontally with a speed of 360 km/hr releases a bomb at a height of 490 m from the ground. If  $g = 9.8 \text{ m/s}^2$ , it will strike the ground at:  
 a) 10 km                      b) 100 km                      c) 1 km                      d) 16 km
- 66) Two springs of spring constant  $1500 \text{ Nm}^{-1}$  and  $3000 \text{ Nm}^{-1}$  respectively are stretched with the same force. They will have potential energy in the ratio:  
 a) 1:2                      b) 2:1                      c) 1:4                      d) 4:1
- 67) A solid sphere of mass  $m$  and radius  $R$  is rotating about its diameter. A solid cylinder of the same mass and same radius is also rotating about its geometrical axis with an angular speed twice that of the sphere. The ratio of their kinetic energies of rotation ( $E_{\text{sphere}}/E_{\text{cylinder}}$ ) will be:  
 a) 2:3                      b) 1:5                      c) 1:4                      d) 3:1
- 68) A particle of mass  $m$  is placed at the centre of a uniform spherical shell of mass  $3m$  and radius  $R$ . The gravitational potential on the surface of shell is:  
 a)  $-\frac{Gm}{R}$                       b)  $-\frac{3Gm}{R}$   
 c)  $-\frac{4Gm}{R}$                       d)  $-\frac{2Gm}{R}$
- 69) Eight drops of water, each of radius 2 mm are falling through air at a terminal velocity of 8 cm/s. If they coalesce to form a single drop, then the terminal velocity of the combined drop will be:  
 a) 32 cm/s                      b) 30 cm/s                      c) 28 cm/s                      d) 24 cm/s
- 70) The volume of a metal sphere increases by 0.24% when its temperature is raised by  $40^\circ\text{C}$ . The coefficient of linear expansion of the metal is:  
 a)  $2 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$                       b)  $6 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$   
 c)  $18 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$                       d)  $1.2 \times 10^{-5} \text{ }^\circ\text{C}^{-1}$
- 71) A mass of diatomic gas ( $\gamma = 1.4$ ) at a pressure of 2 atmospheres is compressed adiabatically so that its temperature rises from  $27^\circ\text{C}$  to  $927^\circ\text{C}$ . The pressure of the gas in the final state is:  
 a) 8 atm                      b) 28 atm                      c) 68.7 atm                      d) 256 atm
- 72) Two tuning forks, A and B, produce notes of frequencies 258 Hz and 262 Hz. An unknown note sounded with A produces certain beats. When the same note is sounded with B, the beat frequency gets doubled. The unknown frequency is:  
 a) 250 Hz                      b) 252 Hz                      c) 254 Hz                      d) 256 Hz
- 73) The total energy stored in the condenser system shown in the figure will be:



- a)  $8 \mu\text{J}$                       b)  $16 \mu\text{J}$                       c)  $2 \mu\text{J}$                       d)  $4 \mu\text{J}$
- 74) A ring of mean radius 15 cm has 3500 turns of wire wound on a ferromagnetic core of relative permeability 800. The magnetic field in the core for a magnetizing current of 1.2 A is:  
 a) 2.48 T                      b) 3.48 T                      c) 4.48 T                      d) 5.48 T
- 75) A voltmeter which can measure 2 V is constructed by using a galvanometer of resistance  $12 \Omega$  and that produces maximum deflection for the current of 2 mA, then the resistance  $R$  is:



- a)  $888 \Omega$                       b)  $988 \Omega$                       c)  $898 \Omega$                       d)  $999 \Omega$
- 76) A circuit consists of a resistance of  $10 \Omega$  and a capacitance of  $0.1 \mu\text{F}$ . If an alternating emf of 100 V, 50 Hz is applied, the current in the circuit is:  
 a) 3.14 mA                      b) 6.28 mA                      c) 1.51 mA                      d) 7.36 mA

