CURRENT ELECTRICITY

1.A charged particle is released from rest in a region of steady and uniform electric and magnetic fields which are parallel to each other. The particle will move in a

(1) Straight line (2) circle (3) helix
(4) Cycloid

- **1.Ans: the force due to electric field=qE**

  Force due to magnetic field=$qvB\sin\theta$=0

  ***i.e.* magnetic field does not exert any force .but the particle experience a force due to electric field and gains velocity. So the particle will move in the direction of the electric field along a straight line**

- **Answer: (1)**

2

- **Which of the following is analogous to momentum in electricity?**

(1) LI (2) VI (3) LQ (4) LC

- **2.In mechanics momentum p= mv =mdr/dt**

  Similarly LI = Ldq/dt is analogous to momentum.

- Answer is (1).

3

- A proton is projected horizontally eastward in a uniform magnetic field, which is horizontal southward in direction. The proton will be deflected

(1) Upward (2) downward

(3) Northward (4) southward

- 3. Ans: upward. Applying Fleming's left hand thumb rule, if forefinger is set in the direction of field direction(south), middle finger along direction of proton(eastward), thumb points in the downward direction towards which proton is deflected.
- Answer: (2)

4

- The dimension of the magnetic field in M,L ,T and C (coulomb) is given as

(1) $MT^{-1}C^{-1}$

(2) $MT^{-2}C^{-1}$

(3) $MLT^{-1}C^{-1}$

(4) $MT^{2}C^{-2}$

- 4.Answer F=Bqv
- $B=F/qv=MLT^{-2}/CLT^{-1}$
- $[B]=MT^{-1}c^{-1}$

ANWSER :(1)

5. A charged particle moves through a magnetic field perpendicular to its direction then.

(1) Both momentum and kinetic energy of the particle are constant

(2)Both momentum and kinetic energy of the particle are constant

(3)Kinetic energy changes but the momentum is constant

(4)The momentum changes but the kinetic energy is constant.

- 5. Ans: since the charged particle enters perpendicular to magnetic field, it describes circular path. since velocity and force are mutually perpendicular, no change in the velocity. Hence both momentum and kinetic energy remains constant.
- Answer:(2)

- **6.** **which of the following particles will describe smallest circle when projected perpendicular to a magnetic field?**

(1) Ne^{+} **(2) He^{+}**

(3)proton **(4) electron**

a

6

$r = mv/Bq$

therefore

$r \propto m/q$

$r \propto m$

7

- In the circuit diagram, the readings of the ammeter and voltmeter are 2A and 120V respectively. If the value of R is 75Ω, then the voltmeter resistance will be
- (1) 100Ω (2) 150Ω
- (3) 300Ω (4) 75 Ω

- 7.if I_2 is the current through voltmeter branch,and R=resistance of the voltmeter,

Then $V = I_2R$ 120 = $(IR_1/R+R_1)R$

120 = (2X75/75+R)R OR 120 =150R/75+R or 75+R =150R/120

On solving we get R=300 ohm

Answer : (3).

8

- An electric current is passed through a circuit containing two wires of the same material connected in parallel. If the lengths and radii of the wires are in the raio 4/3 and 2/3, then the ratio of the currents passing through the wires will be
- (1) 8/9   (2) 1/3 (3) 3 (4) 2

- 8. we know that in parallel combination, maximum current flows along the least resistance .so $I_1/I_2=R_2/R_1=l_2/A_2 \, x A_1/l_1 = l_2/l_1 \; X \; A_1/A_2 = \frac{3}{4} \; X \; 2^2/3^2 = 3/4 x 4/9 = 1/3$

Therefore answer is (2)

9

- **A long wire carries a steady current .It is bent in the form a circle of one turn and the magnetic field at the centre of the coil is B. It is then bent in to a circular loop of n turns. The magnetic field at the centre of the coil will be**
- **(1) 2nB (2) n^2B (3) nB (4) $2n^2B$**

- 9.we know that ,magnetic field at the centre of a circular coil is B = Kn/r .if the coil is rewound to have ‘n’ turns, radius decreases by ‘n’ times .B is proportional to n/r
- $B'/B=n/r \ / \ r/n = n^2$
- $B' = n^2 B$
- answer is (2)

10

Two long conductors, separated a distance ‘d’ carry current I_1 and I_2 in the same direction. They exert a force a F on each other. Now the current in one of them is increased to two times and the direction is reversed. The distance is also increased to 3d. The new value of the force between them is

