

October, 2020

B.Tech. - II SEMESTER (Reappear)
Basic Electrical Engineering (EE-101C)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) Distinguish between active and passive components. (1.5)
- (b) Define statically induced emf and dynamically induced emf. (1.5)
- (c) State Millman's theorem. (1.5)
- (d) The equation of an alternating current is $i = 282.8 \sin 377 t$. What is rms value of current and frequency? (1.5)

- (e) What are the active and reactive powers? Draw the power triangle. (1.5)
- (f) Define quality factor in the resonant circuit. (1.5)
- (g) What are the advantages of three phase system over single phase system? (1.5)
- (h) Define voltage regulation of transformer. (1.5)
- (i) Which type of rotor is used in high speed alternators and why? (1.5)
- (j) Why is commutator employed in DC machines? (1.5)

PART - B

2. (a) Calculate the current in each branch of the circuit shown in Fig-1. (8)

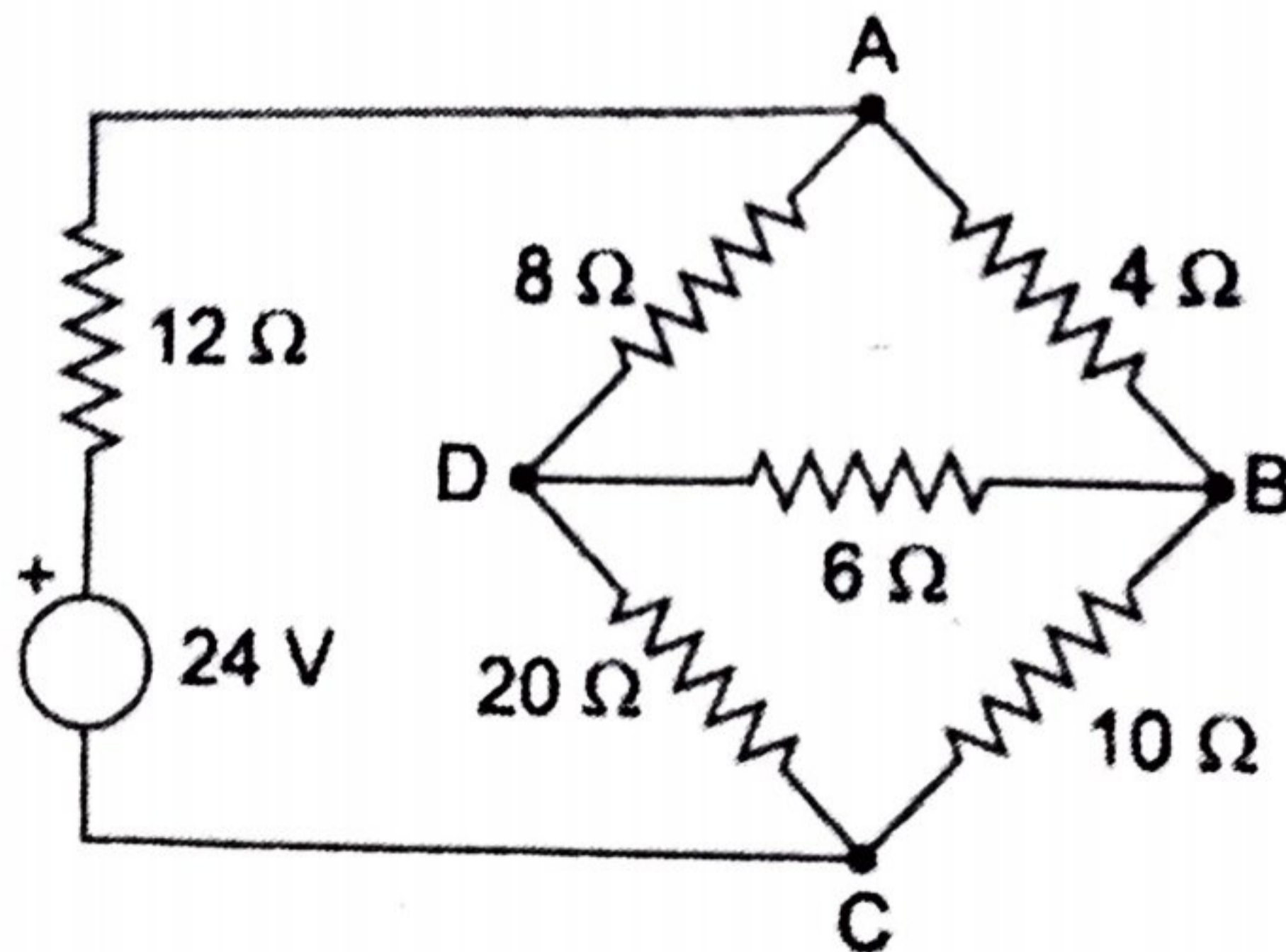


Fig-1

- (b) How energy get stored in the magnetic field? Derive the expression for energy stored. (7)

- (b) Using superposition theorem, find voltage across $4\ \Omega$ resistance in Fig-3. (7)

