

## INSTITUTE OF ENGINEERING

### MODEL ENTRANCE EXAM

(SET – 4)

#### Instructions:

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

**Date :** 2081/03/01  
(June 15)

**Duration :** 2 hours  
**Time :** 8 A.M. – 10 A.M.

**SECTION – A (1 marks) (1\*60 = 60)**

- 1) We had to stop all other work to complete our assignment.
  - a) All other work has to be stopped by us to complete our assignment.
  - b) All other work had stopped by us to complete our assignment.
  - c) All other work had to be stopped by us to complete our assignment.
  - d) All other work was stopped by us to complete our assignment.
- 2) His most trusted friend proved to be **a snake in the grass**.
  - a) cowardly and brutal
  - b) an unreliable and deceitful person
  - c) a hidden enemy
  - d) low and mean
- 3) Rectitude (Synonym):
  - a) duplication
  - b) integrity
  - c) rectification
  - d) recovery
- 4) Puerile (Antonym):
  - a) inquisitive
  - b) matured
  - c) impure
  - d) original
- 5) Transform the following sentence into interrogative.  
“I can never forget you.”
  - a) Could I never forget you?
  - b) Can I ever forget you?
  - c) Can you be forgot by me?
  - d) Is it that I would never forget you?
- 6) The best punctuation for the given sentence is:  
“The sales manager Mr Jayaram is in a meeting”
  - a) The sales’ manager Mr. Jayaram is in a meeting.
  - b) The “sales manager” Mr. Jayaram, is in a meeting.
  - c) The sales manager, Mr. Jayaram, is in a meeting.
  - d) The sale’s manager, Mr. Jayaram, is in a meeting.
- 7) A series of events \_\_\_\_\_ happened.
  - a) have
  - b) has
  - c) are
  - d) were
- 8) A judge should deal \_\_\_\_\_ equal justice to all.
  - a) out
  - b) in
  - c) with
  - d) into
- 9) This torch \_\_\_\_\_ three batteries.
  - a) is holding
  - b) holds
  - c) hold
  - d) holded
- 10) The correct transcription of the word “balloon” is:
  - a) /bə'lu: n/
  - b) /blu: n/
  - c) /bul: n/
  - d) /bə: n/
- 11) If I had a huge sum of money, I \_\_\_\_\_ my parents on the world tour.
  - a) would took
  - b) shall take
  - c) would have took
  - d) would take
- 12) We couldn't get him \_\_\_\_\_ the agreement.
  - a) to sign
  - b) sign
  - c) signing
  - d) signed
- 13) Methoxy propane and Ethoxy ethane are:
  - a) chain isomers
  - b) position isomers
  - c) metamers
  - d) functional isomers
- 14) The IUPAC name of  $CH_2 = CH - C \equiv CH$  is:
  - a) But-1-en-3-yne
  - b) But-1-yn-3-ene
  - c) But-1-en-1-yne
  - d) But-1-yn-3-ene
- 15) Chlorination of Benzene is an example of:
  - a) Nucleophilic substitution
  - b) Electrophilic substitution
  - c) Free radical substitution
  - d) Electrophilic addition
- 16) Which of the following does not undergo aldol condensation reaction?
  - a)  $CH_3CHO$
  - b)  $(CH_3)_3CHO$
  - c)  $CH_3CH_2CHO$
  - d)  $CH_3COC_6H_5$
- 17) Which of the following molecules has trigonal planar geometry?
  - a)  $IF_3$
  - b)  $PCl_3$
  - c)  $NH_3$
  - d)  $BF_3$