(1) - 2F/3 (2) F/3 (3) -2F (4) –F/3

- 10.The initial force is given by $F=kI_1I_2/d$ .when current in one of them is doubled and distance becomes 3d, the force becomes $F'=k2I_1I_2/3d$ .F'/F= 2/3 but nature of the force is also reversed. Hence the answer is F' = -2/3F
- Ans : (1)

11

- **An ammeter reads up to 1 ampere. Its internal resistance is 0.81 ohm. To increase the range to 10 A the value of the required shunt (in ohm) is**

(1) 0.3 (2) 0.9 (3) 0.09 (4) 0.03

- **11. shunt resistance required is given by**
- **$S=I_gG/I-I_g$.**
- **here,I_{-g} =1A, G=0.81 ohm and I=10A .**
- **Substituting we get**
- **S =1x0.81/10-1=0.81/9 = 0.09ohm**
- Answer is (3)

12

- **If a wire of resistance is melted and re-casted to one fourth of its length, then the new resistance of the wire will become**
-
- **(1) 1/8th (2) ½ (3) 1/16th (4) 1/4th**

- 12. When length of a wire is decreased 4 times, area of cross-section increases by 4 times.

- therefore $R_2/R_1 = l_2/A_2 X A_1/l_1 = l_1/4/4lA_1X = 1/16$

- Answer:(3)

13

-
- **Two batteries one of emf 18 V and internal resistance 2Ω and other of emf 12V and internal resistance 1Ω are connected as shown in the figure. The reading of the voltmeter is**
- **(1) 30V (2) 18V (3) 15V (4)14V**
-

- **13. When two cells are parallel. The effective potential difference of the combination is given by (when they send the current in the same direction)**
- **$V = E_1r_2+E_2r_1/r_1+r_2$**
- **=18x1+12x2/2+1**
- **=18+24/3=42/3=14V**
- **Hence answer is (4)**

14

- **The current in a circuit containing a resistance R is 5 amps. When an additional resistance of 3Ω is inserted the current decreases to 2 amp.**
- **The original resistance of the circuit (in ohm) is**
- **(1)3 (2) 4 (3)2 (4) 6**

- 14.current in a circuit is inversely proportional to the resistance.let 'R' is the initial resistanc.If another resistance
- of 3Ω is connected in series to R, effective resistance is R+3. Then current becomes 2A $I_2/I_1=R_1/R_2$
- 2/5=R/R+3 2R+6=5R 3R=6 R=2ohm
- Answer is (3).

15

A uniform conductor of resistance R is cut into 20equal pieces. Half of them is joined in series and the remaining half of them are connectedin parallel. If the two combinations are joined in series, the effective resistance of all the pieces will be

- (1) R (2) R/2 (3) 101R/200(4)201/200

- 15. If resistance RΩ is cut into 20 pieces, then resistance of each part becomes R/20. If half of the pieces i.e.10 pieces are joined in series.R_s=10(R/20) = R/2 . other 10 pieces are joined in parallel. Since R_P =R/n =(R/20)/10=R/200
- If R/2 and R/200 are connected in series again, the effective resistance is R_S = (R/2)+(R/200) =100R+R/200=101R/200. answer is (3)

16

- A conductor of resistance 2Ω is stretched uniformly till its length is doubled. The wire is now bent in the form of a circle. The effective resistance between the any two points which are 1/4the circumference apart is
- (1) 1.33Ω 2) 2 Ω (3) 0.75 Ω (4) 1.5 Ω

- 16.If length of the 2Ω wire is doubled, the new resistance is $R_2 = n^2R_1 = 2^2x2 = 4X2 =$

8Ω. If 8Ω is bent in the form of a circle, resistance of each quarter part is 2 Ω.

Because 1/4 the circumference is considered, longer arc of 6 Ω and2 Ω are

parallel. Then effective resistance is R_P $=R_1R_2/R_1+R_2=6x2/6+2=12/8=3/2=1.5$ohm.

Hence answer is (4).

