Exercise 2 MBS2005X Electrical Knowledge

1. a) calculate the series resistance of three resistors 100ohm, 220ohm, and 330ohm correspondingly.
   b) calculate the resistance if the above three resistors connected in parallel.

2. A 60 μF capacitor is connected to an AC power supply of 220 V and is supplied with a power frequency of 50 Hz.

   To find: (a) capacitive reactance and (b) circuit current.

3. The instantaneous voltage and current of a circuit are
   $u = 300 \sin(4t + 80^{o})$ V
   $i = 30 \sin(4t + 10^{o})$ A

   To calculate circuit impedance Z

4. In a RLC series circuit, if $R = 16\ \Omega$, $L = 6$ H, $C = 2$ F,
   $v = 10 \sin 4t$ V. To find i.

5. a) With reference to below table 14(2) in Code of Practice from EMSD. How many 6 mm^2 stranded cable could pass a 25 mm conduit?

Table 14(2)

Cable Factors and Conduit Factors for Straight Runs of Conduit not Exceeding 3 m in Length

(a) Cable Factor

Type of Conductor	Conductor Cross-Sectional Area (mm^2)	Factor
Solid	1	22
	1.5	27
	2.5	39
Stranded	1.5	31
	2.5	43
	4	58
	6	88
	10	146

(*b*) Conduit Factor

Conduit Diameter (mm)	Factor
16	290
20	460
25	800
32	1 400

b) What is the electrical current demand of a 1000W water heater?

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