- 18) The number of atoms in 0.1 mole of a triatomic gas is ( $N_A = 6.023 \times 10^{23} \text{ mol}^{-1}$ ):  
 a)  $6.026 \times 10^{22}$       b)  $1.806 \times 10^{23}$       c)  $3.6 \times 10^{23}$       d)  $1.8 \times 10^{22}$
- 19) Which of the following salts will give highest pH in water?  
 a) KCl      b) NaCl      c)  $\text{Na}_2\text{CO}_3$       d)  $\text{CuSO}_4$
- 20) Which of the following electronic configuration of an atom has the lowest ionization enthalpy?  
 a)  $1s^2, 2s^2 2p^6$       b)  $1s^2, 2s^2 2p^3$   
 c)  $1s^2, 2s^2 2p^5, 3s^1$       d)  $1s^2, 2s^2 2p^4$
- 21) The oxidation state of Cr in  $\text{CrO}_5$  is:  
 a) -6      b) +12      c) +6      d) +4
- 22) How many  $\text{Cl}^-$  ions are there around  $\text{Na}^+$  ion in NaCl crystal?  
 a) 3      b) 4      c) 6      d) 8
- 23) Gold and silver are extracted from their respective ores by:  
 a) leaching      b) smelting      c) roasting      d) hydrometallurgy
- 24) Which allotrope of phosphorous produces phosphorescence?  
 a) scarlet      b) red      c) black      d) white
- 25) Which of the following is not a thermodynamic function?  
 a) internal energy      b) work done      c) enthalpy      d) entropy
- 26) The product formed when ozone reacts with mercury is:  
 a)  $\text{HgO}$       b)  $\text{Hg}_2\text{O}_2$       c)  $\text{Hg}_2\text{O}$       d)  $\text{HgO}_2$
- 27) Which of the following statement is a wrong statement?  
 a) Power set of a given set is always non-empty.  
 b) Equal sets are always equivalent but equivalent sets may not be equal.  
 c) A non-empty collection is well-defined.  
 d) For a given set A, the relation  $A \cup \Phi = A$  implies A is always a null set.
- 28) If  $\arg(z) < 0$  for a complex number z, then  $\arg(-z) - \arg(z)$  is:  
 a)  $\pi$       b)  $-\pi$       c)  $-\frac{\pi}{2}$       d)  $\frac{\pi}{2}$
- 29) Let A be a matrix of order 3 and  $\Delta$  denotes the value of the determinant A. Then  $\det(-2A)$  is:  
 a)  $-2\Delta$       b)  $2\Delta$       c)  $8\Delta$       d)  $-8\Delta$
- 30) If  $\sin A = \sin B$ ,  $\cos A = \cos B$ ; then the value of A in terms of B is:  
 a)  $n\pi + B$       b)  $n\pi + (-1)^n B$   
 c)  $2n\pi + B$       d)  $2n\pi - B$
- 31) Angle between the pair of lines  $y^2 \sin^2 \theta + xy \sin 2\theta + x^2 (\cos^2 \theta - 1) = 0$  is:  
 a)  $\frac{\pi}{3}$       b)  $\frac{\pi}{2}$       c)  $\frac{\pi}{4}$       d)  $\frac{2\pi}{3}$
- 32) The conditional statement  $p \Rightarrow q$  is equivalent to:  
 a) p is true and q is false      b) p is false and q is true  
 c) p is false and q is false      d) p is true and q is true
- 33) If the function  $f(x) = \begin{cases} \frac{\sin 3x}{x} & x \neq 0 \\ \frac{k}{2} & x = 0 \end{cases}$  is:  
 a) 3      b) 6      c) 9      d) 12
- 34)  $\int \frac{x^3}{1+x^8} dx =$   
 a)  $4 \tan^{-1} x^3 + c$       b)  $\frac{1}{4} \tan^{-1} x^4 + c$   
 c)  $x + 4 \tan^{-1} x^4 + c$       d)  $x^2 + \frac{1}{4} \tan^{-1} x^4 + c$
- 35) Derivative of  $\sinh^{-1} x$  with respect to x is:  
 a)  $\frac{1}{\sqrt{1+x^2}}$       b)  $\frac{1}{\sqrt{1-x^2}} (x < 1)$   
 c)  $\frac{1}{\sqrt{x^2-1}} (x > 1)$       d)  $\frac{1}{x\sqrt{1+x^2}} (x \neq 0)$