17

- **In the hydrogen atom the electron moves around the proton with a speed of 2.0 x 10^6 ms^{-1} in a circular orbit of radius 5.0 x 10^{-11} m. what is equivalent dipole moment?**

(1) 2x10^{-24} Am^2 (2) 4x$10^{-24}$$Am^2$

(3) 8X 10^{-24} Am^{-2} (4) 16X 10^{-24} Am^2

-
- 17.we know that the magnetic moment of a current loop is M= IA.Equivalent current due to revolution of electron is I=e/T =e/2kr/v =exv/2kr.but $A=kr^2$. Therefore M = (exv/2kr)xkr^2= $1.6x10^{-19}x5x10^{-11}x2x10^6/2=8x10^{-24}Am^{-2}$

answer is (3)

18

- **An alternating voltage (in volts) is given by $V=200\sqrt{2}\sin(100t)$ is connected to a 1μF capacitor through an ac ammeter. The reading of the ammeter will be**

- **(1) 10mA (2) 20mA (3) 40mA (4) 80mA**

- 18. the current in the circuit containing capacitor is given $I=V/_{XC}$ given $V_0=200x2^{1/2}$ v.
- $X_C=1/100x10x10^{-6}=1000$ ohm.
- $I_0=200x\sqrt{2}_{/1000}=200\sqrt{2}mA$.
- But ammeter reads rms value of current. therefore $I_{RMS}=200x\sqrt{2}/\sqrt{2}$ = 0.02A=20mA. Hence answer is (2)

19

An inductive coil has a resistance of 10Ω.when an ac signal of frequency 100Hz is fed to the coil, the applied voltage leads the current by 45^0. What is the inductance of the coil?

- **(1)10 mH (2) 12mH (3) 16mH (4) 20mH**

-
- 19. Resistance of the coil =R=10Ω and phase angle $=45^0$
- But phase angle is given by $\tan 45^0 = X_L / R$ OR $X_L = R = 10\Omega$
- i.e. $2\pi fL=10$ or 2X3.14X100 X f =10 or f =10/628 = 0.01599 = 16mH
- Answer :(3)

20

In an ac circuit the potential difference V and current are given respectively by V=100 sin (100t) volt and I=100 sin (100t +60^0) mA. The power dissipated in the circuit will be

(1)10^4 W (2) 10W (3) 2.5 W (4) 5W.

-
- 20.the power in an ac circuit is
- $P = V_{rms} I_{rms} \cos 60^{0}$.
- V_O =100 V and I_o =100X10^{-3}A so P=(100x100x10^{-3}/2)x1/2
- =50x50x10^{-3} =2.5W
- answer is (3)

21

- An electric heater consumes 500W when connected to a 100V line. If the line voltage becomes 150V, the power consumed will be

(1) 500W (2)750 W

(2) (3) 1000W (4) 1125W

- 21. the power dissipated in a resistor is $P=V^2/R$ since resistance of the wire is assumed to be constant
- $P_2/P_1 = V_2^2 / V_1^2$
- $P_2 = 500(15X15/100) = 1125W$

22

- **A current of 1A is passed through a coil across which is a potential difference of 210V. The coil which embedded in ice. Then the ice that melts per hour is**

- **(1) 2.5 kg (2) 2.1 kg (3) 3kg   (4) 4.2kg**

- 22.heat required to melt 'm' kg of ice = Q=mL L=latent heat of fusion

Heat produced in the resistor H=VIt.

mL=VIt

m =VIt/L=210x1x3600/3.6x10^5

=2.1 kg

Answer : (2)

23

- **An electric cable of copper has just one wire of radius 9mm. Its resistance is 5 ohms. This single copper wire of the cable is replaced by six different well insulated copper wires each of radius 3mm. the total resistance of the cable will now be equal to**
- **(1) 7.5 Ω (2) 45Ω (3) 90 Ω (4) 270Ω**

- 23.resistance of a wire is given by $R = kl/A$ $R = kl/r^2$
- $R_2 / R_1 = r_1^2 / r_2^2$
- $R_2 = 5 x 9^2/3 = 5 X 81/9 = 45\Omega$
- If such six wires each of 45Ω is connected in parallel, $R_P = 45/6 = 7.5\Omega$

24

- **A 90W-30V bulb is to be light by a supply of 120 volt. For this a wire is to be connected in series with it. The resistance of the wire be**
-
- **(1) 20 Ω(2) 30 Ω (3) 10 Ω (4) 40 Ω**
-

- 24. given rating of the bulb is 90W-30V . using $R=v^2/P = 30X30/90 = 10\Omega$
- Also current needed by the bulb to glow with maximum intensity is calculated by $I=P/V=90/30=3A$.If the bulb is connected with another resistance of $X\Omega$,then current in the circuit is equal to $I=E/R+X$ or $3=120/10+X$ or $10+X=40$ therefore $X=30\Omega$..answer is (3)

