FACULTY OF ENGINEERING

B.E. 2/4 (EE / Inst.) II – Semester (Main) Examination, June 2017

Subject: Electronic Engineering – I

Time: 3 Hours   **Max. Marks: 70**

Note: Answer all questions from Part A and any five questions from Part B.

PART – A (20 Marks)

1	Draw the V-I characteristics of ideal diode.	2
2	Distinguish between Zener and Avalanche breakdown.	2
3	Explain about half wave rectifier with neat diagram.	2
4	Draw the block diagram of CRO.	2
5	What is punch through effect in transitor?	2
6	When a reverse voltage of 10V is applied between gate and source of JFET the gate current is 0.001 µF. Determine the resistance between gate and source.	2
7	Compare CB, CE and CC configuration.	2
8	List out the features of low frequency BJT amplifier.	2
9	Explain the effect of by pass capacitor on LF response.	2
10	What is pinch-off voltage?	2

PART – B (5x10 = 50 Marks)

11 What is rectifier? Explain with the neat diagram the working principle of full-wave rectifier. Derive the expression for ripple factor of full-wave centre tapped transformer.   10

12 a) Explain different types of PN junction formation technique.   5
   b) Compare filters L, C, LC and CLC used in power supplies.   5

13 a) Explain with suitable diagrams operation of NPN transistor.   5
   b) Explain the operation of CE configuration with neat circuit diagram.   5

14 a) Explain in detail about BJT amplifier with approximate model.   5
   b) Consider a two stage CE-CC cascade amplifier having $h_{ie} = h_{ic} = 2K$; $h_{fe} = 50$; $h_{fc} = -51$; $h_{re} = 6 \times 10^{-4}$, $h_{rc} = 1$ and $h_{oe} = h_{oc}$ 25 uA/V. Find the input impedance, voltage gain and current of individual stages as well as combination. Assume values if required.   5

15 a) Draw the frequency response of RC coupled amplifier and show that gain bandwidth product is constant.   5
   b) Discuss in detail JFET formation, operation and V-I characteristics with suitable diagrams.   5

16 a) Describe the working of a SCR with suitable waveforms.   5
   b) Derive the relationship between the beta (s) and alpha (⌐) of a transistor.   5

17 Write short notes on the following: 10
   a) MOSFETS (Depletion Mode)
   b) LCD.

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FACULTY OF ENGINEERING

B.E. (ECE) II – Semester (Main) Examination, June 2017

Subject: Electrical Technology

**Time: 3 Hours**   **Max.Marks: 70**

Note: Answer all questions from Part A and any five questions from Part B.

PART – A (20Marks)

1 Explain the principle of a DC Generator.   2

2 What is the function of a commutator in DC Generator?   2

3 Show the three phase and line voltage relations in vector diagram.   2

4 How do you convert a three phase star connected load to a delta connected load?   2

5 Define the regulation of a synchronous machine and its importance.   2

6 Why alternator is called as synchronous generator?   2

7 Explain the working principle of single phase transformer.   2

8 Draw the leading phasor diagram of loaded transformer.   2

9 List the applications of induction motors.   2

10 Differentiate between the cage and wound rotor induction motors.   2

PART – B (5x10 = 50 Marks)

11 a) Explain constructional features and operation of a DC generator.   5

   b) Explain the basic working principle of three point starter with neat diagram.   5

12 a) Explain the method of measuring the power by two wattmeter method.   5

   b) Find the value of the voltage source that delivers 2 Amps current through the circuit
       as shown below.   5
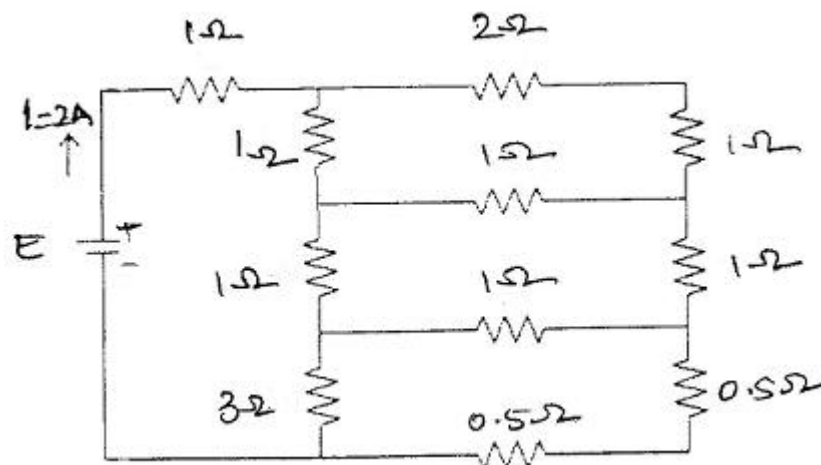
13 a) A 3-phase, wye-connected, round-rotor synchronous generator rated at 10 kV A, 230 V has a synchronous reactance of $1.2\,\Omega$ per phase and an armature resistance of 0.5 Ω per phase. Calculate the percent voltage regulation at full-load with 0.8 lagging power factor. 5

