

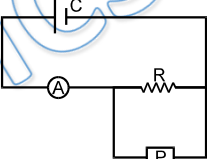


## DPP – 7 (Current Electricity)

Video Solution on Website :- <https://physicsaholics.com/home/courseDetails/98>

Video Solution on YouTube:- [https://youtu.be/Cw\\_eR0ENQPU](https://youtu.be/Cw_eR0ENQPU)

Written Solution on Website:- <https://physicsaholics.com/note/notesDetails/53>

- Q 1. If following meters are prepared with help of identical galvanometer. In which of the case resistance of the device will be largest?  
(a) An ammeter of range 10 A (b) A voltmeter of range 5 V  
(c) An ammeter of range 5 A (d) A voltmeter of range 10 V
- Q 2. A bulb rated 200 W, 200 V is used at 100 V. Then the number of electrons passed through bulb in one second is  
(a)  $3.125 \times 10^{17}$  (b) Zero  
(c)  $3.125 \times 10^{18}$  (d)  $6.25 \times 10^{18}$
- Q 3. 'n' identical light bulbs, each designed to draw power of P watts from a certain voltage supply are joined in series and that combination is connected across that supply. The power consumed by one bulb (in watts) will be  
(a) n P (b) P (c) P/n (d)  $P/n^2$
- Q 4. An ammeter A of finite resistance and a resistor R are joined in series to an ideal cell C. A potentiometer P is joined in parallel to R. The ammeter reading is  $I_0$  & the potentiometer reading is  $V_0$ . P is now replaced by a voltmeter of finite resistance. The ammeter reading now is I and the voltmeter reading is V.
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- (a)  $I > I_0, V > V_0$  (b)  $I > I_0, V < V_0$   
(c)  $I = I_0, V < V_0$  (d)  $I < I_0, V = V_0$
- Q 5. In a potentiometer arrangement  $E_1$  is the cell establishing current in primary circuit  $E_2$  is the cell to be measured AB, is the potentiometer wire and G is a galvanometer. Which of the following are the essential condition for balance to be obtained  
(a) The emf of  $E_1$  must be greater than the emf of  $E_2$   
(b) Either the positive terminals of both  $E_1$  and  $E_2$  or the negative terminals of both  $E_1$  and  $E_2$  must be joined to one end of potentiometer wire  
(c) The positive terminals of  $E_1$  and  $E_2$  must be joined to one end of potentiometer wire  
(d) The resistance of G must be less than the resistance of AB
- Q 6. In a potentiometer wire experiment the emf of a battery in the primary circuit is 20 V and its internal resistance is  $5\Omega$ . There is a resistance box in series with the battery and the potentiometer wire, whose resistance can be varied from  $120\Omega$  to  $170\Omega$ . Resistance of the

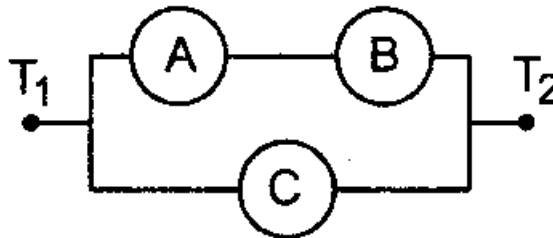


potentiometer wire is  $75\Omega$ . The following potential difference can be measured using this potentiometer

- (a) 5V                      (b) 6V                      (c) 7V                      (d) 8V

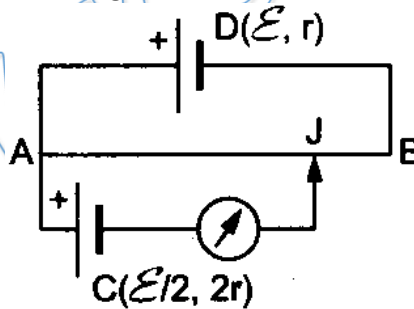
- Q 7. An ammeter and a voltmeter are joined in series to a cell. Their readings are A and V respectively. If a resistance is now joined in parallel with the voltmeter,
- (a) both A and V will increase  
 (b) both A and V will decrease  
 (c) A will decrease, V will increase  
 (d) A will increase, V will decrease

- Q 8. Three ammeters A, B and C of resistances  $R_A$ ,  $R_B$  and  $R_C$  respectively are joined as shown. When some potential difference is applied across the terminals  $T_1$  and  $T_2$ , their readings are  $I_A$ ,  $I_B$  and  $I_C$  respectively.



- (a)  $I_A = I_B$   
 (b)  $I_A R_A + I_B R_B = I_C R_C$   
 (c)  $\frac{I_A}{I_C} = \frac{R_C}{R_A}$   
 (d)  $\frac{I_B}{I_C} = \frac{R_C}{R_A + R_B}$

- Q 9. In the potentiometer arrangement shown, the driving cell D has emf  $\xi$  and internal resistance  $r$ . The cell C, whose emf is to be measured, has emf  $\xi/2$  and internal resistance  $2r$ . The potentiometer wire is 100-cm long. If balance is obtained, the length  $AJ = l$ .



