2nd Semester Midterm Exam

SCIENCE SC23102 MEP M.3/6

Name: _____ Student no. _____ Class: M.3/6

Part 1. Multiple choice

Instruction: Read each questions carefully and select the best answer.

Indicator 1: SC5.1 Gr. 9.2 Explain the relationship between electrical potential difference, electrical current and resistance. (Items 1-13)

1. Defined as the electrical energy supply needed to move each unit charge from one point to another.

a. Electrical resistance
c. Electrical potential difference
b. Electrical current
d. Electrical circuit

2. State that, the current through a conductor is directly proportional to the voltage across the end of the conductor.

a. Cost of electricity
c. Voltage rating
b. Ohm's law
d. Flow of electric current

3. Bulbs are connected next to each other. The current flows through the bulbs in a single path.

a. Series circuit
c. Semi-circuit
b. Parallel circuit
d. Electric circuit

4. Bulbs are connected separately to the same terminal of a battery.

a. Close circuit
c. Parallel circuit
b. Series circuit
d. Open circuit

5. The property of a materials that resist the flow of electrical current through it.

a. Voltage

c. Conductor

b. Resistance

d. Ampere

6. Which of the following statements are true?

I. High resistance materials suppress the flow of electrical current.

II. Low resistance materials allow electrical current to flow.

III. Resistance resist the flow of the electrical current to the conductor.

a. I and II only

c. II and III only

b. I and III only

d. I, II and III

7. The unit for electrical current is …

a. watt

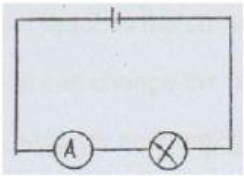
c. ohm

b. voltage

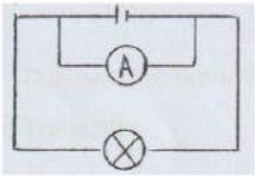
d. ampere

8. Which of the following shows the correct way of connecting an ammeter?

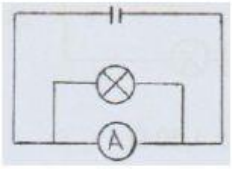
a.



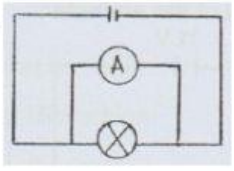
c.



b.



d.



9. Which of the following electrical components and their symbols are correctly matched?

	Symbol	Components
I.		Battery
II.		Resistor
III.		Switch
IV.		Bulb

a. I, II and III only

c. II and III only

b. II, III and IV only

d. I and IV only

10. Which of the following is not true about the parallel circuit?

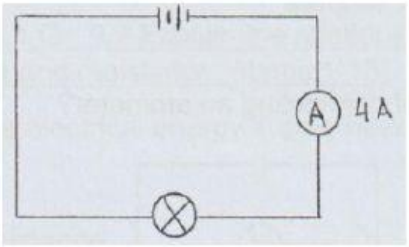
a. The voltage across each components is the same as the battery voltage.

b. The bulbs connected in parallel gets full battery voltage.

c. The voltage cross each component is not the same.

d. If one bulb is removed, the other bulbs are not affected.

11. Figure 1 shows the electrical circuit connecting with the battery that has the electrical potential difference of 6 V. What is the value of electrical resistance?



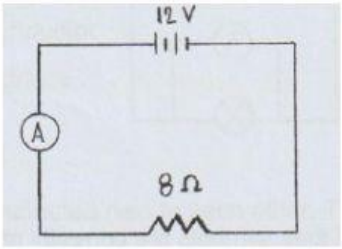
a. 0.67 Ω

b. 1.50 Ω

c. 10 Ω

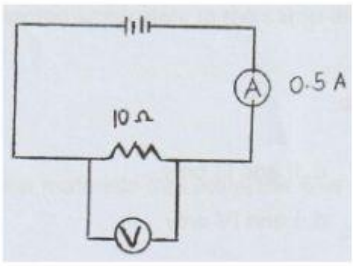
d. 24 Ω

12. Calculate the reading of the ammeter.



a. 1.5 A b. 2.5 A c. 3.5 A d. 4.5 A

13. Calculate the voltage.



a. 20 V b. 15 V c. 10 V d. 5 V

Indicator 2: SC5.1 Gr. 9.3 Calculate electrical energy of electrical appliances. (Items 14-22)

14. The electrical energy recorded by the electric meter is measured in…

a. joules-seconds

b. joules-minutes

c. watt-seconds

d. kilowatt-hours

15. The power need to operate a device or appliances is called…..

a. Ampere

b. Voltage

c. Watt

d. Power

16. Which of the following is the function of a resistor?

a. It reduces the current flowing through the circuit.

b. It can change the power from AC to DC.

c. Magnify and amplify signals.

d. It is the energy needed to move the charges in the circuit.

