CLASS: BTECH
BRANCH: CS/IT/ECE/EEE

SEMESTER : II
SESSION : SP/2022

SUBJECT: EE101 BASICS OF ELECTRICAL ENGINEERING

FULL MARKS: 50

TIME: 3 Hours

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Distinguish between an independent voltage source and a practical voltage source. What are the [5] types of dependent sources? Explain with a diagram. [5]
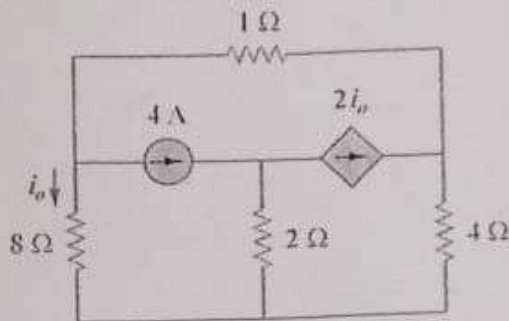Q.1(b) Find the current i_0 in the circuit in Fig. 1.

Fig.1.

Q.2(a) Define RMS value, average value, form factor and peak factor of a sine wave. What is a power [5] triangle? [5]
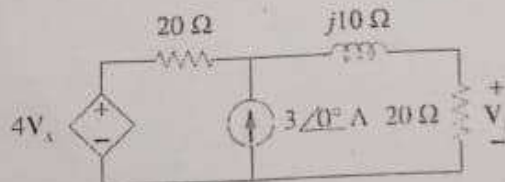Q.2(b) Find the voltage V_x as shown in Fig.2.

Fig. 2

Q.3(a) What is positive phase sequence and negative phase sequence in a three-phase circuit? Obtain the [5] relation between the line voltage and phase voltage in a three-phase star-connected circuit. [5]
Q.3(b) Solve for the line currents in the Y-Δ circuit of Fig.3. Consider $Z\Delta = 60 \angle 45° \, \Omega$
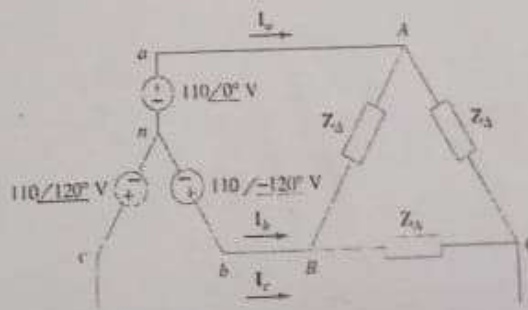

Fig.3

PTO

Q.4(a) State and explain superposition theorem. Describe its limitations. [5]
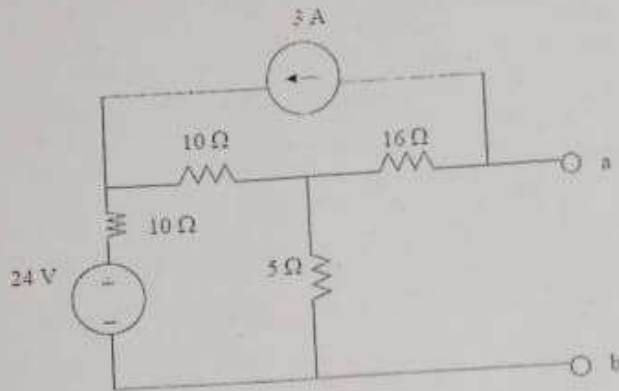Q.4(b) Obtain the Thevenin equivalent at terminals a-b of the circuit in Fig.4. [5]

Fig.4

Q.5(a) Explain the working principle of an ac generator. [5]
Q.5(b) Write short notes on the working principle of a transformer. [5]

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