L-3/T-1/ARCH

Date : ~~30/04/2024~~ 20/05/2024

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2022-2023

Sub : **ARCH 331** (Architecture of Indian Sub-Continent)

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer **Question No. 1** and any **TWO** from the rest.

1. Write short notes (any two) from the following: **(15×2=30)**
   (a) Buddhist Torana
   (b) Ladh Khan Temple at Ahole
   (c) Free standing Monoliths at Mahabalipuram

2. (a) Identify the different parts of the Stupa through required illustrations. **(8)**
   (b) Illustrate the development of the Chaitya halls with necessary sketches. **(12)**

3. (a) Compare between Gopuram and Vimana. **(8)**
   (b) Use necessary sketches to interpret the following statement-'The temple becomes the fort and the fort becomes the city' **(12)**

4. (a) Describe the different elements of a typical. Indo-Aryan temple. Use necessary examples and sketches. **(10)**
   (b) Discuss how the apsidal ended Buddhist Chaityahall was adopted for hindu temple formation. **(10)**

SECTION - B

There are **FOUR** questions in this Section. Answer **Question No. 5** and any **TWO** from the rest.

5. (a) Compare the architectural features of 'Tomb Architecture' between the 'Slave Dynasty' and the 'Mughal Period'. **(15)**
   (b) Categories the architectural design strategies embedded in the architecture of 'Jahangiri Mahal' within the Agra Fort Premise. **(15)**

6. How is the architecture of 'Houz Khas' novel in terms of functional arrangements, spatial articulation and building volume? **(20)**

7. Explain the influences behind the development of 'Fatehpur Sikri' master plan and its architecture in terms of political and socio-cultural practice. **(20)**

8. Write short notes on the following topics: **(10×2=20)**
   (a) Qutub Minar
   (b) Chahar Bagh Gardens

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BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. Arch. Examinations 2022-2023

Sub: **EEE 373** (Electrical and Electronic Installation for Buildings)

Full Marks: 140 Time: 3 Hours

The figures in the margin indicate full marks.

The corresponding Course Outcomes (COs) of each part of Question 1 and 5 are mentioned on the right most column. The COs of the Course are mentioned at the end of the question paper.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer to **Question No. 1 is compulsory.**

Answer any TWO questions from Questions 2-4.

1. (a) Voltage across and current through a load are respectively $5\sin(100t+30^\circ)$ and $1.5\cos(100t-20^\circ)$. Between voltage and current which one is leading and at what angle? Find the value of circuit elements (R, L or C) that comprise the load. [Use phasor approach] **(8)** (CO2)

(b) Consider a reading room of 20m × 16m which needs an illuminance of 300 lux. How many bulbs of 1250 lumen need to have desired illuminance? How many fans need to be installed in this room? **(4 1/3)** (CO1)

(c) Using source transformation principle determine the value of V_x shown in the circuit, Fig. for Q 1(c). **(11)** (CO1)

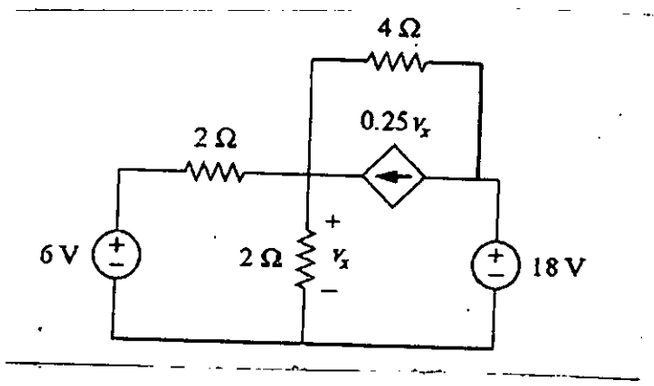

Fig. for Q 1(c)

Contd P/2

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2. (a) Using superposition theorem, find the expression of V_0 shown in the circuit, Fig. for Q 2(a). **(12)**

