

FORM TWO MARKING SCHEME

SUBJECT: ELECTRICAL ENGINEERING SCIENCE

MAY 2024

SECTION A

1. (10Marks) @ 01

QUESTION	i	ii	iii	iv	v	vi	vii	viii	ix	x
ANSWER	A	A	A	C	B	D	B	A	B	C

2. (05 Marks) @ 01

LIST A	i	ii	iii	iv	v
LIST B	E	C	B	A	D

SECTION B (Marks 70)

3. Positive plate – Chocolate (05Marks) Negative plate – Bright grey (05 Marks)

4. Four things which you should done before charging the lead acid cell so as to increase its life span are

- (i) If the current is low
- (ii) Specific gravity low (2.5) Marks @) (Any Four.)
- (iii) If voltage of the battery is low
- (iv) The initial charging current (Time take used the battery to be gull charged)
- (v) The electrolyte level should be slightly above the plat as shown before charging.

5. Given

$$I = 10A$$

$$\text{Cell} = 12 \times 1.9 = 22.8V \quad (02 \text{ Marks})$$

$$E = 30V \text{ supply}$$

$$r = \text{neglected}$$

$$I = \frac{E - V}{R + r} \quad (02 \text{ Marks})$$

$$10 = \frac{30 - 22.8}{R} \quad (02 \text{ Marks})$$

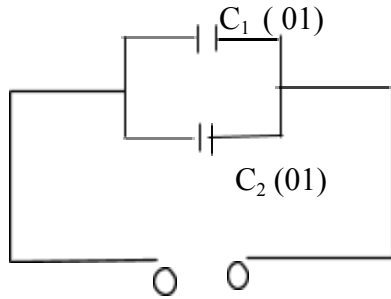
$$10R = 30 - 22.8 \quad (02 \text{ Marks})$$

$$R = \frac{30 - 22.8}{10} \quad (02 \text{ Marks})$$

$$R = \frac{7.2}{10} \quad (01 \text{ Marks})$$

$$R = 0.72\Omega \quad (01 \text{ Marks})$$

6. (a)



V (01)

$$C_T = C_1 + C_2 \quad (02 \text{ Marks})$$

(b) TV make sure that you get the total capacitance, you should connect the capacitor in parallel.

$$C_T = C_1 + C_2 \quad (02)$$

$$10\text{Mf} = (0.05 + C_2) \quad (01)$$

$$C_2 = 10\text{F} - 0.05\mu\text{F} \quad (01)$$

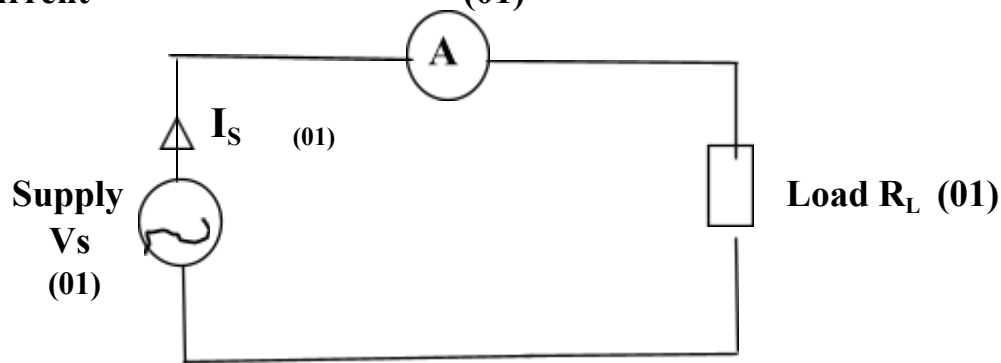
$$\underline{C_2 = 9.95\mu\text{F}} \quad (01)$$

