Bani Swief Technological University

Principles of Automotive Electricity and Electronics

Time Allowed: 2hrs

Semester II

Autotronic program

Final exam (2022)

Total Marks :(45 Marks)

Question (1) :

1- What are the components of an atom?
2- What are the four functions of a charging system?
3- What is the purpose of the batteries?
4- Mention the different types of variable resistor.
5- What are the main reasons for failure the battery?

Question (2) : Choose the correct answer: -

1- Battery electrolyte is a mixture of water and:
a. Lead peroxide.
b. Sulfuric acid.
c. Lead sulfate.
d. All of the above

2- The capacity of a battery is determined by its:
a- Number of plates.
b- Size of plates.
c- Neither a nor b.
d- Both a and b.

3- To determine if a battery with cell vent covers is charged or discharged, a technician would use a:
a- Load tester.
b- Hydrometer.
c- Ammeter.
d- None of them.

4- A battery with a built in hydrometer is being checked. Technician A says that a DARK GREEN eye indicates the battery is sufficiently charged for further testing. Technician B says that a light yellow hydrometer eye means the battery must be replaced.
a- Technician A.
b- Technician B.
c- Both technicians A and B.
d- Neither technicians A or B.

5- The alternator brush rides on a:
a- Rotor.
b- Regulator.
c- Slip ring.
d- Diode.

6- What is not true about alternator fan:
a- Cools the windings and diodes.
b- Rotating with the same engine speed.
c- Mounted on the front of alternator.
d- Draws air through and over the alternator.

7- The magnetic field in an alternator is developed in the:
a- Stator.
b- Rotor
c- Delta or Wye winding.
d- None of them.

1st year
Midter

Question

Bani Swief Technological University

Principles of Automotive Electricity and Electronics

Time Allowed: 2hrs

Semester II

Autotronic program

Final exam (2022)

Total Marks :(45 Marks)

8- In an alternator, alternating current is converted to direct current by the:

a- Stator.

b- Brushes.

c- Rectifier

d- Regulator.

9- A battery that is overcharged can be due to:

a- Loose alternator drive belt.

b- High speed driving.

c- Defective regulator.

d- High resistance in the field circuit.

10- Several lamps are connected in parallel to a voltage source. If one light burns out, all the other lamps:

a- Will go out.

b- Will get brighter

c- Will not be affected.

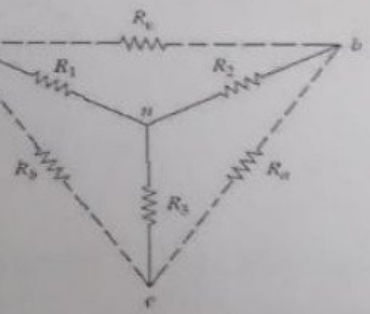
d- Will get dimmer.

11- Resistivity of a wire depends on:

a- Length b- Material c- Cross sectional area d- None of them

12- When uses Wye to Delta transformation, the equivalent value of R_b is:

$$Rb = R1 + R3 + \frac{R1 \cdot R3}{R2}$$



a- $R_1 + R_2 * R_3 + R_2$

b- $R_3 + R_1 + (R_3 + R_1)/R_2$

c- $R_3 + R_1 + (R_1 * R_3)/R_2$

d- $R_3 + R_1 + (R_1 * R_3)/R_1$

13- A cylindrical conductor conducts of length L and uniform area of cross-section A has resistance R. Another conductor of length 2L and resistance R of the same material. The area of cross-section is:

a- $A/2$ b- $3A/2$ c- $3A$ d- $2A$

14- The resistivity does not change if :

a- The material is changed

b- The temperature is changed

c- The shape of the resistor is changed

d- Both material and temperature are changed

Bani Swief Technological University
Principles of Automotive Electricity and Electronics
Time Allowed: 2hrs

Semester II

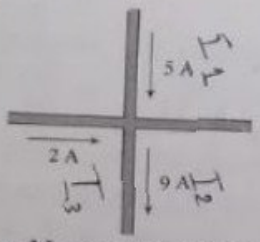
Autotronic program
Final exam (2022)
Total Marks :(45 Marks)