- 36) If  $\vec{i} - \vec{j}$  and  $\vec{j} + \vec{k}$  are the given vectors, then which of the following vectors can form a triangle with them taken in order?  
a)  $2\vec{i} - \vec{j} + \vec{k}$       b)  $\vec{i} + \vec{k}$       c)  $-\vec{i} - \vec{k}$       d)  $\vec{j} - 2\vec{k}$
- 37)  $\lim_{x \rightarrow 5} \sqrt{x - 5} =$   
a) 0      b) -5      c) 5      d) does not exist
- 38) Solution of the differential equation  $xdy - ydx = 0$  represents:  
a) rectangular hyperbola      b) straight line passing through the origin  
c) parabola whose vertex is at origin      d) circle whose centre is at origin
- 39)  $\int \sin^{-1} x dx + \int \cos^{-1} x dx =$   
a) 0      b)  $\frac{\pi}{2} + c$       c)  $\frac{\pi}{2}x + c$       d)  $\pi + c$
- 40) The inclination of line  $x \cos \alpha + y \sin \alpha = p$  with positive x-axis is:  
a)  $\alpha$       b)  $\frac{\pi}{2} + \alpha$       c)  $\frac{\pi}{2} - \alpha$       d)  $\pi - \alpha$
- 41) In three-dimensional space,  $2x + 3y + 5z = 0$  represents:  
a) plane  $\parallel$  to x-axis      b) plane  $\parallel$  to y-axis  
c) plane  $\parallel$  to z-axis      d) straight line
- 42) If  $S_n = n^3 - 10$ , then  $t_{10} =$   
a)  $10^3 - 9^3$       b)  $9^3 - 8^3$       c)  $11^3 - 10^3$       d) 2000
- 43) From 20 tickets numbered from 1 to 20, a ticket is drawn. What is the probability that it is a multiple of 5?  
a) 1/5      b) 4/5      c) 1/4      d) 3/4
- 44) The principal value of  $\sin^{-1} \left\{ \sin \frac{3\pi}{4} \right\}$  is:  
a)  $\frac{5\pi}{4}$       b)  $-\frac{\pi}{4}$       c)  $\frac{\pi}{4}$       d)  $\frac{3\pi}{4}$
- 45) In a moderately asymmetrical distribution, mode and mean of the data are  $6\lambda$  and  $9\lambda$  respectively, then median is:  
a)  $8\lambda$       b)  $7\lambda$       c)  $6\lambda$       d)  $5\lambda$
- 46)  $\frac{1}{2!} + \frac{1+2}{3!} + \frac{1+2+3}{4!} + \dots \infty =$   
a)  $e/2$       b)  $e/3$       c)  $e/4$       d)  $e/5$
- 47) For a particle performing uniform circular motion, choose the incorrect statement from the following:  
a) Magnitude of particle velocity (speed) remains constant.  
b) Particle velocity remains directed perpendicular to radius vector.  
c) Direction of acceleration keeps changing as particle moves.  
d) Magnitude of acceleration does not remain constant.
- 48) Which of the following is a self-adjusting force?  
a) static friction      b) Rolling friction  
c) Sliding friction      d) Dynamic friction
- 49) The breaking stress of a wire depends upon:  
a) length of the wire      b) radius of the wire  
c) material of the wire      d) shape of the cross-section of wire
- 50) After terminal velocity is reached, the acceleration of a body falling through a viscous fluid is  
a) zero      b) equal to  $g$       c) less than  $g$       d) more than  $g$
- 51) In a cyclic process, which of the following statement is correct?  
a) change in internal energy is not zero  
b) the system returns to its initial state and it is reversible  
c) the total heat absorbed by the system is not equal to work done by the system  
d) change in internal energy is zero

- 52) For transmission of heat from one place to the other, medium is required in:  
a) conduction                      b) convection                      c) radiation                      d) both (a) and (b)
- 53) Speed of sound waves in a fluid is:  
a) directly proportional to the square root of bulk modulus of the medium  
b) inversely proportional to the bulk modulus of the medium  
c) directly proportional to the density of the medium  
d) inversely proportional to the density of the medium
- 54) If dielectric constant and dielectric strength be denoted by K and X respectively, then a material suitable for use as a dielectric in a capacitor must have:  
a) high K and high X                      b) high K and low X  
c) low K and high X                      d) low K and low X
- 55) With increase in temperature, the conductivity of:  
a) metals increases and of semiconductor decreases  
b) semiconductor increases and of metals decreases  
c) in both metals and semiconductors increases  
d) in both metal and semiconductor decreases
- 56) In a region, uniform electric and magnetic fields are present. These two fields are parallel to each other. A charged particle is released from rest in this region. The path of the particle will be:  
a) circle                      b) ellipse                      c) helix                      d) straight line
- 57) When the rate of change of current is unity, the induced emf is equal to:  
a) thickness of coil                      b) number of turns in coil  
c) coefficient of self-inductance                      d) total flux linked with coil
- 58) The final image in an astronomical telescope with respect to object is:  
a) virtual and erect                      b) real and erect  
c) real and inverted                      d) virtual and inverted
- 59) When the complete Young's double slit experiment is immersed in water, the fringes:  
a) remain unaltered                      b) become wider  
c) become narrower                      d) disappear
- 60) In the Bohr model of the hydrogen atom, the lowest orbit corresponds to:  
a) infinite energy                      b) maximum energy  
c) minimum energy                      d) zero energy