7. The measuring instrument you may use is (i) Ammeter (01)

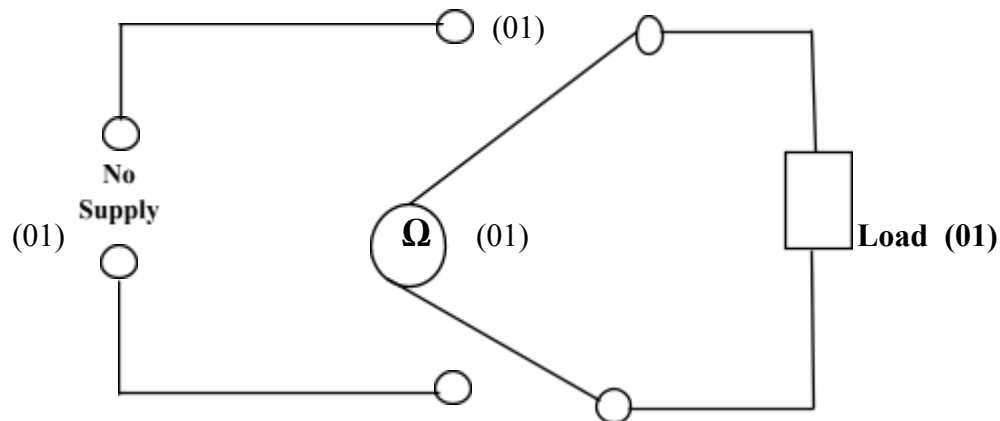
(ii) Ohmmeter (01)

Current (01)

(ii)



Resistance



8. (a) Temperature is a coldness or hotness of the body. **(01 Mark)**

(b)(i) Given -85°F to degree Celsius.

$$C = \frac{5}{9} (^{\circ}\text{F} - 32) \quad (01\text{Mark})$$

$$C = \frac{5}{9} (85 - 32) \quad (01\text{ Mark})$$

$$C = \frac{5}{9} \times 53 \quad (01\text{Mark})$$

$$C = 29.44^{\circ}\text{C} \approx \underline{29^{\circ}\text{C}} \quad (01\text{ Mark})$$

(ii) Given – convert 90° into Fahrenheit

$$F = \frac{9}{5} \times ^{\circ}\text{C} + 32 \quad (02\text{Marks})$$

$$F = \frac{9}{5} \times 90 + 32 \quad (01\text{Marks})$$

$$F = 162 + 32 \quad (01\text{Mark})$$

$$\underline{F = 194^{\circ}\text{F}} \quad (01\text{Mark})$$

9. Given – cell = $(10 \times 1.5) \text{ V} = 15\text{V}$, $E = r = 0.2\Omega$ **(02 Marks)**

(a) Total internal resistance = $0.2 \times 10 = 2\Omega$. $r_T = 2\Omega$ **(02 Marks)**

$$(b) I = \frac{E}{R + r} \quad (02\text{Marks})$$

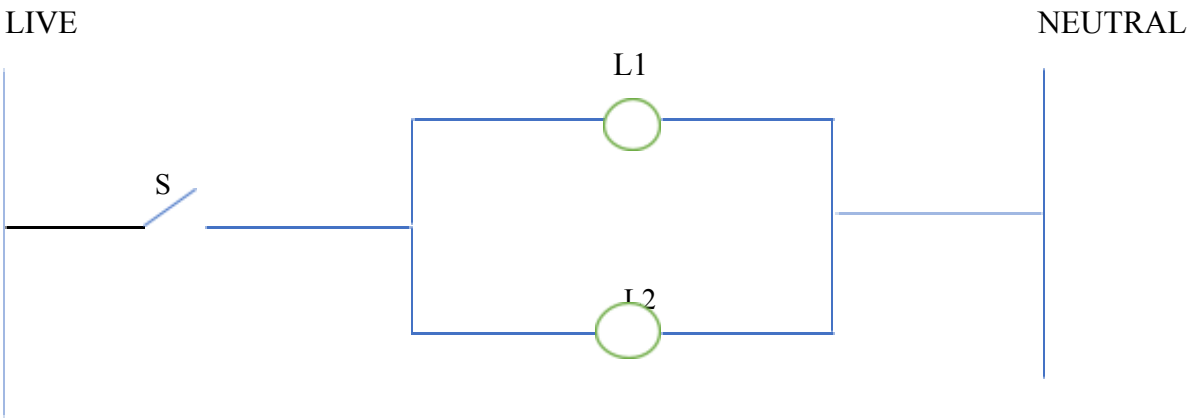
$$I = \frac{15}{4 + 2} \quad (01\text{Marks})$$