15- Deep cycling means:
a- Overcharging the battery
b- Overfilling the battery with water
c- The battery is overfilled with acid (H2SO4)
d- The battery is fully discharged and then recharged

16- Which battery rating is tested at 0°F (-18°C)?
a- Cold-cranking amperes (CCA)
b- Cranking amperes (CA)
c- Reserve capacity
d- Battery voltage test

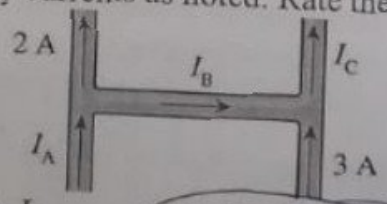
17- What battery rating is tested at 32°F (0°C)?
a- Cold-cranking amperes (CCA)
b- Cranking amperes (CA)
c- Reserve capacity
d- Battery voltage test

18- The current in the fourth wire is



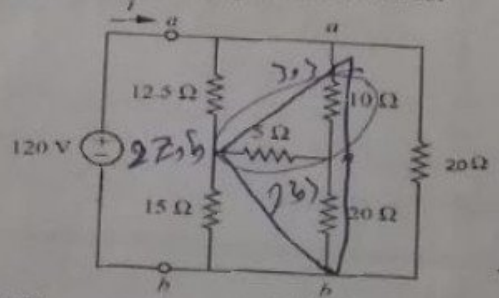
a- 2 A to the left
b- 4 A to the left.
c- No enough information to tell
d- 16 A to the right.

19- The wires showed next carry currents as noted. Rate the currents I_A, I_B, and I_C.



a- $I_A > I_B > I_C$
b- $I_B > I_A > I_C$
c- $I_C > I_A > I_B$
d- $I_A > I_C > I_B$

20- the equivalent resistance R_{ab} for the given circuit is:

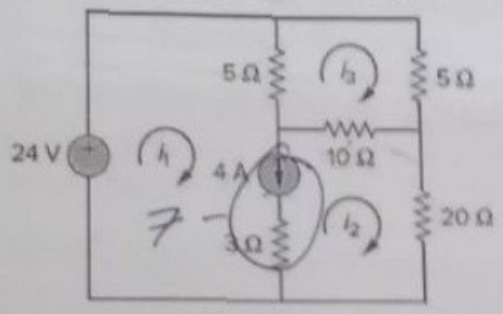


a- 10.2 Ω
b- 8.3 Ω
c- 9.6 Ω
d- 9.1 Ω

21-What is the maximum resistance which can be made using five resistors each of 0.5 Ω?

a- 0.5 Ω b- 1 Ω c- 10 Ω d- 5 Ω

22- In the circuit shown in figure (1), the value of I_1 is:



Figure(1)

a- $\frac{18}{5}$ b- $\frac{12}{5}$ c- $\frac{5}{12}$ d- $\frac{10}{5}$

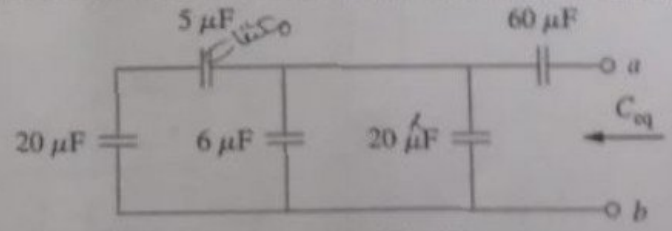
23- In the circuit show in figure (1), the value of I_2 is:

a- $\frac{28}{15}$ b- $-\frac{28}{20}$ c- $\frac{28}{20}$ d- $-\frac{18}{15}$

24- In the circuit show in figure (1), the value of I_3 is:

a- b- $\frac{4}{5}$ c- $\frac{5}{4}$ d-

25- the equivalent capacitance seen between terminals a and b of the circuit is



a- 30 μF b- 22 μF c- 20 μF d- 18 μF