25

- A conductor of resistance of 3Ω is stretched uniformly till its length is doubled. The wire is now bent in the form of an equilateral triangle. The effective resistance between the ends of any side of the triangle in ohms is
- (1) 9/2 (2)8/3 (3) 2 (4) 1

- 25.when a wire is stretched n times resistance new resistance= n^2 x initial resistance.after stretching resistance of the wire is R = 2^2 x 3 = 4 x3 =12Ω
- If it connected to from a triangle two arms of the triangle are in series and third side is in parallel with it. Therefore 8Ω parallel to 4Ω. R_P =8x4/8+4 = 32/12 = 8/3

Answer :(2)

26

- **An electron in the potentiometer wire experiences a force of 3.2 X 10^{-19} N. the length of the potentiometer wire is 4m. The emf of the battery across the wire is**
- **(1) 3.2V (2) 1.6V (3) 4.8V (4) 8V**

- 26. the force experienced by an electron in the electric field is F=eE
- But E=F/e ,V being the P.d.across the wire = EMF of the cell equating ,we get
- F=ev/l
- $3.2X10^{-19}$ =$1.6X10^{-19}$XV/4 solving this we get V= emf of the battery =8V
- The answer is (4)

27

- **If two bulbs of 25W and 100W respectively each rated at 220V connected in series with a supply of 440V, which bulb will glow brighter?**
- **(1)25W bulb (2)100W bulb (3) bothwith same brightness bulbs (4)first 25W bulb and then 100W bulb**

- 27.we know that low wattage bulb will have high resistance.(since $R=v^2/P$)
- Heat produced is $H=I^2Rt$ i.e. hence 25W bulb glows more brightly when they are in series.
- the answer is (1)

28

- The resistance of the coil of an ammeter is R. the shunt required to increase its range four-fold should have a resistance;

- (1) R/3 (2) R/4 (3)4R (4) R/5

- 28. shunt resistance is calculated by $S=I_gG/I-I_g$ herG=R and I_g =I.
- S=IR/4I-I =R/3.
- therefore the answer is (1)

29

- Two particles accelerated with same voltage enter a uniform magnetic field perpendicularly the radii of the circular Paths are R_1 and R_2, the charge on the particles is same, the ratio of m_1/m_2 is
- (1) $(R_2/R_1)^2$ (2) R_2/R_1
- (3) R_1/R_2 (4) $(R_1/R_2)^2$

- 29.since particles have same charge and accelerated through same p.d. their kinetic energies are equal. We have

therefore $v=BqR/m$ $mv^2/R=Bqv$

$KE=1/2(mv^2)=1/2\ m[B^2q^2R^2/m^2]$

$=1/2[B^2q^2R^2/m]$Since kinetic energies are equal $R_1^2/R_2^2=m_1/m_2$ or

$m_1/m_2=[R_1/R_2]^2$ answer is (4)

30

An electron moving toward the east enters a magnetic field directed towards the north. The force on the electron will be directed:

- **(1) Vertically upward**
- **(2) vertically downward**
- **(3)towards the west**
- **(4) towards south**

- **30.using Flemings left hand thumb rule , electron experiences a force in upward direction.**
- **hence answer is (1)**

31

- If only 2% of the main current is to be passed through a galvanometer of resistance G then the resistance of the shunt will be
- (1)G/50 (2) G/49
- (3) 50G (4) 49

31. we know that shunt resistance is given by

$S=I_gG/I-I_g$

Given $I_g=0.02I$

therefore $S = 0.02IG/I-0.02I$

$=0.02G/0/98=G/49$

hence answer is (2).