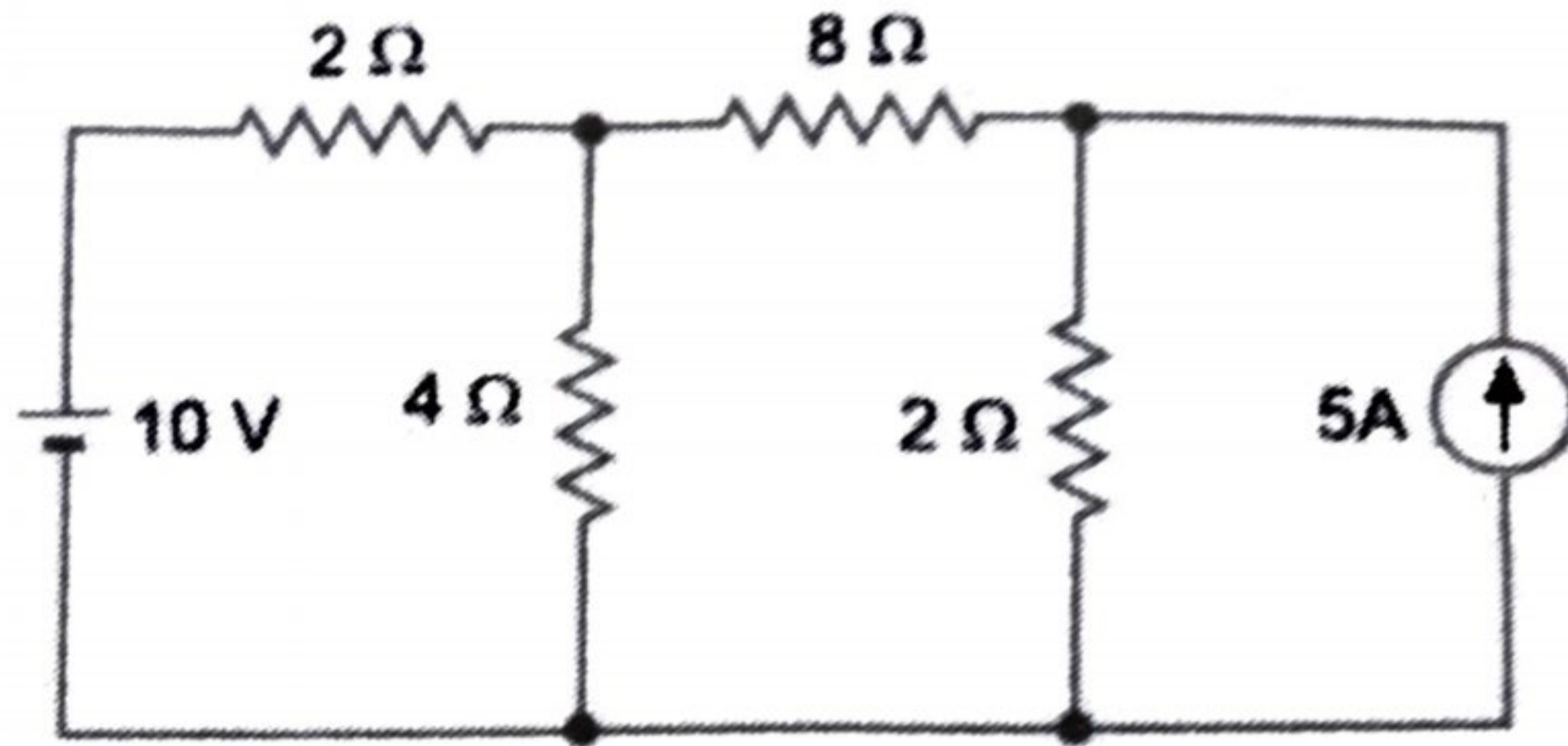


Fig-3

5. (a) Find the average and rms values of the sinusoidal waveform shown in Fig. 4. The maximum value is 100 V. (7)