**SECTION – B ( 2 marks) (2\*40=80)**

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

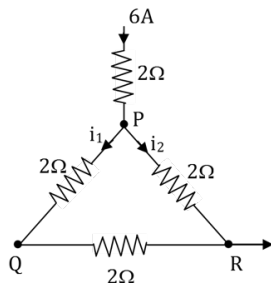
The capitalist system of society does not foster healthy relations among human beings. A few people own all the means of production and others—though nominally few have to sell their labour under conditions imposed upon them. The emphasis of capitalism being on the supreme importance of material wealth the intensity of its appeal is to the acquisitive intensity. It promotes worship of economic power with little regard to the means employed for its acquisition and the end that it serves. By its exploitation of human beings to the limits of endurance its concentration is on the largest profit rather than maximum production.

Thus the division of human family is done on the basis of economic circumstance. All this is injurious to division of human dignity. And when the harrowed poor turn to the founders of religion for succour, they rather offer a subtle defence of the established order. They promise future happiness for their present suffering and conjure up visions of paradise to redress the balance to soothe the suffering and the revolt of the tortured men. The system imposes injustice, the religion justifies it.

- 61) The passage indicates that the capitalist system is:  
a) fair                                      b) ambitious                                      c) prosperous                                      d) dehumanising
- 62) The established order is supported by religion to:  
a) alleviate the suffering of the poor in the capitalist system.  
b) perpetuate the injustice imposed by the capitalist system.  
c) balance the suffering of the poor with hopes of future rewards  
d) help the tortured men to seek redress
- 63) Capitalism is injurious to human relations because it divides society into two groups, i.e.:  
a) working and non-working                                      b) exploiters and exploited  
c) religious and irreligious                                      d) buyers and sellers
- 64) In a capitalistic system of society, each man wishes:  
a) to acquire maximum wealth                                      b) to produce maximum wealth  
c) to have visions of practice                                      d) to soothe the sufferings of other
- 65)  $A \xrightarrow{PCl_5} B \xrightarrow{alc.KOH,\Delta} C \xrightarrow{H_2O/H^+} D$ . What is D in the given reaction, if A is a 1° alcohol which gives positive Iodoform test.  
a)  $CH_3CH_2OH$                                       b)  $CH_3CH(OH)CH_3$   
c)  $CH_2 = CH_2$                                       d)  $CH_3CH_2Cl$
- 66) The increasing order of basic strength is:  
a)  $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N > NH_3$   
b)  $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$   
c)  $(CH_3)_2NH > (CH_3)_3N > CH_3NH_2 > NH_3$   
d)  $NH_3 > (CH_3)_2NH > (CH_3)_3N > CH_3NH_2$
- 67)  $p^H$  of a saturated solution of  $Ca(OH)_2$  is 9. The solubility product ( $K_{sp}$ ) of  $Ca(OH)_2$  is:  
a)  $0.25 \times 10^{-10}$                                       b)  $0.125 \times 10^{-15}$                                       c)  $0.5 \times 10^{-10}$                                       d)  $0.5 \times 10^{-15}$
- 68) Standard electrode potential of three metals X, Y and Z are -1.2 V, +0.5 V, -3.0 V respectively. The reducing power of these metals will be:  
a)  $X > Y > Z$                                       b)  $Z > X > Y$   
c)  $X > Y > Z$                                       d)  $Y > Z > X$
- 69) The rate of diffusion of methane at a given temperature is twice that of a gas X. The molecular weight of X is:  
a) 64                                      b) 32                                      c) 4                                      d) 2
- 70) For a first order reaction,  $A \rightarrow$  Products, the concentration of A changes from 0.1 M to 0.025 M in 40 minutes. The rate of reaction when the concentration of A is 0.01 M is:  
a)  $1.73 \times 10^{-5}$  M/min                                      b)  $3.47 \times 10^{-4}$  M/min  
c)  $3.47 \times 10^{-5}$  M/min                                      d)  $1.73 \times 10^{-4}$  M/min
- 71) The correct order of electron affinity of N, O, Al and Cl is:  
a)  $N < O < Cl < Al$                                       b)  $O < N < Al < Cl$   
c)  $Al < N < O < Cl$                                       d)  $Cl < N < O < Al$
- 72) When chlorine is passed over dry slaked lime at room temperature, the main reaction product is:  
a)  $Ca(ClO_2)_2$                                       b)  $CaCl_2$                                       c)  $CaOCl_2$                                       d)  $Ca(OCl)_2$
- 73) The mean deviation of the numbers 3, 4, 5, 6, 7 is:  
a) 0                                      b) 1.2                                      c) 5                                      d) 25
- 74) For  $a \neq b$ , if equation  $x^2 + ax + b = 0$  and  $x^2 + bx + a = 0$  have a common root, then the value of  $(a + b)$  is:  
a) -1                                      b) 0                                      c) 1                                      d) 2
- 75) A five digit number divisible by 3 is to be formed by using the numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways in which this can be done is:

