Code No. 11383/CBCS/BL

FACULTY OF ENGINEERING

BE II Semester (CBCS)(Backlog) Examination, May/June 2019

Subject: Electronic Engineering – I

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

Note: Answer all questions from Part-A & **answer any five questions from Part-B.**

PART – A (20 Marks)

1. A Germanium diode carries a current of 1mA at room temperature, when a forward bias of 0.15V is applied .Estimate the reverse saturation current at room temperature. 2
2. Give the drawbacks of bridge rectifier over centre-tap rectifier. 2
3. Explain the significance of transistor h-parameter model. 2
4. What is punch through effect? 2
5. Compare JFET & MOSFET. 2
6. Draw and explain the V-I characteristics of SCR? 2
7. List out the salient features of low frequency BJT amplifier circuit. 2
8. Explain briefly the working of UJT with help of its equivalent circuit. 2
9. Write the applications of CRO. 2
10. What are the limitations of zener diode regulator? 2

PART-B(50 Marks)

11. (a) Draw the V-I characteristics of a PN junction diode. Explain in detail its operation. 5
    (b) Explain the Zener voltage regulator. 5
12. (a) Derive the expressions of rms value of voltage and transformer utilization factor of a full wave rectifier with resistive load. 6
    (b)Explain transistor as an amplifier. 4
13. (a) What is stability factor and find it for collector to base bias and emitter bias circuits. 6
    (b) Explain the various current components of a transistor. 4
14. (a) Explain the construction, operation and characteristics of a SCR. 7
    (b) List the benefits of h-parameters. 3
15. (a) Describe the construction operation and characteristics of MOSFET in Enhancement mode. 6

    (b)Prove that transconductance g_m of a JFET is given by 4

$$g_m = \frac{2I_{DSS}}{V_p}\left(1 - \frac{V_{GS}}{V_p}\right)$$

16. (a) A 230V,50Hz voltage is applied to the primary of a 5:1 step-down ,centre tapped transformer in a full wave rectifier having a load of 900Ω.
    Determine (i) DC voltage across the load (ii)I_{dc} (iii)DC power delivered to the load (iv) AC input power from the transformer (v)Efficiency. 7
    (b) What are the factors effecting Q-Point? 3
17. Write a short note on any of the two following: 10
    (a) TRIAC
    (b) Liquid Crystal Display (LCD)
    (c) CCD.

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Code No. 11385/CBCS/BL

FACULTY OF ENGINEERING

BE (ECE) II Semester (CBCS) (Backlog) Examination, May/June 2019

Subject: Electrical Technology

Time: 3Hrs **Max Marks: 70**

Note: Answer all questions from Part-A & Any five questions from Part-B

Part – A (2 x 10 = 20 Marks)

1. Draw and explain the internal and external characteristics of DC shunt generator
2. A 460V ,3 phase ,3 wire star connected supply to a load of 8KW .what is the current drawn by each phase.
3. A 220V Dc shunt motor having an armature resistance of 0.5ohms drawing an armature current of 4 amps .what is the back emf generated
4. Write the Relationship between line and phase voltage current in star connection.
5. Define slip and synchronous speed of induction motor
6. A 230/115 V 1 phase 50Hz transformer primary current is 10A what is the secondary current.
7. Draw the no –load phasor diagram of Transformer.
8. What are the different types of single phase induction motors and give their applications?
9. What is armature Reaction?
10. The induction motor running at 1450 rpm having a slip of 2%, what is the synchronous speed?