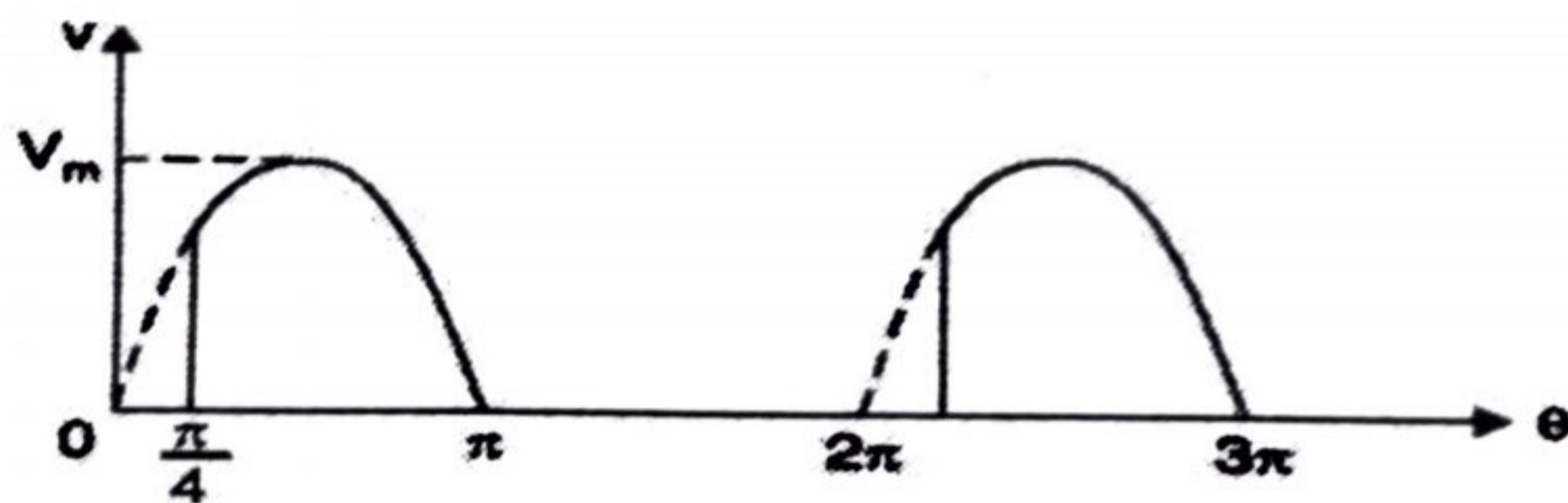


Fig-4

- (b) In the circuit shown in Fig. 5, find the values of (i) the current I (ii) V_1 and V_2 and (iii) power factor. Draw the phasor diagram. (8)