- 76) a) 216                      b) 600                      c) 240                      d) 840  
 If  $(1+x)^n = C_0 + C_1x + C_2x^2 + \dots + C_nx^n$ , then  $C_0C_2 + C_1C_3 + C_2C_4 + \dots + C_{n-2}C_n$  is equal to:
- 77) a)  $\frac{(2n)!}{(n!)^2}$                       b)  $\frac{(2n)!}{(n-1)(n+1)!}$                       c)  $\frac{(2n)!}{(n-2)!(n+2)!}$                       d)  $\frac{(2n)!}{(n-3)!(n+3)!}$   
 The elements  $a_{ij}$  of a square matrix is given by  $a_{ij} = (i+j)(i-j)$ . The matrix must be:  
 a) symmetric                      b) skewsymmetric                      c) upper triangular                      d) lower triangular
- 78) In an equilateral triangle, the in-radius (r) and the circum radius (R) are connected by:  
 a)  $r = \frac{R}{4}$                       b)  $r = \frac{R}{2}$                       c)  $r = \frac{R}{3}$                       d)  $r = \frac{R}{6}$
- 79) The length of common chord of the circle  $x^2 + y^2 = 12$  and  $x^2 + y^2 - 4x + 3y - 2 = 0$  is:  
 a)  $6\sqrt{2}$                       b)  $5\sqrt{2}$                       c)  $4\sqrt{2}$                       d)  $2\sqrt{2}$
- 80) The length of latus rectum of the parabola  $4y^2 + 2x - 20y + 17 = 0$  is:  
 a) 3                      b) 6                      c) 1/2                      d) 1/3
- 81) The probability that a card drawn from a pack of 52 cards will be a diuamond or a king is:  
 a) 4/52                      b) 4/13                      c) 1/52                      d) 2/13
- 82) The equation of the plane which bisects the line joining the points (-1, 2, 3) and (3, -5, 6) at right angles is:  
 a)  $4x - 7y - 3z = 8$                       b)  $4x - 7y - 3z = 28$   
 c)  $4x - 7y + 3z = 28$                       d)  $4x + 7y - 3z = 28$
- 83) If  $f(x) = \log_a \log_a(x)$ , then  $f'(x)$  is:  
 a)  $\frac{\log_e a}{x \log_e x}$                       b)  $\frac{\log_a e}{x \log_a x}$                       c)  $\frac{\log_e a}{x}$                       d)  $\frac{x}{\log_e a}$
- 84) If  $y = x \sin^{-1} x + \sqrt{1-x^2}$ , then  $\frac{dy}{dx}$  is:  
 a)  $\sqrt{1-x^2}$                       b)  $-\sqrt{1-x^2}$                       c)  $\cos^{-1} x$                       d)  $\sin^{-1} x$
- 85) The function  $y = x^x$  has a stationary point at:  
 a)  $x = e$                       b)  $x = 1/e$                       c)  $x = -e$                       d)  $x = -1/e$
- 86) The area bounded by the curve  $y = 4x - x^2$  and the x-axis is:  
 a) 30/7 sq. unit                      b) 31/7 sq. unit                      c) 32/3 sq. unit                      d) 34/3 sq. unit
- 87) If  $\vec{j}$  is a unit vector and vectors  $\vec{a}$  and  $\vec{r}$  are such that  $\vec{a} \times \vec{r} = \vec{j}$ , then  $\vec{a} \cdot \vec{r}$  is:  
 a)  $\sqrt{a^2 r^2 - 1}$                       b)  $\sqrt{1 - a^2 r^2}$                       c)  $\sqrt{1 + a^2 r^2}$                       d) 0
- 88) A stone tied to one end of a string 100 cm long is whirled in a horizontal circle with a constant speed. If the stone makes 14 revolutions in 22 s, then the acceleration of the stone is:  
 a)  $16 \text{ m/s}^2$                       b)  $4 \text{ m/s}^2$                       c)  $12 \text{ m/s}^2$                       d)  $8 \text{ m/s}^2$
- 89) A bolt of mass 0.2 kg falls from the ceiling of an elevator moving down with a uniform speed of 5 m/s. It hits the floor of the elevator (length of the elevator = 5 m) and does not rebound. The amount of heat produced by the impact is ( $g = 10 \text{ m/s}^2$ ):  
 a) 5 J                      b) 10 J                      c) 15 J                      d) 20 J
- 90) A steel wire of length 4.5 m and cross-sectional area  $3 \times 10^{-5} \text{ m}^2$  stretches by the same amount as a copper wire of length 3.5 m and cross-sectional area of  $4 \times 10^{-5} \text{ m}^2$  under a given load. The ratio of the Young's modulus of steel to that of copper is:  
 a) 1.3                      b) 1.5                      c) 1.7                      d) 1.9
- 91) If  $W_1$  be the work to be done to form a bubble of volume V from a given solution. The work required to be done to form a bubble of volume 2 V is:  
 a)  $4^{2/3} W_1$                       b)  $4^{1/3} W_1$                       c)  $2^{1/2} W_1$                       d)  $2^{3/2} W_1$
- 92) If a ball of 80 kg mass hits an ice cube and temperature of ball is  $100^\circ\text{C}$ , then how much ice is converted into water? (Specific heat of ball is  $0.2 \text{ cal g}^{-1}$ , Latent heat of ice =  $80 \text{ cal g}^{-1}$ )  
 a) 20 g                      b) 200 g                      c)  $2 \times 10^3 \text{ g}$                       d)  $2 \times 10^4 \text{ g}$

