

MARKING SCHEME

PHYSICS F2 PRE-MOCK EXAMINATION – MARCH 2026

SONGEA DC

Total Marks: 100

SECTION A (10 MARKS)

1.

I	II	III	IV	V	VI	VII	VIII	IX	X
B	C	D	D	B	D	C	B	C	C

2. Matching (05 marks – 1 mark each)

LIST A	I	II	III	IV	V
LIST B	E	F	B	H	A



SECTION B (70 MARKS)

3(a) **This occurs because of Static electricity which builds the friction with the carpet causes a build up of electrons on your body which then discharges when you touch a conductor. (05 marks).**

DATA GIVEN

Capacitance (C)=100F, Voltage (V)=12V , Amount of charges(Q)=?

recall

(b) from $Q = CV$ ------(01 marks)

$Q = 100F \times 12V = 1200 C$ -----(04 marks)

4(a) **Electric current:** is the actual flow of electric charges (electrons) through a conductor. (02 marks). Formula: $\text{Current (C)} = \frac{\text{Charge(Q)}}{\text{Time(t)}}$ while

Electric circuit: is a closed, continuous, and connected path through which electricity current flow (02 marks) Total: 05 marks.

b. i. Parallel resistance:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} \text{-----(1.5 marks)}$$

Substituting the given values $R_1 = 3 \Omega$ and $R_2 = 6\Omega$

$$\frac{1}{R_T} = \frac{1}{3} + \frac{1}{6} \text{-----}$$



$$R_T = \frac{1}{\frac{1}{3} + \frac{1}{6}} = 2 \Omega \text{-----(1.5 marks)}$$

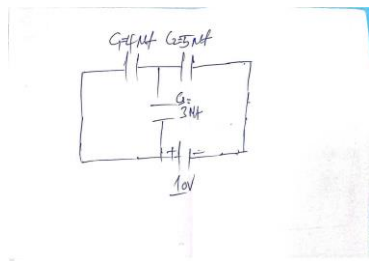
Force opposing current = Resistance = 2Ω -----(2.5 marks total)

ii. Current(I) = $\frac{V}{R}$ -----(1.5 marks)

$$I = \frac{12}{2} = 6A \text{-----(1.5 marks)}$$

Total =2.5 marks

5(i) Correct circuit diagram



.....(04marks)

(ii) Series first: $1/C_t = 1/C_1 + 1/C_2$ -----(01marks)

$$1/C_t = 1/4 + 1/5$$

$$1/C_t = 9/20$$

$$C_t = 20/9 \text{ F----- (01marks)}$$

Parallel with C3: $C_t = 20/9 + 3$

$$C_t = 47/9 \text{ F} \approx 5.22\text{F} \text{ (2 marks)}$$

(iii) $Q_2 = CV$

$Q = (20/9 \times 10) = 200/9 \text{ C} \approx 22.2\text{C}$ -----(04 marks)

6(a) $v^2 = u^2 + 2gh$

$80^2 = 2gh$

$6400 = 20h$

$h = 320 \text{ m}$ ----- (05 marks)

6 (b) $v = u + gt$ $80 = 10t$ $t = 8 \text{ s}$ -----

----- (05 marks)



7(a)(i) **The man failed to push the car due to its much higher mass, which creates greater inertia (resistance to change in motion) and higher static friction compared to the motorcycle..... (2.5 marks)**

(ii)**According to newton`s first law of motion, objects at rest or uniform motion(constant velocity) can have multiple, balanced Forces acting on them, resulting in zero net force..... (2.5 marks)**

(b) Convert speeds to m/s

$120 \text{ km/hr} = 33.3 \text{ m/s}$

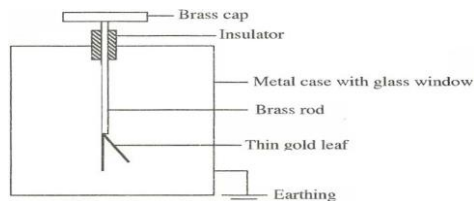
$40 \text{ km/hr} = 11.1 \text{ m/s}$

Momentum car = $350 \times 33.3 = 11655 \text{ kgm/s}$

Momentum bus = $1000 \times 11.1 = 11100 \text{ kgm/s}$ (05 marks)

8(a) Instrument: **Gold leaf electroscope**(04 marks)

(b) Correct labelled diagram.



.....(06 marks)

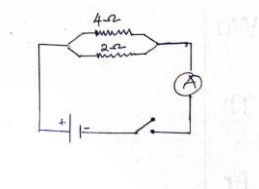
9 **Parallel gives lower total resistance. While series connections are useful for reducing current or creating higher resistance, parallel arrangement(Haji) are considered better for general, practical circuit implementation, because they are more reliable and allow component to operate independently.....(05 marks)**

Series: $R = 2 + 3 = 5\Omega$

Parallel: $1/R = 1/2 + 1/3 = 5/6 \Rightarrow R = 6/5 = 1.2\Omega$(05marks)

SECTION C (10 MARKS)

10(i) Parallel connection diagram.



cell = 3v.....(03 marks)

(ii) $1/R = 1/4 + 1/2 = 3/4$

$R = 4/3\Omega$

$I = V/R = 3 \div (4/3) = 2.25A$ (3 marks)

(iii) Ohm's Law: **Current is directly proportional to potential difference provided temperature remains constant. (02 marks)**

(iv) Ammeter connected in **series**; voltmeter connected in **parallel across resistor**. (02 marks)

.....END.....