Solutions to Government Exam Questions

1. $R_T = [R_1^{-1} + R_2^{-1} + R_3^{-1}]^{-1} = [100^{-1} + 100^{-1} + 100^{-1}]^{-1} = 33.3\ \Omega.$

2. A_c because it is the total current.

3. $V_T = IR_T$

   $9 = I (2 + 4 + 5+ 7)$

   $I = 0.5$ A

4. Circuit M

$V_T = IR_T$

   $12 = I (3 + 9 + 12)$

   $I = 0.5$ A

   Circuit N needs 10 times the current, so we need 10 (0.5 A) = 5A

   Resistance? V = IR

   $12 = 5R$

   $R = 2.4\ \Omega.$

   Which two resistors will give 2.4 Ω?

   Try them into the formula: $R_T = [R_1^{-1} + R_2^{-1}]^{-1} = [3^{-1} + 12^{-1}]^{-1} = 2.4\ \Omega.$

   Answer 3 Ω And 12 Ω.

5. Voltage is constant! Answer 12 V

6. C

7. $V_T = I R_T = 0.25(10 + 20 + 40) = 17.5$ V.

8. $I_T = 0.75 + 0.75 = 1.5$ A

9. If the resistance at the second bulb is twice as big, then it will draw only half the current. 0.5(0.6) = 0.3 A.

   Attach an ammeter to L_2 to check if this is the case.