- 93) A refrigerator with coefficient of performance  $\frac{1}{3}$  releases 200 J of heat to a hot reservoir. Then, the work done on the working substance is:  
 a)  $\frac{100}{3}$  J                      b) 100 J                      c)  $\frac{200}{3}$  J                      d) 150 J
- 94) A transverse harmonic wave on a string is described by  $y(x, t) = 3 \sin\left(36t + 0.018x + \frac{\pi}{4}\right)$  where x and y are in cm and t is in second. Which of the following statements is incorrect?  
 a) The wave is travelling in negative x-direction.  
 b) The amplitude of the wave is 3 cm.  
 c) The speed of the wave is 20 m/s.  
 d) The frequency of the wave is  $\frac{9}{\pi}$  Hz.
- 95) A metallic spherical shell has an inner radius  $R_1$  and outer radius  $R_2$ . A charge is placed at the centre of the spherical cavity. The surface charge density on the inner surface is:  
 a)  $\frac{q}{4\pi R_1^2}$                       b)  $\frac{-q}{4\pi R_1^2}$                       c)  $\frac{q}{4\pi R_2^2}$                       d)  $\frac{-q}{4\pi R_2^2}$
- 96) A current of 6A enters one corner P of an equilateral triangle PQR having 3 wires of resistances  $2\Omega$  each and leaves by the corner R. Then, the currents  $i_1$  and  $i_2$  respectively are:



- a) 2A, 4A                      b) 4A, 2A                      c) 1A, 2A                      d) 2A, 3A
- 97) A 90 cm long solenoid has six layers of windings of 450 turns each. If the diameter of solenoid is 2.2 cm and current carried is 6A, then the magnitude of magnetic field inside the solenoid, near its centre is:  
 a)  $50\pi \times 10^{-4}$  T                      b)  $60\pi \times 10^{-4}$  T  
 c)  $72\pi \times 10^{-4}$  T                      d)  $80\pi \times 10^{-4}$  T
- 98) Double convex lenses are to be manufactured from a glass of refractive index 1.55, with both faces of same radius of curvature. What is the radius of curvature required if the focal length is to be 20 cm?  
 a) 11 cm                      b) 22 cm                      c) 7 cm                      d) 6 cm
- 99) A parallel beam of light of wavelength 600 nm is incident normally on a slit of width d. If the distance between the slits and the screen is 0.8 m and the distance of 2<sup>nd</sup> order maximum from the centre of the screen is 15 mm. The width of the slit is:  
 a) 40  $\mu$ m                      b) 80  $\mu$ m                      c) 160  $\mu$ m                      d) 200  $\mu$ m
- 100) The power gain for common base amplifier is 800 and the voltage amplification factor is 840. The collector current when base current is 1.2 mA is:  
 a) 24 mA                      b) 12 mA                      c) 6 mA                      d) 3 mA

❖❖❖❖ Thank You!!! ❖❖❖❖