7 **(a)** Explain why transformers do not work when a steady direct current is used.

._____.

._____.

._____.

._____.

._____.

._____. [3]

(b) A power station generates an electrical power of 4200 kW. It supplied power to an industrial consumer with a total resistance R_L of 30 at a considerable distance from it. They are represented in Fig. 7.1.

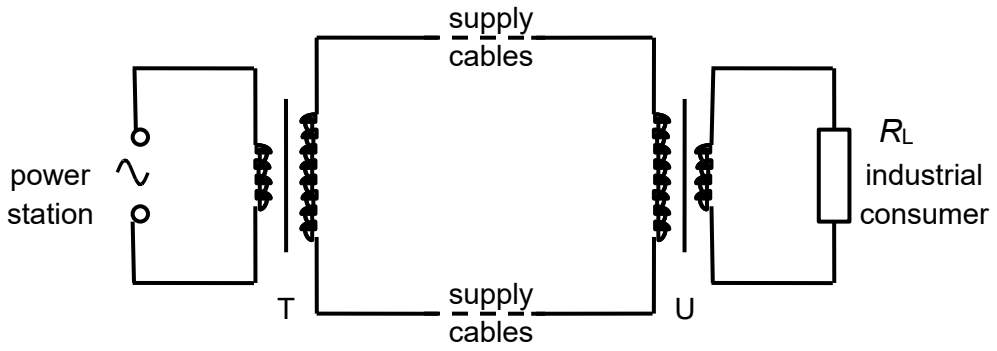

Fig. 7.1

The electricity supply company makes use of a circuit containing two transformers, T and U. The transformers T and U can be considered to be ideal. The turns ratios of transformers T and U are 11 : 275 and 275 : 11 respectively. The efficiency of the transfer of power from power station to industrial consumer is 99.0%.

(i) Determine the power delivered to the industrial consumer.

power = _____ W [1]

(ii) Determine the resistance of the supply cables.

resistance = _____ Ω [3]

(iii) Determine the voltage across the secondary coil of the transformer T.

voltage = _____ V [2]

[Total: 9]

End of Paper 3 Section A

Section B

Answer **one** question from this Section in the space provided.