Cork Institute of Technology

Bachelor of Engineering in Building Services Engineering - Stage 2

(EBSEN_7_Y2)

Summer 2008

Electrotechnology

(Time: 3 hours)

Answer THREE question from Section A and TWO question from Section B Use separate answer book for each Section All question carry equal marks Examiner: Mr. S. Boljevic Dr. M. Smyth Mr. D. Leonard

Section A

- Q1. (a) A coil of insulated wire of resistance 8 Ω and inductance 0.03 H is connected to an a.c. supply at 240 V 50Hz. Draw the circuit and calculate:
 - (i) the current through the coil
 - (iii) power factor
 - (iii) the power consumed by the coil

(6 marks)

(b) Calculate the value of capacitance which when connected in series with the above coil, causes no change in the values of the current and power taken from the supply.

(6 marks):

- (c) A coil of resistance 100 Ω and inductance 100 µH is connected in series with a 100 pF capacitor. The circuit is connected to a 10 V variable frequency supply. Draw the circuit and calculate:
 - (i) the resonant frequency
 - (ii) current at resonance
 - (iii) voltage across L and C at resonance
 - (iv) Q factor of the circuit

(8 marks)

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Tobias Bleicker

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