- 77) For a glass prism ( $\mu = \sqrt{3}$ ), angle of minimum deviation is equal to angle of the prism. The angle of the prism is:  
 a)  $45^\circ$                       b)  $30^\circ$                       c)  $90^\circ$                       d)  $60^\circ$
- 78) A triply ionized beryllium ( $Be^{3+}$ ) has the same orbital radius as the ground state of hydrogen. Then the quantum state 'n' of  $Be^{3+}$  is:  
 a)  $n = 1$                       b)  $n = 2$                       c)  $n = 3$                       d)  $n = 4$
- 79) In  $\Delta ABC$ ,  $b^2 \sin 2C + c^2 \sin 2B =$   
 a)  $\Delta$                       b)  $2\Delta$                       c)  $3\Delta$                       d)  $4\Delta$
- 80) If  $\sin^{-1}\left(\frac{2a}{1+a^2}\right) + \sin^{-1}\left(\frac{2b}{1+b^2}\right) = \tan^{-1} x$ , then the value of x is:  
 a)  $\frac{a-b}{1+ab}$                       b)  $\frac{a+b}{1-ab}$                       c)  $\frac{a}{1-ab}$                       d)  $\frac{b}{1-ab}$
- 81) If in the expansion of  $\left(x^4 - \frac{1}{x^3}\right)^{15}$ ,  $x^{-17}$  occurs in the  $r^{\text{th}}$  term, then:  
 a)  $r = 10$                       b)  $r = 11$                       c)  $r = 12$                       d)  $r = 13$
- 82) The third term of a GP is square of the first term. If the second term is 8, then 8<sup>th</sup> term is:  
 a) 256                      b) 128                      c) 64                      d) 512
- 83) If  $\omega$  is an imaginary cube root of unity, then  $\begin{vmatrix} 1 + \omega & \omega^2 & -\omega \\ 1 + \omega^2 & \omega & -\omega^2 \\ \omega + \omega^2 & \omega & -\omega^2 \end{vmatrix}$  is equal to:  
 a) 0                      b)  $2\omega$                       c)  $3\omega^2$                       d)  $-3\omega^2$
- 84) The range of  $f(x) = \tan \sqrt{\frac{\pi^2}{9} - x^2}$  is:  
 a)  $[0, \sqrt{3}]$                       b)  $(0, \sqrt{3})$                       c)  $[0, \sqrt{3})$                       d)  $(0, \sqrt{3}]$
- 85)  $\lim_{x \rightarrow 1} \frac{ab^x - a^x b}{x-1} =$   
 a)  $ab \log(ab)$                       b)  $ab \log\left(\frac{a}{b}\right)$                       c)  $ab \log\left(\frac{b}{a}\right)$                       d)  $\frac{a}{b} \log(ab)$
- 86) If  $\sin y = x \sin(a + y)$ , then  $\frac{dy}{dx}$  equals:  
 a)  $\sin(a + y)$                       b)  $\sin^2(a + y)$                       c)  $\frac{\sin(a+y)}{\sin a}$                       d)  $\frac{\sin^2(a+y)}{\sin a}$
- 87) The angle of intersection between the curves  $x^2 = 32y$  and  $y^2 = 4x$  at the point (16, 8) is:  
 a)  $60^\circ$                       b)  $90^\circ$                       c)  $\tan^{-1}\left(\frac{3}{5}\right)$                       d)  $\tan^{-1}\left(\frac{4}{3}\right)$
- 88)  $\int \frac{dx}{\sqrt{x(3+x)}} =$   
 a)  $\frac{1}{\sqrt{3}} \tan^{-1} \frac{\sqrt{x}}{3} + c$                       b)  $\frac{2}{\sqrt{3}} \tan^{-1} \sqrt{\frac{x}{3}} + c$                       c)  $\frac{1}{\sqrt{3}} \sin^{-1} \sqrt{\frac{x}{3}} + c$                       d)  $\frac{2}{\sqrt{3}} \cos^{-1} \frac{\sqrt{x}}{3} + c$
- 89) The area enclosed within the curve  $|x| + |y| = 1$  is:  
 a) 1                      b)  $2\sqrt{2}$                       c)  $\sqrt{2}$                       d) 2
- 90) The value of h for which the equation  $3x^2 + 2hxy - 3y^2 - 40x + 30y - 75 = 0$  represents a pair of straight lines are:  
 a) 4, 4                      b) 4, 6                      c) 4, -4                      d) 0, 4
- 91) If the circle  $x^2 + y^2 + 4x + 22y + c = 0$  bisects the circumference of the circle  $x^2 + y^2 - 2x + 8y - d = 0$ , then  $c + d =$   
 a) 60                      b) 50                      c) 40                      d) 56
- 92) If for the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ , y-axis is the minor axis and the length of latus rectum is one half of the length of its minor axis, then its eccentricity is:  
 a)  $1/2$                       b)  $1/\sqrt{2}$                       c)  $\sqrt{3}/2$                       d)  $3/4$
- 93) A line makes angles  $\frac{\alpha}{2}, \frac{\beta}{2}, \frac{\gamma}{2}$  with the positive direction of coordinate axes, then  $\cos \alpha + \cos \beta + \cos \gamma$  is equal to:  
 a) 1                      b) -1                      c) 2                      d) -2