17. It allows the current to flow through it in one direction only.

a. Transistor
c. Microchips
b. Diode
d. Resistor

18. A fan is rated 110 V, 80 W. Calculate the operating power of the fan using the formula W = VI.

a. 0.73 A
b. 1.38 A
c. 190 A
d. 30 A

19. A bulb is rated 110 V, 20 W. Calculate the electrical energy used in 1 minute using the formula J = W x s.

a. 80 J
b. 40 J
c. 130 J
d. 1,200 J

20. Calculate the electrical energy consumed by a refrigerator rated 220 V, 900 W used for 24 hours in kWh. Formula: Electrical energy = Power x Time

a. 21,600 kWh
b. 21.6 kWh
c. 876 kWh
d. 0.36 kWh

21. From no.20, calculate the energy consumption in one month (30 days).

a. 630 kWh
b. 648 kWh
c. 240 kWh
d. 10.8 kWh

22. From no. 20, if the cost of 1 kWh of energy is 2.5 Baht for the first 100 units, 3.5 Baht for the next 100 units and 4 Baht for the remaining units. Calculate the cost of energy used.

a. 1,620 Baht
b. 2,268 Baht
c. 2,392 Baht
d. 2,592 Baht

<u>Indicator 2: SC5.1 Gr. 9.4 Observe and discuss the correct, safe and economical connection of electrical circuit at home. (Items 23-28)</u>

23. _____ is caused by contact with the electricity supply.

a. Electric shock
c. Electric fire
b. Electric current
d. Electric overloading

24. A safety device that prevent electrical appliances from overloading.

a. Breaker
c. Voltmeter
b. Galvanometer
d. Fuse

25. _____ will break the circuit when there is a short circuit or overloaded current.

a. Earth leakage circuit breaker
c. Miniature Circuit Breaker
b. Double insulation
d. Earth wire

26. This electrical accident is caused by connecting too many appliances to one socket and using them at the same time.

a. Damage insulation
c. Damp condition
b. Overloading
d. electric shock

27. Which of the following steps should be taken when someone gets an electric shock?

I. Turn off the current by pulling out the plug or switch off the main switch.

II. If you cannot turn off the current, drag the victim away using a suitable insulator.

III. Call an ambulance and send the victim to a hospital immediately.

a. I and II only
c. II and III only
b. II and III only
d. I, II and III

28. Which of the following statements is incorrect?

a. Always check the cords and plugs before using.

b. Use safety devices to prevent from overloading.

c. Use cables and plugs which are worn out or damage.

d. Electricity can be very dangerous if you are not careful while using it.

(สำหรับรายการที่ 29-33 เขียนคำตอบลงในสมุดบันทึกวิทยาศาสตร์ของคุณ)

Part 2: Writing

Indicator 2: SC5.1 Gr. 9.4 Observe and discuss the correct, safe and economical connection of electrical circuit at home. (Items 29-33)

29-31. Innumerate three (3) possible causes of electrical accidents.

29._____

30._____

31. _____

32-33. State two (2) precautions that you can apply when you are using electricity at home.

32. _____

33. _____

(สำหรับข้อ 34-40 เขียนคำตอบลงในสมุดบันทึกวิทยาศาสตร์ของคุณ)

Indicator 2: SC5.1 Gr. 9.3 Calculate electrical energy of electrical appliances.(Items 34-40)

The table below shows the consumption of electrical energy for the appliances in a house.

Electrical devices	**Number of units**	**Power rating (W)**	**Total time used per day/hour**
Light bulb	6	80	8 h
Fan	3	90	12 h
Refrigerator	1	200	24 h

Base on the data given,

34-37. Calculate the total electrical energy consumption in one day.

34. Light bulb	35. Fan	36. Refrigerator	37. Consumption per day

38. Calculate the amount of energy used for a month (30 days)

39-40. Calculate the cost of electricity in one month if the electrical tariff of a house hold is as follows: First 100 units = 2 Baht, Second 100 units = 3 Baht, Additional units = 4 Baht.