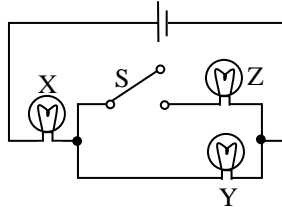
- (a)  $l = 50$  cm.  
 (b)  $l > 50$  cm.  
 (c) Balance will be obtained only if resistance of AB is  $> r$ .  
 (d) Balance cannot be obtained.

- Q 10. Two heaters designed for the same voltage  $V$  have different power ratings. When connected individually across a source of voltage  $V$ , they produce  $H$  amount of heat each in times  $t_1$  and  $t_2$  respectively. When used together across the same source, they produce  $H$  amount of heat in time  $t$ .

- (a) If they are in series,  $t = t_1 + t_2$ .  
 (b) If they are in parallel,  $t = \frac{t_1 t_2}{t_1 + t_2}$ .

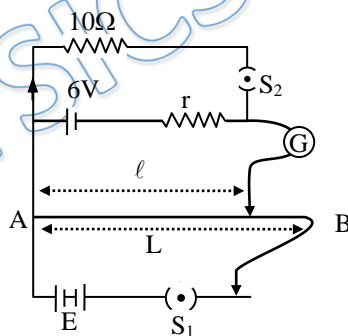
- (c) If they are in parallel,  $t = \frac{t_1 t_2}{(t_1 + t_2)}$ .
- (d) If they are in parallel,  $t = \frac{t_1 t_2}{2(t_1 + t_2)}$

Q 11. If X, Y, and Z in figure are identical lamps, which of the following changes to the brightnesses of the lamps occur when switch S is closed?



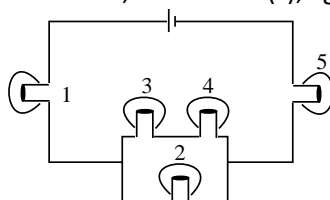
- (a) X stays the same, Y decreases  
 (b) X increases, Y decreases  
 (c) X increases, Y stays the same  
 (d) X decreases, Y increases
- Q 12. When a galvanometer is shunted with a 4ohm resistance, the deflection is reduced to one-fifth. If the galvanometer is further shunted with a 2ohm wire, the deflection will be (The main current remains the same) -
- (a) (8/13 ) of the original deflection only  
 (b) (5/13 ) of the original deflection  
 (c) (3/4) of the deflection when shunted with 4 ohm only  
 (d) (5/13 ) of the deflection when shunted with 4 ohm only

Q 13. In the arrangement shown in figure when the switch S<sub>2</sub> is open, the galvanometer shows no deflection for  $l = L/2$ . When the switch S<sub>2</sub> is closed, the galvanometer shows no deflection for  $l = 5L/12$ . The internal resistance (r) of 6 V cell, and the emf E of the other battery are respectively-



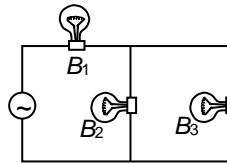
- (a) 3Ω, 8V  
 (b) 2 Ω, 12V  
 (c) 2 Ω, 24V  
 (d) 3 Ω, 12V

Q 14. In the fig below the bulbs are identical, which bulb(s), light(s) most brightly ?



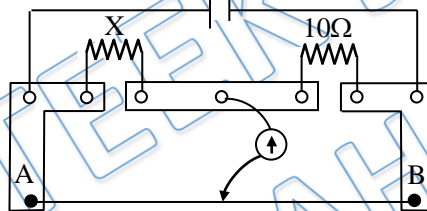
- (a) 1 only                      (b) 4 only                      (c) 2 and 3                      (d) 1 and 5

Q 15. Three bulbs  $B_1$ ,  $B_2$  and  $B_3$  are connected to the mains as shown in figure. How will the incandescence of the bulb  $B_1$  be affected, if one of the bulbs  $B_2$  or  $B_3$  is disconnected from the circuit?



- (a) no change in the incandescence  
 (b) bulb  $B_1$  will become brighter  
 (c) bulb  $B_1$  will become less brighter  
 (d) the bulb  $B_1$  may become brighter or dimmer depending upon wattage of the bulb which is disconnected.

Q 16. A meter bridge is set-up as shown, to determine an unknown resistance 'X' using a standard 10 ohm resistor. The galvanometer show null point when tapping-key is at 52 cm mark. The end-corrections are 1 cm and 2 cm respectively for the ends A and B. The determine value of 'X' is-



- (a) 10.2 ohm                      (b) 10.6 ohm  
 (c) 10.8 ohm                      (d) 11.1 ohm



## Answer Key

Q.1 d	Q.2 c	Q.3 d	Q.4 b	Q.5 a, b
Q.6 a, b, c	Q.7 d	Q.8 a, b, d	Q.9 b, c	Q.10 a, c
Q.11 b	Q.12 d	Q.13 b	Q.14 d	Q.15 c
Q.16 b				

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