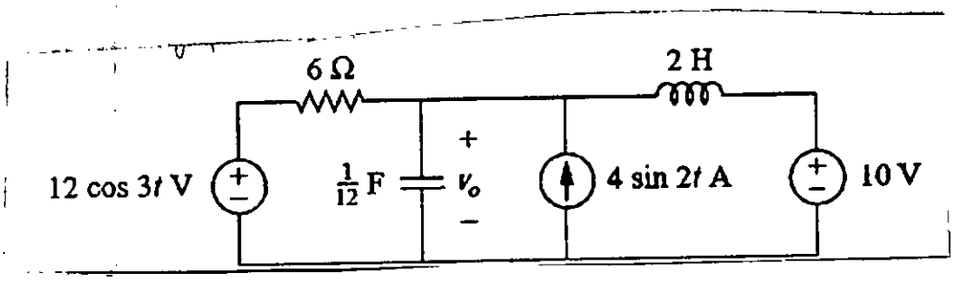

Fig. for Q 2(a)

(b) In the circuit, Fig. for Q 2(b) Norton equivalent impedance as seen from terminal a-b. **(⅓)**

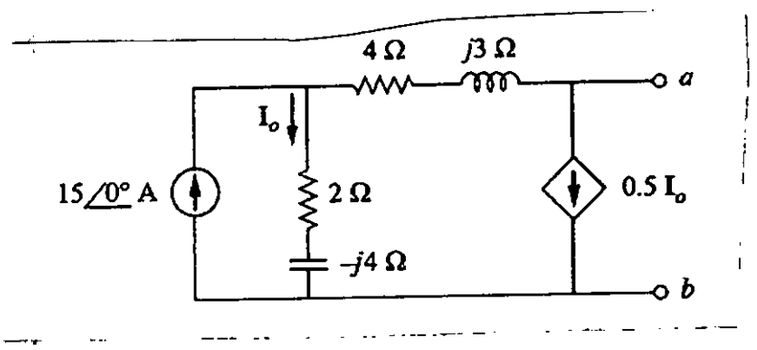

Fig. for Q 2(b)

3. (a) In the circuit Fig. for Q 3(a), R_L is adjusted until it absorbs maximum power. Find the value of R_L and the maximum power it absorbs. **(12)**

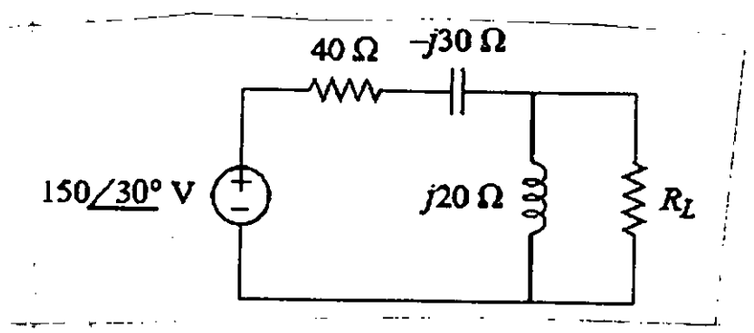

Fig. for Q 3(a)

(b) Determine the power factor of the entire circuit shown in figure 3(b). Also determine the reactive power delivered by the source. **(11⅓)**

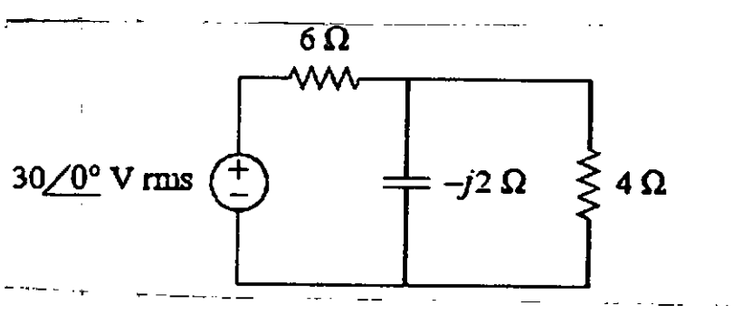

Fig. for Q. 3(b)

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4. (a) **(16)**

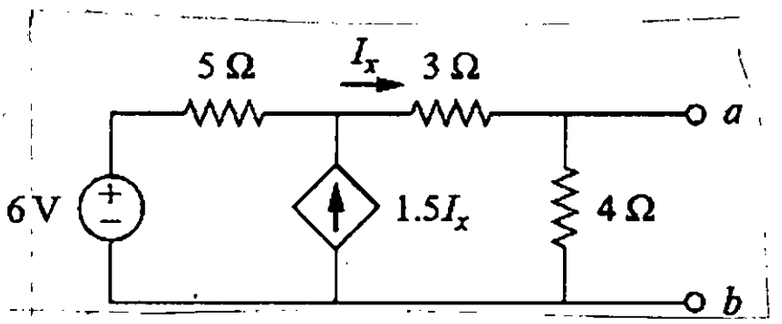

Fig. for Q 4(a)

(i) Determine the Thevenin equivalent circuit of the Fig. for Q 4(a) to the left of the terminals a-b.

