Exercise-I

1.	B	**2.**	B	**3.**	D	**4.**	A	**5.**	A	**6.**	C	**7.**	C
8.	C	**9.**	D	**10.**	D	**11.**	D	**12.**	D	**13.**	B	**14.**	B
15.	D	**16.**	C	**17.**	A	**18.**	C	**19.**	D	**20.**	A	**21.**	A
22.	A	**23.**	B	**24.**	B	**25.**	D	**26.**	D	**27.**	C	**28.**	B
29.	A	**30.**	B	**31.**	A	**32.**	B	**33.**	C	**34.**	C	**35.**	D
36.	D	**37.**	B	**38.**	C	**39.**	B	**40.**	A	**41.**	B	**42.**	C
43.	B	**44.**	D	**45.**	C	**46.**	C	**47.**	B	**48.**	D	**49.**	D
50.	B	**51.**	B	**52.**	B	**53**	A	**54.**	B	**55.**	B	**56.**	C
57.	B	**58.**	A	**59.**	C	**60.**	A	**61.**	B	**62.**	D	**63.**	A
64.	A	**65.**	D	**66.**	B	**67.**	A	**68.**	A	**69.**	B	**70.**	B
71.	D	**72.**	A	**73.**	D	**74.**	B	**75.**	D	**76.**	C	**77.**	C
78.	A	**79.**	D	**80.**	B	**81.**	C	**82.**	C	**83.**	D	**84.**	D
85.	B	**86.**	A	**87.**	A	**88.**	A	**89.**	A	**90.**	B	**91.**	B
92.	B	**93.**	B	**94.**	A	**95.**	D	**96.**	C	**97.**	B	98.	D
99.	D	100.	A	101.	D	102.	C						

Exercise-II

1.	A,B,C	**2.**	A	**3.**	D	**4.**	A,B,C,D	**5.**	A,D	**6.**	C	**7.**	A,C,D
8.	A	**9.**	C	**10.**	A,C	**11.**	A,C	**12.**	D	**13.**	A,D	**14.**	C
15.	B,C	**16.**	A,C,D	**17.**	A	**18.**	A,B	**19.**	A,B,C	**20.**	A,C		

Exercise-III

1. 1.5625×10^{19} **2.** 1.25×10^{-17}, (b) $\frac{2}{\pi} \times 10^6$ A/m^2 **3.** 25 V/m **4.** (a) 7.5 V, (b) 24 mA(c) greater than 12 V

5. zero **6.** 19 V **7.** (a) 3.7 V (b) 3.7 V **8.** 1Ω **9.** 600Ω

10. 1 V **11.** $\frac{3}{20} = 0.15A$, $\frac{3 \times 5.5}{20} = 0.83\,A$ **12.** I = 2.5 A, V = 3.5 volts

13. $\frac{25}{9}V = 2.78\,V$, $\frac{5}{18}A = 0.278A$ **14.** B **15.** 1W **16.** $\frac{22}{35}\Omega$ **17.** $\frac{3r}{5}$

18. (a) 12 W (b) 4W (c) 8 W (d) 4Ω (e) 4W

19. 90 watt. **20.** 12A, – 20 W **21.** $\sqrt{R_1 R_2}$

22. (a) $\frac{50}{11} = 4.55A$ (b) $\frac{22\times11}{5} = 48.4\Omega$ (c) 1000 W (d) 240 cal s^{-1} (e) 80/3 gm

23. 90%

24. (a) E = 10 V each (b) (A) act as a source and (B) act as load
(c) V_A = 9V, V_B = 11 V (d) P_A = 9 W, P_B = 11 W (e) Heat rate = 1 W each
(f) 10 watt. (g) 9V, 11 V (b) –9W, 11 W

25. 4Ω **26.** 20 ohm **27.** $\frac{50}{73}$A **28.** 46.67 cm

29. 4 ohm **30.** $\frac{10}{3}\Omega, 5\Omega$ **31.** 7.5 m, 8.75 m, 6.25 m

Exercise-IV

1. $(3/11)\alpha$ **2.** (a) $J_0A/3$; (b) $2J_0A/3$ **3.** $\frac{R_2}{R_1} = \frac{3}{5}$ **4.** (i) 10.52 Ω; (ii) 0.3125 Ω

5. 7/5 times the length of any side of the square

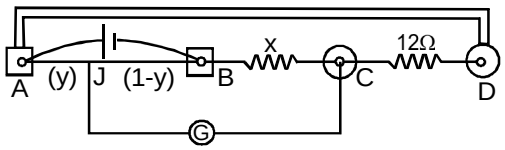
6. (i) $\frac{(k-1)^2}{k}; \frac{k}{(k-1)}$ (ii) $\frac{\left((k-1)/k^2\right)V_0}{R^3}$ **7.** 4/9 kg/sec, 450 sec **8.**(i) V_{ab} = –12 V, (ii) 3 amp from b to a

9. $11+6\sqrt{2}$ **10.** $R = \frac{\rho_0 L}{A}\left(1-\frac{1}{e}\right)$; $I = \frac{V_0 A}{\rho_0 L}\left(\frac{e}{e-1}\right)$; $V = \frac{V_0(e^{-x/L}-e^{-1})}{1-e^{-1}}$ **11.** 7.2 m **13.** $-\frac{22}{9}V_n$

14. $\alpha_{eff} = \frac{5}{4}\alpha$ **15.** 233.3Ω, 144V **16.** (a) 6m, (b) 1Ω **17.** (a) 1.01 W, (b) 0-5A, 0-10 V, (c) 0.05 A

Exercise-V

1. 20/3 V **2.** (i) D; (ii) $M^{-1}L^{-3}T^3A^2$; (iii) $\frac{V_1r_2+V_2r_1}{r_1+r_2}, \frac{r_1r_2}{r_1+r_2}$ **3. D** **4.** A

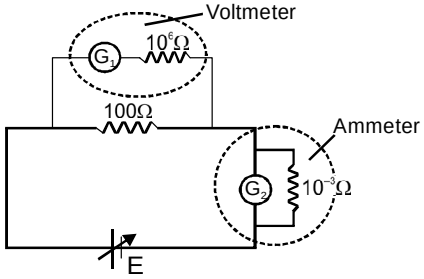


5. A **6.** D

7. (a) No, (b) (c) 8Ω **8.** A **9.** A

10. Battery should be connected across A and B. Out put can be taken across the terminals A and C or B and C

11. A **12.** C **13.**



14. B **15.** D

16. This is true for $r_1 = r_2$; So R_2 given most accurate value **17.** A **18.** A **19.** C

20. D **21.** A,D **22.** C **23.** D **24.** C **25.** 4

26. B **27.** 5 **28** A, B, C, D