32

- A coil is placed in transverse magnetic field of 0.02T. This coil starts shrinking at a rate of 1mm/sec. when its radius is 4cm, then what is the value if the induced emf.
- (1) 2μV (2) 2.5μV
  (3) 5μV (4) 8μV

-
- 32. induced emf =-rate of change of magnetic flux
- e=-d/dt(BA)=BxdA/dt
- =-3.14x0.02x(2x0.04)x(-10^{-3})
- =5x10^{-6} =5μV.
- Hence answer is (3)

33

- On connecting a battery to the two corners of a diagonal of a square conductor frame of side ‘a’ , the magnitude of the magnetic field at the centre will be
- (1) zero (2) $\mu_0/\pi a$
- (3) $2\ \mu_0/\pi a$ (4) $4\ \mu_0/\pi a$

- 33.since current is devided equally into two parts and flows in opposite direction, each part produces equal and opposite magnetic field at the centre of the loop.hence resultant magnetic magnetic field is zero. Therefore the answer is (1)

34

- 34.A wire of length   carrying a current i is bent in the form a circle . The magnitude of the magnetic moment is
-
- (1) $iL^2/4\pi$ (2) $iL^2/2\pi$
- (3) $iL/4\pi$ (4) πiL^2

- 34.magnetic moment of a coil = iA
- $=i(\pi r^2)$
- Given that $2\pi r = L$ or $r = L/2\pi$ $M = iL^2/4\pi$
- Answer :(1)

35

- A coil and a bulb are connected in series with an AC source. If a soft iron rod is inserted in to the inductive coil, the intensity of the bulb will become
-
- (1) dim   (2) intense
- (3) unchanged (4)go out

- 35. on inserting the iron rod into the coil, the inductive reactive(X_L) increases. Hence impedence of the circuit also increases.which results in decrease of current .hence intensity of the bulb decreases. Correct answer is(1).
-

36

- **The resistance of a wire is 10 ohm. It is drawn in order to increase its length by 10%.the new resistance of the wire will be**
-
- **(1)11 Ω (2)8 Ω**
- **(3)12 Ω (4)15 Ω**

- **36.if a wire is stretched by n%, resistance increases by 2n%.therefore, if length is increased by 10%, resistance increases by 20%. New resistance is**
- **R = 10Ω + 20% of 10Ω =10+2=12Ω.therefore answer is (3)**

37

- In the following figure, circuit of wheat stone's bridge is represented. When the ratio arms P and Q are almost equal then the bridge gets balanced at R=400Ω .If P and Q are mutually interchanged then the bridge gets balanced at R=441Ω. The value of unknown resistance X will be
- (1) 402.Ω (2) 403 Ω (3) 404Ω (4) 420Ω

- 37.P/Q =400/X   Q/P= 441/X
- solving these two $X=\sqrt{400 \times 441}$ $=20 \times 21=420\Omega$.

38

- **A student connects four cells ,each of internal resistance 1/4Ω in series. One of *the* cells is incorrectlyconnected because its terminals are reversed. The value of external resistance is 1 Ω. If the emf of each cell is 1.5 volt, then current in the circuit is**
- **(1)4/3 A (2) zero (3)3/4 A (4) 1.5 A**

- 38.because one of the cells is reversed , it nullifies emf of one cell.
- Total emf =1.5+1.5 =3V
- Total internal resistance of four cells = 4X1/4 =1Ω
- Therefore current in the circuit is I = 3/1+1=3/2=1.5 A
- Therefore answer is (4)

39

- **The potential difference between the ends of 4 Ω resistance in the given circuit is**
-

(1) 1.2V (2)2.6V (3)6.4V (4) 4.8V

-
- 39.we have to find the main current =current through 4 ohm=I
- We know that branch current $I_1 = I x R_2/R_1+R_2$ 0.8 = Ix6/6+3 or 0.8=2I/3=1.2A
- hence p.d. across 4Ω =IR
- =1.2 X 4 = 4.8 V

40

- **A wire emits 80J of energy in 10 seconds when a current of 2A is passed through it. The resistance of the wire in ohms will be**
-
- **(1) 0.5 (2) 2 (3) 4 (4)20**

- **40. the heat dissipated in a reisistor is**
- **$Q = I^2Rt$**
- **$80 = 2^2 \times R \times 10$**
- **$8 = 4R$**
- **$R = 2\Omega$ Answer is (2)**

41

- **A battery of 15V and of negligible internal resistance is connected to the**
- **Rheostat XZ of 1kΩ. The resistance of Yz part is 500 .the reading of the ammeter will be.**
- **1A (2) 0.1A (3) 0.01A (4) 0.001 A**

- 41.500 ohms in parallel with 500 ohm.
- So Rp=R1R2/R1+R2Rp=250 Ohm.
- This is series with remaining part of the rheostat. Their eff.res=500+250 ohm
- Current in the ckt I=E/R I=15/750A
- Branches are equal-I1=I2=1/2[15/750]
- AMMETER READING =15/1500=0.01A
- Answer (c)

