I D NO.	

PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 40 % Max Marks: 80 Max Time: 2 hrs. 10 May 2018, Thursday

ENDTERM FINAL EXAMINATION MAY 2018

Even Semester 2017-18 Course: **EEE 101 Elements of Electrical Engineering** II Sem. Physics Cycle

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Instructions:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part A

(3 Q x 10 M = 30 Marks)

1. Derive an expression for the EMF of a DC Generator.
2. With the neat sketch explain the constructional details of an alternator.
3. A single phase, 20 KVA transformer has 1000 primary turns, and 2500 secondary turns. The net cross sectional area of the core is 100 cm^2. When the primary winding is connected to 500 V, 50 Hz supply, calculate (i) the maximum value of the flux density in the core (ii) the voltage induced in the secondary winding and (iii) the primary and secondary full load currents.

Part B

(2 Q x 15 M= 30 Marks)

4. Discuss the important features of squirrel cage and phase wound rotor constructions in an induction motor. Explain the principle of operation of an induction motor. (15 M)
5. a) A circuit consists of a resistance of 20 Ω and a capacitance of 80 μF connected in series. A supply of 200 V at 50 Hz is applied across the circuit. Find the power factor and power consumed by the circuit. Draw the vector diagram. (10 M)

   b) Explain the construction of a core type of transformer. (5 M)

Part C

(1Q x 20 M= 20 Marks)

6. a) A parallel circuit comprises a resistor of 20 Ω in series with an inductive reactance of 15 Ω in one branch and a resistor of 30 Ω in series with a capacitive reactance of 20 Ω in the other branch. Determine the current and power dissipated in each branch, if the total current drawn by the parallel circuit is $10\angle -30^0$ amps. (15 M)

   b) Derive an expression for the average value of an alternating current. (5 M)

ID NO:	

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Weightage: 20% Max Marks: 40 Max Time: 1 hr. 27 March Tuesday 2018

TEST – 2 **SET B**

Even Semester 2017-18 Course: **EEE 101 Elements of Electrical Engineering** II Sem. Physics Cycle

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Instruction:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted

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Part A

(2 Q x 6 M = 12 Marks)

1. Derive an expression for the rms value of an alternating current.

2. An alternating voltage has the equation v = 200 sin 377t; what are the values of: (a) r.m.s. Voltage; (b) frequency; (c) the instantaneous voltage when t = 3 ms?

Part B

(1 Q x 12 M = 12 Marks)

3. Show that a pure inductance does not consume any power. Draw the relevant waveforms of Voltage, current and power, when alternating voltage is applied to the pure inductance circuit.

Part C

(1Q x 16 M = 16 Marks)

4. a) A circuit consists of a resistance of 25 Ω, an inductance of 0.03 H connected in series. A supply of 230 V at 50 Hz is applied across the circuit. Find the current, power factor and power consumed by the circuit. Draw the vector diagram. [12 M]

b) Define Power factor. What is meant by lagging and leading Power factor? [04 M]

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PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 20 % Max Marks: 40 Max Time: 1 hr. 22 Feb Thursday 2018

TEST – 1

Even Semester 2017-18 Course: **EEE 101 Elements of Electrical Engineering** II Sem. Electrical

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Instruction:

(i) Read the question properly and answer accordingly.

(ii) Question paper consists of 3 parts.

(iii) Scientific and Non-programmable calculators are permitted

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Part A

(3 Q x 5 M = 15 Marks)

1. State and explain Kirchhoff's laws.
2. Write the transformation formulae with figure to convert (i) Delta to Star, and (ii) Star to Delta
3. Three resistors of 2 Ω, 3 Ω and 5 Ω are connected in series and a current of 2 A flows thorough them. Calculate the p.d. across each resistor and the total supply voltage.

Part B

(1 Q x 10 M = 10 Marks)

4. The resistances of the various arms of a bridge are given in the Fig. No. 1. The battery has an e.m.f. of 2.0 V and a negligible internal resistance. Determine the value and direction of the current in BD, using mesh analysis.

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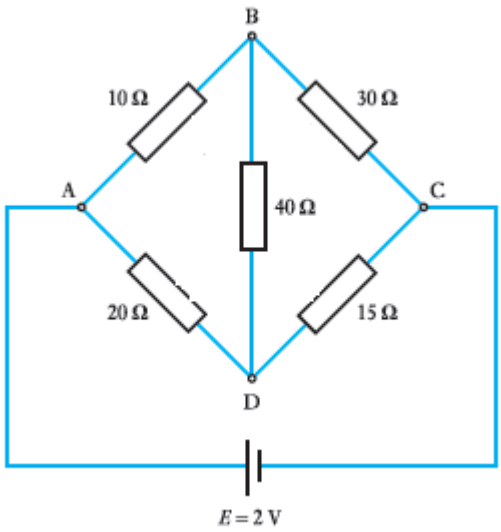

Fig. No. 1

Part C

(1Q x 15 M = 15 Marks)

5. A network is arranged as shown in the Fig. No. 2 Calculate the value of the current in the 8 Ω resistor by the Nodal analysis

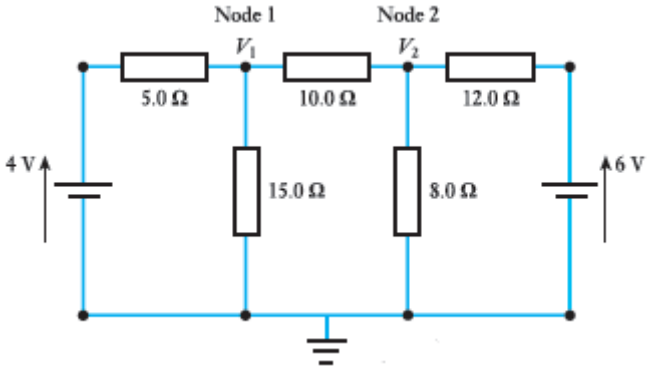

Fig. No. 2