(ii) Using source transformation, find the Norton equivalent circuit.

(iii) A variable load is connected between terminals a-b. Draw a typical curve of the load power vs. load resistance. Also determine the peak point in this curve.

(b) A parallel RLC circuit has following node equation **(7⅓)**

$$\frac{dv}{dt} + 50v + 100\int v dt = 110\cos(377t - 10^{\circ})$$

Find v(t) using phasor approach.

SECTION – B

There are **FOUR** questions in this section. Answer to **Question No. 5 is compulsory.**

Answer any TWO questions from Questions 6-8.

5. Fig. for Q5 (i) shown a fitting and fixture layout, and Fig for Q5 (ii) current rating for different types of copper cables. In the diagram, each fan has rated power of 250 W at 220 Vac, each light has rated power of 40 W and each of the sockets have rated power of 3500 W. **(12 + 6 + 6)**
(CO3)

(a) Design an appropriate conduit layout, clearly indicating the cable ratings for each line, satisfying power requirement. Write justification for choosing a particular cable.

(b) Draw Switch Board Connection Diagram for each room

(c) Draw the Distribution Board Connection Diagram

Contd P/4

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Contd... Q. No. 5

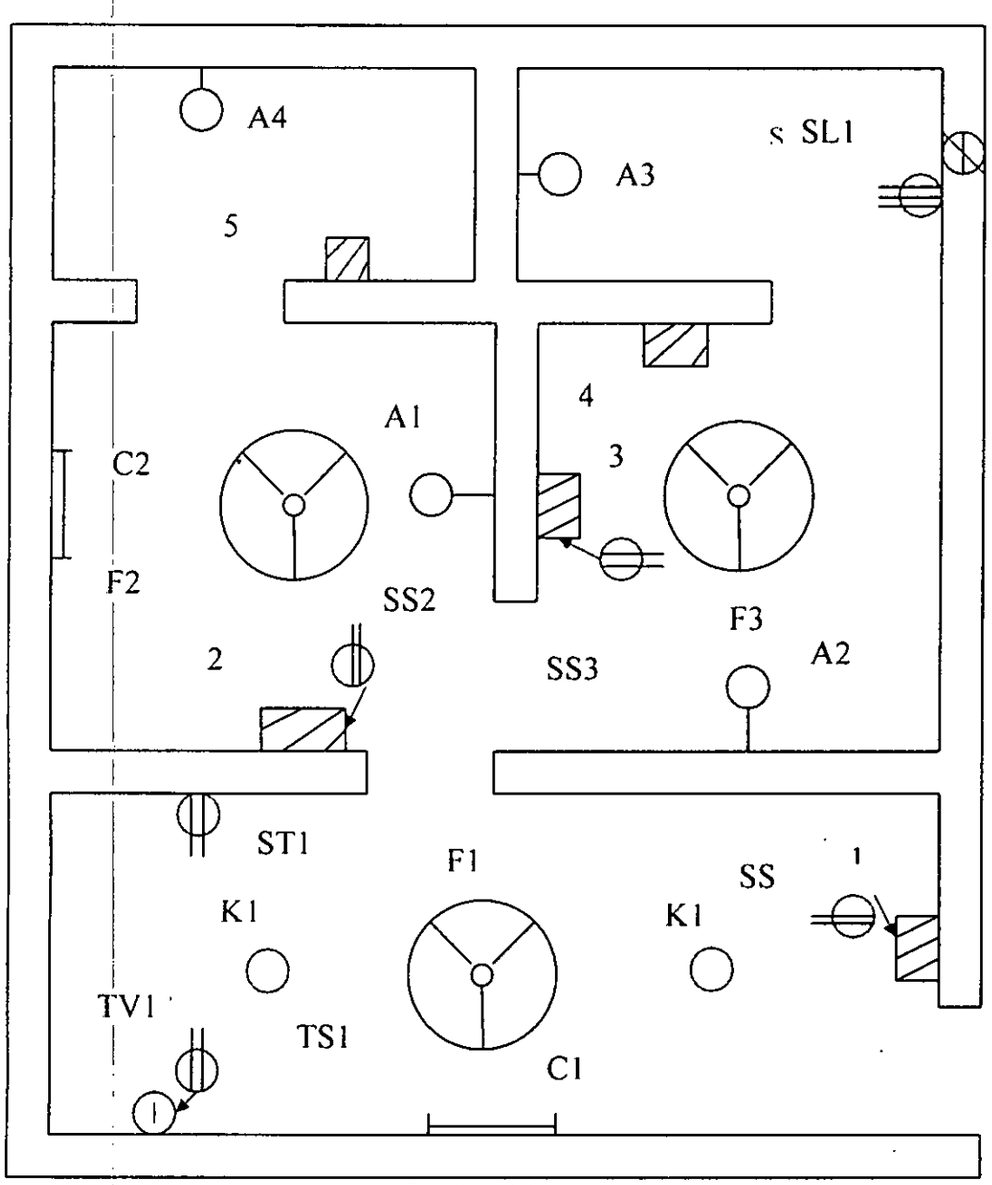

Fig for Q 5 (i)

Cable Rating Table

Cross Sectional Area	No. & Approx. Diameter of wire Cu/Al	Nominal Thickness of Insulation	Current rating at 30°C in ground	
			Copper	Aluminium
Core x mm²	No./mm	mm	amps	amps
1×1.5 mm	7/0.52	0.7	16	11
1×2.5 mm	7/0.67	0.8	22	15
1×4.5 mm	7/0.91	0.8	32	21
1×6.0 mm	7/1.04	0.8	38	25
1×7.0 mm	7/1.12	1.0	42	27
1×9.5 mm	7/1.32	1.0	50	32
1×10 mm	7/1.35	1.0	52	34

Fig for Q 5 (ii)

Contd P/5

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6. (a) For the given circuit, in Fig. for Q 6(a), find the value of current I_0 and Voltage V_0. **(13)**

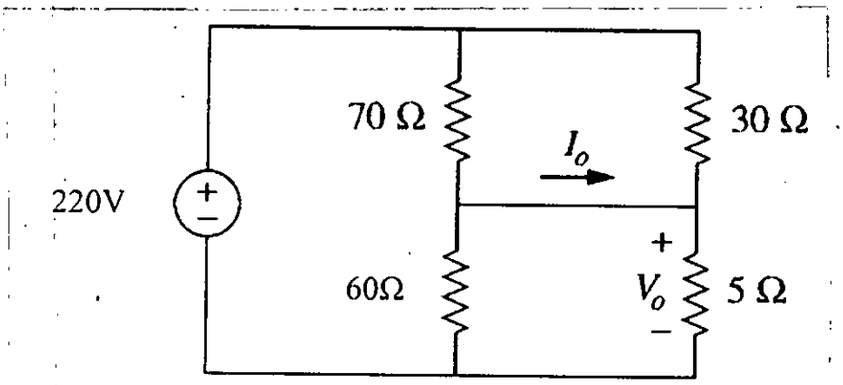

Fig for Q 6(a)

(b) Find the equivalent resistance, Rab for the given network in Fig for Q 6(b). **(10)**

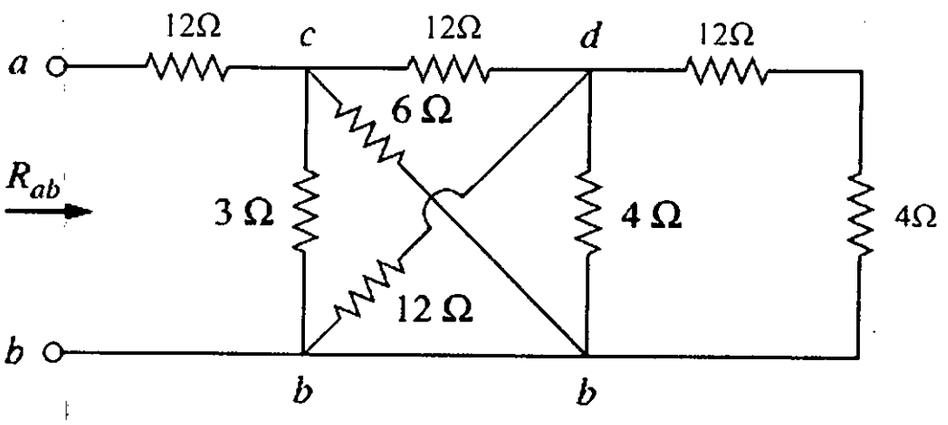

Fig for Q 6(b)

