

8 Fig. 8.1 shows a diagram of part of a simple a.c. generator.

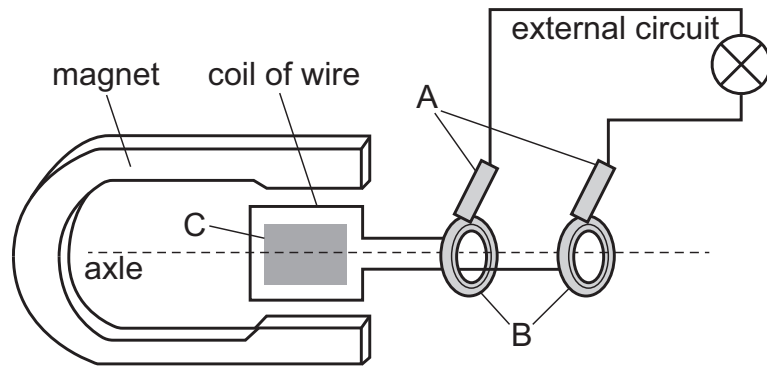


Fig. 8.1

(a) (i) Identify components A and B in Fig. 8.1.

A

B

[2]

(ii) Component C is made of soft iron.

Describe the effect of this component on the generator.

.....

..... [1]

(b) The coil of the generator rotates at a constant speed of two complete revolutions per second. Sketch a graph of the e.m.f. generated against time on the axes in Fig. 8.2. The coil is in the position shown in Fig. 8.1 at time = 0.

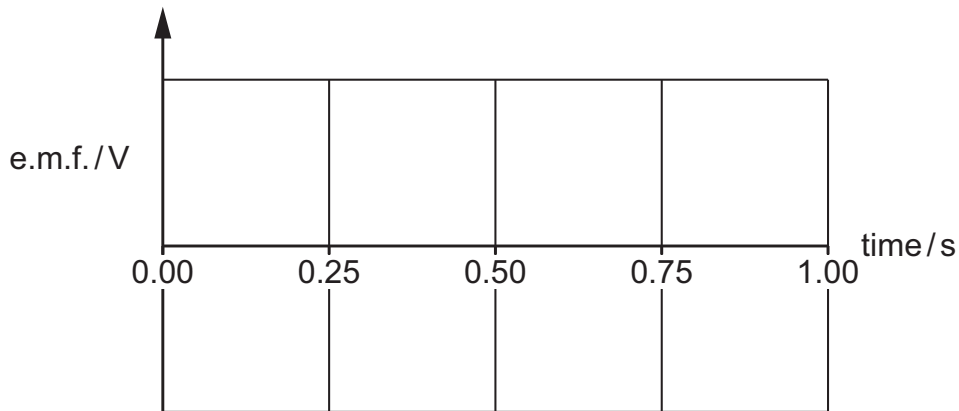


Fig. 8.2

[3]

(c) In power stations, transformers are used to step up the voltage of electricity generated before it is transmitted through cables over long distances.

(i) Explain the advantages of transmitting electricity at high voltages.

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..... [2]

(ii) A power station generates electricity at 25 000 V. A transformer steps up the voltage to 300 000 V. The primary coil of the step-up transformer has 450 turns.

Calculate the number of turns N_s on the secondary coil of the transformer.

$N_s =$ [2]

[Total: 10]