42

- The potential difference between the points A and B in the adjoining diagram will be
- (1) PQ/P+Q (2)PQ/P-Q
- (3) P+Q   (4) P-Q

- 42.each branch contain same reisstancei.e (p+q)
- Current devides equally I1=I2=1A
- P.d.across p= 1Xp =P volts
- P.d.across Q =1XQ=Q volts
- Then p.d.=V_{A-} V_B **=P-Q**

43

- **43. A bulb rated 4.5W, 1.5V is connected as shown in the figure. The emf of the cell needed to make the bulb glow at full intensity is**

- **(1) 4.5V (2)1.5V (3)2.67V (4) 13.5V**

- 43. **Resistance of the bulb=V²/p=1.5x1.5/4.5=0.5Ohm**
- **Rp=1x0.5/1+0.5=1/3=0.333ohm**
- **Current requied for its glow=I=P/v=4.5/1.5=3A**
- **Similarly current ! ohm branch=I=V/R=1.5A.Wkt I=E/Rp+r**
- **(3+1.5)=E/1.333+2.67 4.5=E/3 E=13.5V**

44

- **For drawing a current of 2A for 6 minutes in a circuit 1000J of work is to be done. The emf of the source in the circuit is**

(1) 3.10V (2)2.03V (3)1.68V (4) 1.38 V

- 44.emf=amout of workdone to transfer 1 coulomb of charge
- charge transferred Q=It=2x6x360coulombs
- To transfer Q , workdone=1000J
- t0 transfer workdone=emf=1000/2x6x360=2.03j
- therefore E=2.03V

45.

- The internal resistance of a cell of emf is 0.1Ω. It is connected to a resistance of 3.9Ω. the voltage across the cell will be
- (1) 0.52V (2) 1.68V
- (3) 1.95V (4) 2.71V

- 45.The voltage across the cell

=terminal p.d

=E-Ir

=E-(E/R+r)r

=2-[2x0.1/3.9+0.1]

=2-[0.2/4]

=2-0.05=1.95V

Answer :(3)

46

-
- **When a resistance of 2Ω is connected across the terminals of a cell. The current is 0.5A. But when the resistance across the cell is 5Ω, the current is 0.25A. The emf of the cell is**
- **(1)2.0V(2)1.0V (3)1.5V (4) 0.5V**

4

- 46.E=i(R+r)
- E=0.5x(r+2)=0.25x(r+5)
- Therefore r=1
- and E=1.5V
- Answer: (3)

47

- **A wire is stretched so that its radius becomes one-third of the original value. The value of the resistance as compared to original value is**
-
- **(1) 9:1 (2) 27:1 (3) 81:1 (4) 3:1**
-

- **47.Hint:R_2** $/R_1 = (l_2/l_1) \times (A_1/A_2)$ if radius decreases by 1/3. Area of cross-section by 1/9. Therefore length increases 9 times.
- **Answer: (3) 81:1**

48

- **A battery supplies 150W and 196W power to two resistors of 6Ωand 4Ω when they are connected separately to it. The internal resistance of the battery is**
-
- **(1)2.5 Ω (2) 2 Ω (3) 1 Ω (4) 0.5 Ω**

- 48. $P=I^2 R=(E/R+R)^2$
- $150=E^2 x6/(6+r)^2$
- $196=E^2x4/(4+r)^2$
- solving ,we get
- $r=1\ \Omega$

49

- **A voltmeter has a resistance of 20K. When it is connected in series with a**
- **Resistance R across 230V supply it reads 200V.what is the value of R?**
-
- **(1) 2kΩ (2) 3kΩ (3) 4kΩ (4)1k Ω**

- 49.current flowing through the voltmeter $=I=V/R=200/20\times10^{3}$
- $=10\times10^{-3}$
- same current flows through R
- then $R=30/10\times10^{-3}=3k\Omega$

50

- Three conductors draw currents 1A,3A and 6A when connected to a battery of negligible internal resistance in turn. If they are connected in series across the same battery, the current drawn will be
- (1) 3/2 A(2) 2/3A (3) 4/3A (4) 5/3 A

- 50.I_1=v/R_1 1= V/R_1 R_1=v
- I_2=V/R_2 3=V/R_2 R_2=V/3
- I_3=V/R_3 6=V/R_3 R_3= v/6
- R_s=V+V/3+V/6=9/6V
- I=V/R_s=V/(9/6)V=2/3V