

- 7 (a) Explain what is meant by the *capacitance* of a parallel plate capacitor.

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.....[3]

- (b) A parallel plate capacitor C is connected into the circuit shown in Fig. 7.1.

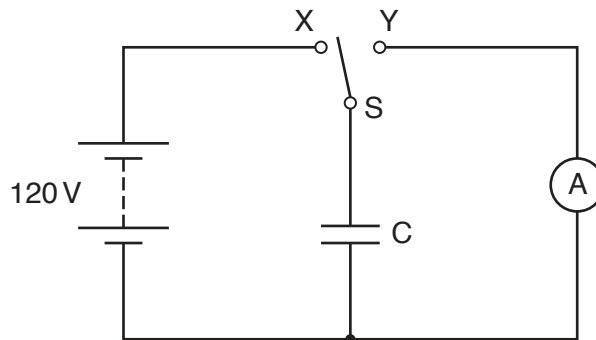


Fig. 7.1

When switch S is at position X , the battery of electromotive force 120 V and negligible internal resistance is connected to capacitor C .

When switch S is at position Y , the capacitor C is discharged through the sensitive ammeter.

The switch vibrates so that it is first in position X , then moves to position Y and then back to position X fifty times each second.

The current recorded on the ammeter is $4.5\text{ }\mu\text{A}$.

Determine

- (i) the charge, in coulomb, passing through the ammeter in 1.0 s ,

charge = C [1]

- (ii) the charge on one plate of the capacitor, each time that it is charged,

charge = C [1]

- (iii) the capacitance of capacitor C.

capacitance = F [2]

- (c) A second capacitor, having a capacitance equal to that of capacitor C, is now placed in series with C.

Suggest and explain the effect on the current recorded on the ammeter.

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 [2]

[Total: 9]