

**FACULTY OF ENGINEERING**  
**BE – II- Semester(CBCS) (Backlog) Examination, November 2020**

**Subject : Electronic Engineering - I**

**Time : 2 Hours**

**Max. Marks : 70**

**Note: Answer any five questions from Part – A, & any four questions from Part-B,  
PART – A (5x2=10 Marks)**

1. Draw Zener Diode Characteristics.
2. List the applications of PN-junction diode.
3. Define ripple factor.
4. Explain the necessity of filter circuit after the rectifier circuit.
5. Give reasons why common emitter configuration is widely used in amplifier circuits?
6. With a neat circuit diagram, define early effect?
7. Compare UJT and SCR.
8. Explain how you will obtain graphically hybrid parameters of a transistor?
9. Explain why E-MOSFET is called sometimes normally - off MOSFET?
10. Differentiate between BJT and JFET.

**PART – B (4x15=60 Marks)**

- 11.a) Explain the formation of depletion region in a PN junction diode with a neat diagram.  
b) For a Ge diode, the  $I_0=2\mu\text{A}$  and the voltage of 0.26V is applied. Calculate the forward and reverse dynamic resistance values at room temperature.
- 12.a) Define varactor diode? Explain the operation of varactor diode with its equivalent circuit and mention its applications.  
b) Draw the circuit diagram of Half-wave rectifier and derive the expressions for average value, R.M.S value and voltage drop across diode.
- 13.a) Explain input and output characteristics of a transistor in CE configuration.  
b) The reverse leakage current of the transistor when in CB configuration is  $0.3\mu\text{A}$  while it is  $16\mu\text{A}$  when the same transistor is connected in CE configuration. Determine  $\alpha$ ,  $\beta$  and  $\gamma$ .
- 14.a) Explain the working of TRIAC with neat sketches.  
b) With the help of neat circuit diagram, Analyze the approximate model of CE Amplifier.
- 15.a) Define DC Drain resistance, AC Drain Resistance, Amplification Factor and derive them.  
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b) Describe the construction and working principle of depletion mode MOSFET and draw its characteristics.
- 16.a) Why FET is called as a Voltage Controlled Device.  
b) Describe the principal of operation of a CCD.
- 17.a) Compare the characteristics of Photo diode and LED.  
b) Explain in detail about Thermal Runaway and Thermal Resistance.

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**FACULTY OF ENGINEERING****B. E. (CBCS) II – Semester (Backlog) Examination, November 2020****Subject: Electrical Technology****Time: 2 hours****Max. Marks: 70****Note: Answer any five questions from Part – A, & any four questions from Part-B, PART – A (5x2=10 Marks)**

1. List the types of excitation with neat figures.
2. Reproduce the different methods of speed control of DC motor.
3. Express the relationship between voltage and currents in star and delta connections.
4. What is the regulation of AC generators?
5. Recall the construction details of AC generator.
6. Reproduce the definition of regulation in AC generator.
7. Restate the definition of auto transformer.
8. Quote the definition of efficiency and regulation of single phase transformer.
9. List the different parts of three phase induction motor.
10. Illustrate the construction details of shaded pole motor.

**PART – B (4x15=60 Marks)**

11. (a) The armature of 6 pole dc generator has a wave winding containing 664 conductors. Calculate the generated emf when flux per pole is 0.06 Weber and speed is 250 rpm. At what speed must the armature be driven to generate an emf of 250V. if the flux per pole is reduced to 0.058 Weber's.
- (b) Describe with neat sketch the construction of DC generator.
12. (a) Explain the measurement of three phase power using two wattmeter method.
- (b) The readings of two wattmeter's of 3 phase power measurement are 50 W and 100 W. Calculate power and power factor.
13. (a) Derive EMF equation of an alternator.
- (b) Explain method to find regulation of Alternator using synchronous impedance method.
14. (a) Explain the advantages and disadvantages of auto transformer.
- (b) A 10kVA, 220/400V, 50Hz single phase transformer has the following test results. OC test: 200V, 1.3A, 120W – LV side; SC test: 22V, 30A, 200W-HV side; calculate (i) magnetizing and core loss component at 50Hz and rated voltage ii) magnetizing branch impedance iii) regulation at full load 0.8 leading.
15. (a) Explain the principle of rotating magnetic field.
- (b) Explain the operation of single phase capacitor start and run induction motor.
16. (a) Explain the various methods of speed control of d.c. shunt motor.
- (b) Draw the phasor diagram of loaded transformer and explain.
17. (a) Write about double field revolving theory of single phase induction motor.
- (b) Discuss about armature reaction in alternators.

**FACULTY OF ENGINEERING**  
**B.E II Semester (CBCS) (Backlog) Examination, November 2020**

**Subject: Basic Electrical Engg.**

**Time: 2 hours**

**Max. Marks: 70**

**Note: Answer any five questions from Part – A, & any four questions from Part-B,  
 PART – A (5x2=10 Marks)**

1. State and explain Kirchhoff's voltage law and current law.
2. Derive the expression for rms value of a sine wave.
3. Write the relationship between line and phase voltages and currents for the balanced delta connected system.
4. Name the losses in a transformer.
5. An 8 pole lap wound armature has 1200 conductors and flux per pole of 0.02 wb. Determine the generated emf when running at 600 rpm.
6. Give applications of series and compound motors.
7. Compare 3- $\phi$  squirrel cage and slip ring induction motors.
8. Why the 1- $\phi$  induction motors are not self-starting?
9. Write the types of tariff.
10. What is the function of circuit breaker?

**PART-B (4 x15=60 MARKS)**

11. a) State and explain Superposition theorem.  
 b) An alternating voltage is given by  $v = 141.4 \sin 314 t$  V. Find (i) frequency (ii) rms value (iii) maximum value (iv) average value and (v) instantaneous value at  $t = 5\text{ms}$ .
12. a) Show that  $V_L = \sqrt{3}V_{ph}$  in 3- $\phi$  balanced star connected system with the help of phasor diagram.  
 b) Explain principle of operation of transformer on no-load
13. a) Derive the emf equation of DC generator.  
 b) Describe the various methods of speed control of DC motor.
14. a) Explain constructional details and principle of operation of 3- $\phi$  induction motor.  
 b) Explain the principle of operation of capacitor start induction motor.
15. a) Explain in detail the different types of consumers and their tariffs.  
 b) Explain the different methods to improve the power factor of the system.
16. a) State and explain Thevenin's theorem.  
 b) Differentiate 3- $\phi$  balanced star and delta connected systems.
17. a) Explain the principle of operation of DC motor.  
 b) What is an earthing? Write its importance.

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