Part – B (5 x 10 = 50 Marks)

11. a) A three phase star connected load drawing a current of 25amps , the KVA and KW are 20 and 11 respectively, find the line current and phase voltage
    b) Deduce the three phase power is $\sqrt{3}$ VI cosφ for a delta and star connected system
12. a) Deduce the expression for a induced e.m.f. produced by a DC generator
    b) An 8pole DC generator with 778 wave connected armature conductors is running at 500rpm supplying a load of 12.5ohms resistance and the terminal voltage of 50V.The armature resistance is 0.24 ohms and the field resistance is 250ohms.Find the induced e.m.f., armature current and flux
13. a) Draw and explain the need of a starter in DC motor and draw the 4point starter with all the parts mentioning.
    b) A 220V shunt motor runs at 500 rpm, an armature current is 50amps.Calculate the speed if the torque is doubled. Given the armature resistance is 0.2ohms

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14. a) Given a 20KVA, 2200/220V ,50Hz transformer ,the OC and SC test results are as follows:

    OC test: 220V, 4.2 amps, 148 watts (lvside);

    SC test: 86V,10.55amps, 360 watts (hvside)

    b) Determine efficiency and voltage regulation at 0.8 lag power factor and draw the equivalent circuit parameters of the transformer

15. a) Show that the three phase power can be measured by two wattmeter method and draw the necessary circuit diagram

    b) A 3- inductive load of star connected to three phase balanced system with two watt meter.

    The phase voltage is 150V and line current is 25amps and the power factor is 0.707lag . Find the readings of the watt meters

16. a) Explain the basic principle of operation of alternator and give the types of rotors used.

    b) A three phase ,50Hz, 16 pole alternator has number of conductors 240 /phase, distribution factor of 0.96 , the flux per pole is 0.03wb,running at 375rpm ,find the e. m. f. generated per phase

17. a) Explain the concept of rotating magnetic field and derive the expression for it.

    b) Draw and explain the Torque slip characteristics of an Induction motor.

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Code No. 11388/CBCS/BL

FACULTY OF ENGINEERING

BE II-Semester (CBCS) (Backlog) Examination, May/June 2019

Subject: Basic Electrical Engineering

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

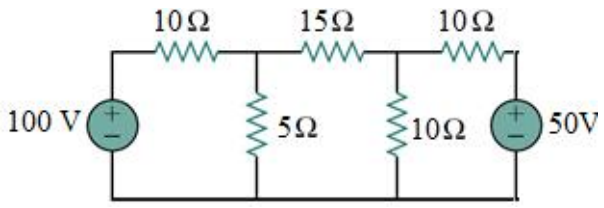
Note: Answer all questions from Part-A & any five questions from Part-B.

PART – A (20 Marks)

1. State and explain Kirchhoff's current Law. [2M]
2. A series circuit having the R = 30 Ω and X_L = 40 Ω. Determine the power factor for the ac circuit. [2M]
3. Write the relationship between phase and line values of voltage, current in delta connected system. [2M]
4. Define voltage Regulation of a Transformer. [2M]
5. The armature of a 6-pole, 600 rpm lap wound generator has 720 armature conductors. If each coil has 4 turns, calculate the flux per pole required to generate an e.m.f. of 288V. [2M]
6. What is the need of starter for a DC motor? [2M]
7. What are different types of three phase Induction motors? [2M]
8. Why 1-φ induction motors are not self-starting? [2M]
9. Define Block rate tariff. [2M]
10. What is a relay? [2M]

Part – B (5x10 = 50 Marks)

11. a) State and explain Norton's Theorem. [5M]
    b) Using Super Position Theorem, find the current in 5Ω Resistor. [5M]



12. a) Derive the 3 phase power measurement by two wattmeter method. [5M]
    b) In a 50 kVA transformer, the iron loss is 500W and full-load copper loss is 800W. Find the efficiency at full-load and half full-load at 0.8 p.f. lagging. [5M]

Cont…2…

13. a) Derive the EMF equation of a D.C. Generator. [5M]
    b) Explain the different speed control techniques of DC Shunt Motor. [5M]
14. a) Explain briefly about the Star-delta starting method of 3φ Induction motor. [5M]
    b) Explain briefly about Capacitor Start & Capacitor Run 1-φ Induction motor. [5M]
15. a) Write short notes on improvement of power factor using Static Capacitors. [5M]
    b) Write briefly about earthing and its importance. [5M]
16. a) Derive Average and RMS value of a sinusoidal waveform. [5M]
    b) Explain briefly about the losses in the transformers. [5M]
17. Write short notes on:
    a) Derive the Torque equation of a DC motor [5M]
    b) Types of Tariff. [5M]

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