b) Explain the constructional details of AC generator. 5

14 a) Develop the equivalent circuit of a single phase transformer. 5

b) How do you conduct the no-load test on transformer? Explain. 5

15 a) Describe the construction and principle of operation of shaded pole motor. 5

b) Discuss about the production of rotating magnetic field in an induction motor. 5

16 a) In a 20 kVA, 200 / 200 V, single-phase transformer, the iron and full-load copper losses are 350 and 400 W respectively. Calculate the efficiency at unity power factor on (i) full load, (ii) half full-load. 5

b) If the e.m.f. in the starter of an 8-pole induction motor has a frequency of 50 Hz and that in the rotor 1.5 Hz, at which speed is the motor running and what is the slip? 5

17 a) A 440 V DC shunt motor takes a 4 A at no-load. Its armature and field resistances are 0.4 ohm and 220 ohms respectively. Estimate the kW output and efficiency when the motor takes 60 A on full load. 5

b) Explain the principle of operation of auto-transformer. 5

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FACULTY OF ENGINEERING

B.E. (CSE / IT) II – Semester (Main) Examination, June 2017

Subject: Basic Electrical Engineering

Time: 3 Hours   **Max.Marks: 70**

Note: Answer all questions from Part A and any five questions from Part B.

PART – A (20 Marks)

1 State Kirchnoff's current law.   2

2 What do you understand by the term RMS value?   2

3 What is reactive power?   2

4 A balanced star connected load of (8+j6) ohms per phase is connected to a balanced three phase 400 V supply. Find the line currents.   3

5 Name the losses in a transformer.   2

6 Mention various types of dc generators.   2

7 Draw the schematic diagram of a star-delta starter for a three phase induction motor.   3

8 Mention various applications of a dc series motor.   2

9 What is a circuit breaker?   2

PART – B (5x10 = 50 Marks)

10 a) State and explain superposition theorem.   5

     b) Find the resistance connected between terminals A and B.   5
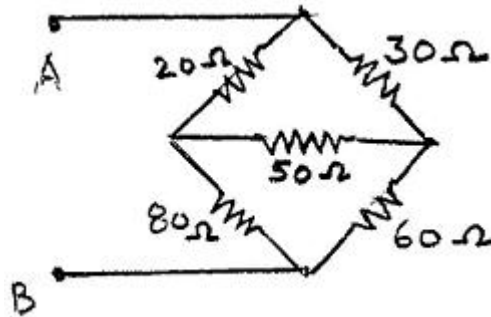
11 A resistance of 10Ω is connected in series with an inductance of 0.05 H and a capacitance of 300µF to a 100V, 1-w ac supply. Calculate the magnitude and phase angle of the current when the frequency of the supply is (a) 25 Hz, (b) 50 Hz.   10

12 Draw a neat sketch and explain in detail how three phase power is measured by two wattmeters.   10

13 A 400 V dc shunt generator gives a full load output of 50 kW. The armature and field resistances are $0.1\,\Omega$ and $250\,\Omega$ respectively. The core and frictional losses are together 2000 W. Calculate the generated emf, copper losses and efficiency.   10

14 A 18.65 kW, 4-pole, 50 Hz, three phase induction motor has friction and windage losses of 2.6% of the output and full load slip is 4.2%. Find the following:
   i) The rotor copper loss
   ii) The rotor input
   iii) The output torque
   iv) The gross mechanical torque developed in the rotor.   10

15 a) What are the various types of tariffs in electrical power systems and what are their advantages and disadvantages?   7

    b) What are the causes of low power factor and what are its disadvantages?   3

16 Write short notes on:
   a) Open and short circuit tests on a transformer.   5
   b) Capacitor start and capacitor run motor.   5

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