Questions from the same exercise can be combined together to increase difficulty.

7.1

Which one is the unit of active power, reactive power and apparent power?

a) Active power J, reactive power VA, apparent power VAr.

b) Active power W, reactive power VAr, apparent power VA.

c) Active power W, reactive power VA, apparent power VAr.

d) None of the above.

7.2

Which one of the below is a static device that can generate reactive power?

a) Capacitor.

b) Inductor.

c) Synchronous generator.

d) Asynchronous generator.

7.3

Which one of the below is a static device that absorbs reactive power?

a) Synchronous generator.

b) Inductor.

c) Capacitor.

d) Asynchronous generator.

(mine)

Which one of the below CANNOT generate reactive power?

a) Capacitor.

b) Synchronous generator.

c) Asynchronous generator.

d) Synchronous motor.

7.6

The current in a single-phase motor lags $50°$ behind the voltage. What is the power factor of the motor?

a) 76.6%.

b) 23.4%.

c) 64.3%.

d) 35.7%.

7.7

A large motor absorbs 600kW at a power factor of 90%. What is the apparent and reactive power absorbed by the machine?

a) Apparent power 666,67kVA, reactive power 66,67kVAr.

b) Apparent power 540kVA, reactive power 261,53kVAr.

c) Apparent power 599,92kVA, reactive power 9,7kVA.

d) Apparent power 666,67kVA, reactive power 290,59kVAr.

7.8

A 200μF capacitor is connected to a 240V 60Hz source. What is the reactive power generated/consumed by the capacitor?

a) 3622kVAr generated.

b) 3622kVAr consumed.

c) 4343kVAr generated.

d) 4343kVAr consumed.

7.9

A 10Ω resistor is connected across a 120V 60Hz source. What is the dissipation of:
- Active power
- Peak power
- Duration of each positive power peak

a) 2880W, 1440W, 0ms respectively.

b) 1440W, 2880W, 8.3ms respectively.

c) 1440W, 2036W, 8.3ms respectively.

d) 1440W, 2880W, 8.3ms respectively.

7.10

A 10Ω reactance is connected to a 120V 60Hz source. What is the:

- Reactive power absorbed by the reactance
- Apparent power absorbed by the reactance
- Peak power input of the reactance
- Peak power output of the reactance

a) 1440VAr, 1440VA, 1440W, 1440W respectively.

b) 1440VA, 1440VAr, 2880W, 2880W respectively.

c) 2880W, 1440VA, 1440VA, 2880W respectively.

d) 2036VAr, 2036VA, 1440VAr, 1440W respectively.

7.13

A single-phase motor draws a current of 12A from a 240V 60Hz line. A Wattmeter connected to the line gives a reading of 2765W. What is the power factor of the motor and the reactive power it absorbs?

a) Power factor 0.0416 and reactive power 230VAr.

b) Power factor 0.96 and reactive power 805VAr.

c) Power factor 0.96 and reactive power 115VAr.

d) None of the above.

7.16

An induction motor absorbs an apparent power of 400kVA at a power factor of 80%. What is the active and the reactive power absorbed by the motor?

a) 320kW and 240kVAr respectively.

b) 500kW and 300kVAr respectively.

c) 320kW and 80kVAr respectively.

d) 500kW and 240kVAr respectively.

7.17

A circuit composed of a 12Ω resistor in series with an inductive reactance of 5Ω carries an AC current of 10A. What is the active power of the resistor, the reactive power of the inductor, the apparent power of the circuit and the power factor of the circuit?

a) 1200W, 300VAr, 1500VA and 0.8 respectively.

b) 1300W, 80VAr, 1380VA and 0.71 respectively.

c) 1200W, 500VAr, 1300VA and 0.92 respectively.

d) 1700W, 300VAr, 1726VA and 0.78 respectively.