7. (a) Convert the given Delta network shown in Fig for Q 7(a) into an equivalent Y network. **(12)**

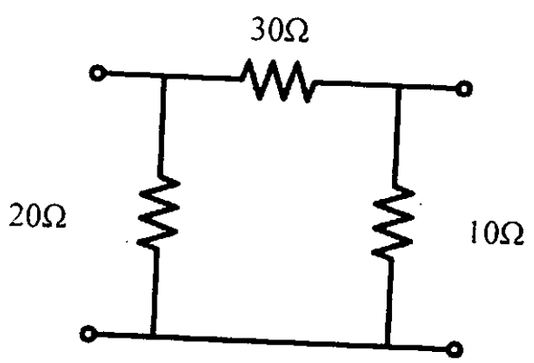

Fig for Q 7(a)

Contd P/6

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Contd... Q. No. 7

(b) For the circuit shown in Fig. for Q 7(b), find the current through each of the resistors using any appropriate network analysis method. **(10)**

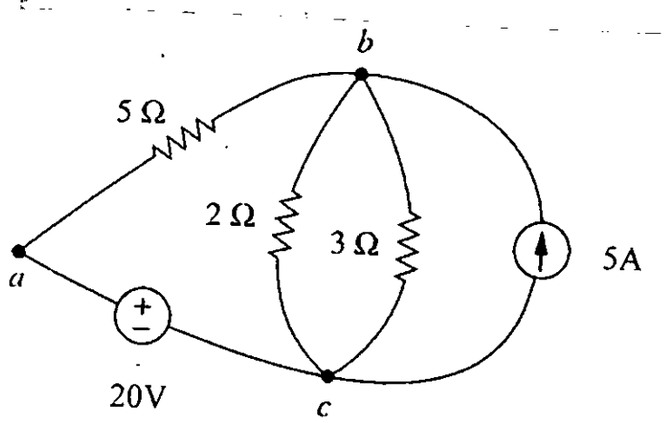

Fig for Q 7(b)

8. (a) The network shown in Fig for Q 8(a) is connected to a current source, I_{ab} = 16A. Calculate the voltage across the current source. **(13)**

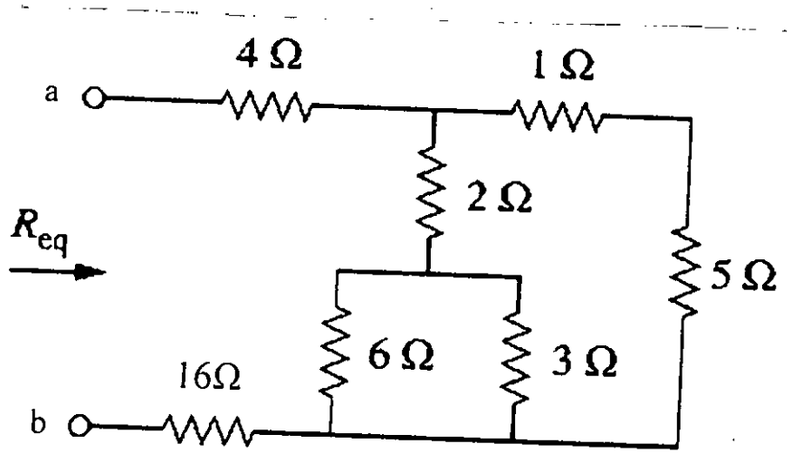

Fig for Q 8(a)

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Contd... Q. No. 8(a)

(b) For the circuit shown in Fig for Q 8(a) if a voltage source of 5V voltage and 10Ω series resistance is connected to node a and b, what will be the dissipated power of the 10Ω resistor? **(10)**

Course Outcomes of EEE 373

CO No.	CO Statement
1	**explain** the basic laws of electrical DC and AC circuits, fundamentals of lighting technologies and their applications.
2	**apply** the knowledge gained to solve DC and AC circuit problems.
3	**design** electrical wiring system for residential and commercial buildings.