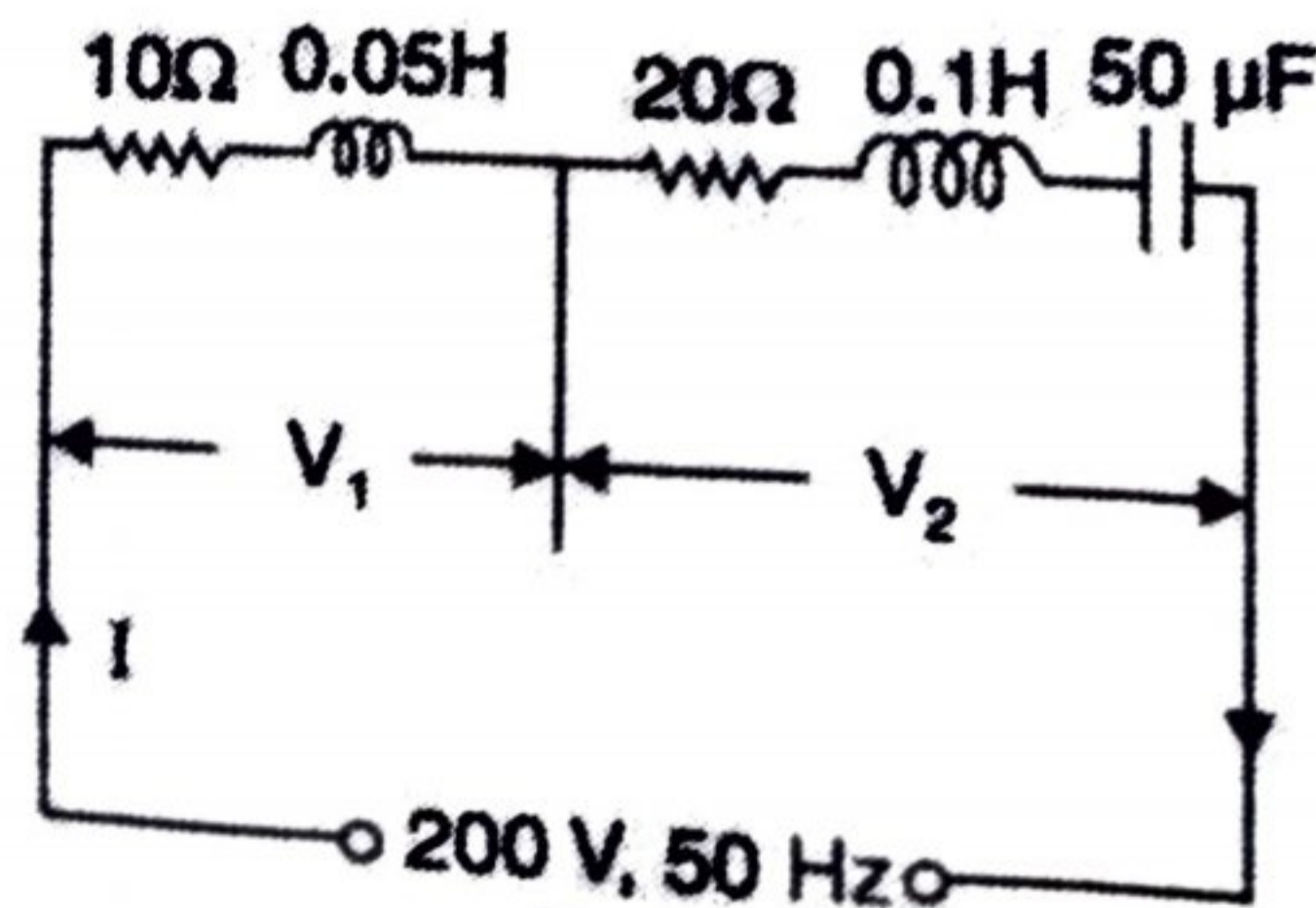


Fig-5