- 94) The decomposition of certain mass of  $CaCO_3$  gave  $11.2 \text{ dm}^3$  of  $CO_2$  gas at STP. The mass of KOH required to completely neutralize the gas is:  
 a) 56 g                      b) 28 g                      c) 42 g                      d) 20 g
- 95) How many grams of a dibasic acid (molecular weight 200) should be present in 100 mL of the aqueous solution to give 0.1N?  
 a) 1 g                      b) 2 g                      c) 10 g                      d) 20g
- 96) The solubility of a saturated solution of calcium fluoride is  $2 \times 10^{-4} \text{ mol/L}$ . Its solubility product is  
 a)  $12 \times 10^{-2}$                       b)  $14 \times 10^{-4}$                       c)  $22 \times 10^{-11}$                       d)  $32 \times 10^{-12}$
- 97) The IUPAC name of  

$$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} = \text{C} - \text{CHO} \text{ is} \\ | \qquad \qquad | \\ \text{OH} \qquad \qquad \text{CH}_3 \end{array}$$
 a) 4-hydroxy-1-methyl pentanal                      b) 4-hydroxy-2-methyl pent-2-en-1-al  
 c) 2-hydroxy-4-methyl pent-3-en-5-al                      d) 2-hydroxy-3-methyl pent-2-en-5-al
- 98) The mass of silver deposited by the quantity of electricity which displaces  $112 \text{ cm}^3$  of  $H_2$  at NTP will be:  
 a) 108 g                      b) 10.8 g                      c) 1.08 g                      d) 0.0108 g
- 99) The arrangement of  $(CH_3)_3C-$ ,  $(CH_3)_2CH-$ ,  $CH_3CH_2-$  when attached to benzene or an unsaturated group in increasing order of inductive effect is:  
 a)  $(CH_3)_3C- < (CH_3)_2CH- < CH_3CH_2-$   
 b)  $CH_3CH_2- < (CH_3)_2CH- < (CH_3)_3C-$   
 c)  $(CH_3)_2CH- < (CH_3)_3C- < CH_3CH_2-$   
 d)  $(CH_3)_3C- < CH_3CH_2- < (CH_3)_2CH-$
- 100) Correct order of the mobility of the alkali metal ions in aqueous solution is:  
 a)  $Na^+ > K^+ > Rb^+ > Li^+$                       b)  $K^+ > Rb^+ > Na^+ > Li^+$   
 c)  $Rb^+ > K^+ > Na^+ > Li^+$                       d)  $Li^+ > Na^+ > K^+ > Rb^+$



Thank You!!!!!!