$$I = \frac{15}{6} \quad (01\text{Mark})$$

$$\underline{I = 2.5\text{A}} \quad (01\text{ Marks})$$

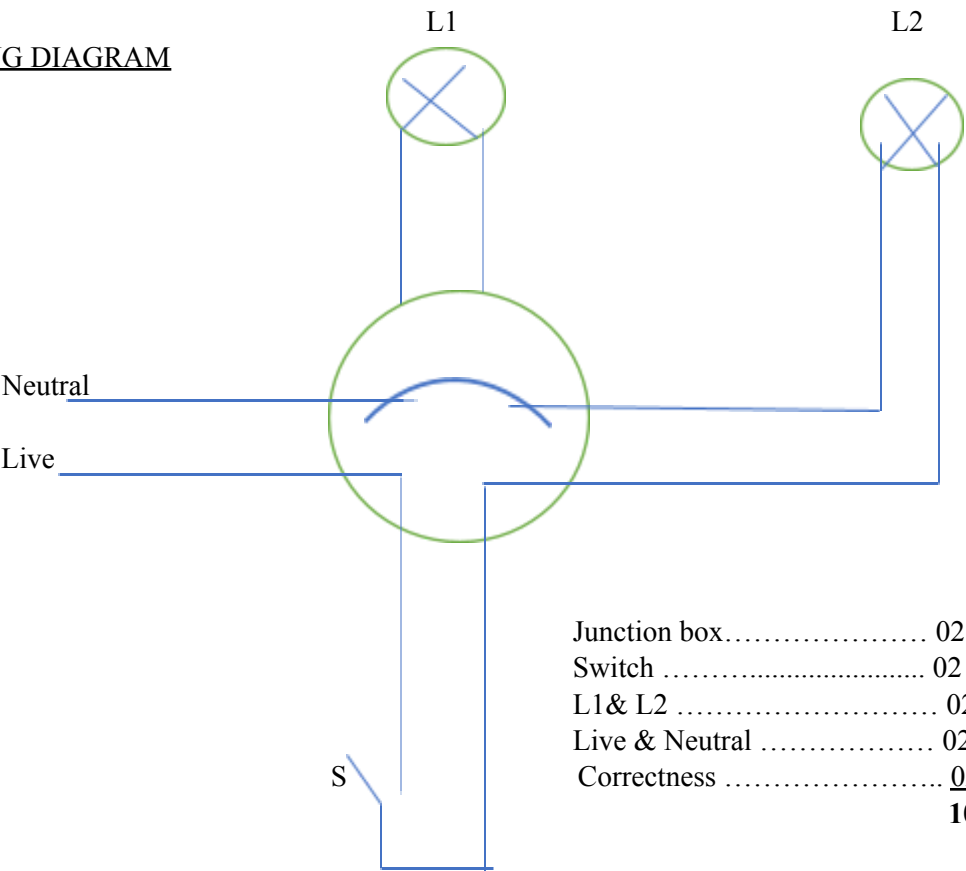
SECTION C (Marks 15)

10. (a) SCHEMATIC DIAGRAM



LIVE	01 Mark
NEUTRL.....	01Mark
L1& l2	02Marks
S (Switch).....	<u>01Mark</u>
	05Marks

(b) WIRING DIAGRAM



Junction box.....	02
Switch	02
L1& L2	02
Live & Neutral	02
Correctness	<u>02</u>
	10 (Marks)