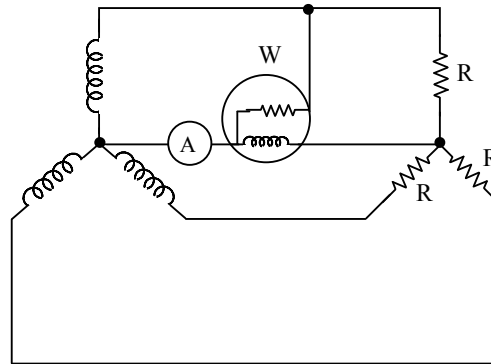


- (q) $\oint \vec{B} \cdot d\vec{s} = 0$ (ii) Ampere's law
- (r) $\oint_L \vec{H} \cdot d\vec{l} = \int_s \vec{J} \cdot d\vec{s}$ (iii) Gauss's law
- (s) $\nabla \cdot \vec{E} = 0$ (iv) Conservativeness of electrostatic field
- (A) (p) (q) (r) (s)
 (i) (ii) (iii) (iv)
- (B) (i) (ii) (iii) (iii)
- (C) (iii) (i) (ii) (iv)
- (D) (iii) (i) (ii) (iii)

Q.5– 10 carry two marks each

5. The transformer secondary in star supplies power to a purely resistive load, with one ammeter & wattmeter connected as shown in figure. The readings on the ammeter and voltmeter are 27 A and 648 W respectively. The line to line voltage are balanced. Considering upto third harmonic the value of the resistor R will be



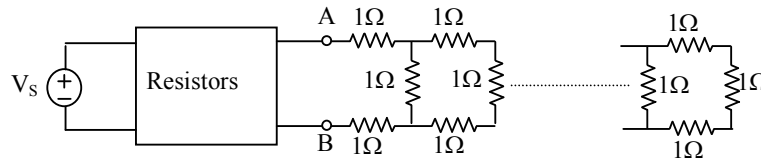
- (A) 2Ω
 (B) 3Ω
 (C) 2.98Ω
 (D) 2.67Ω
6. A 240V shunt motor has an armature resistance of 0.5Ω and takes an armature current of 45A on a certain load. Neglecting saturation & armature reaction. The speed is to be raised by 50% the reduction in main flux required if the developed torque is constant will be
- (A) 55% of ϕ_1 (B) 58% of ϕ_1
 (C) 60% of ϕ_1 (D) 62.5% of ϕ_1
7. Following data for a 3-phase IM is given below
 Max starting current = Full load current
 Full load slip = 0.016
 Rotor resistance / phase = 0.016Ω
 If a 5 section rotor starter is used for starting purpose, the resistance of 5 sections are
- (A) 0.66, 0.4, 0.3, 0.28, 0.01Ω
 (B) 0.76, 0.3, 0.25, 0.11, 0.045Ω
 (C) 0.56, 0.25, 0.11, 0.045, 0.019Ω
 (D) 0.66, 0.5, 0.4, 0.32, 0.21Ω
8. Power flowing in 3- ϕ , 3 wire system is measured by two wattmeters whose reading are 7000 W and -2500 W. If the voltage of the circuit is 400V, then what will be the value of

capacitance introduced in each phase to make one wattmeter read zero. The frequency is 50 Hz.

- (A) 500 μF (B) 668.6 μF
 (C) 1000 μF (D) 748.5 μF

9. A 50MVA, 132/33kV star delta bulk supply transformer protected by Merz price scheme has 1A secondary C.T rating. Then the C.T ratio of primary side will be
 (A) 1: 378.78 (B) 126.41 :1
 (C) 218.69: 1 (D) 378.78 : 1

10. Consider the circuit shown below



Short circuit current is 2A and open circuit voltage is 5 V. Then voltage across AB under practical implementation is given by _____

- (A) 0.741 V (B) 5 V
 (C) 3 V (D) 2 V

