ALPHA COLLEGE OF ENGINEERING & TECHNOLOGY

FAQs

SEMESTER: 4TH DIPLOMA ELECTRICAL ENGINEERING

SUBJECT NAME: POLYPHASE TRANSFORMERS AND ROTATING AC MACHINES

SUB CODE: 3340901

Unit – I.
Poly Phase Transformer
1. Explain the construction of 3 phase transformer.
2. Explain the essential condition required for parallel operation of 3 phase transformers.
3. Explain the accessory of 50 MVA 3 phase transformer.
4. Write the specification on name plate in 3 phase transformer.
5. Write the ratings of 3 phase transformer.
6. Write the transformer winding are to be connected in parallel with vector diagram.
7. Why transformer ratings are in KVA?
8. Explain the function of conservator tank in Transformer.
9. Draw vector diagram & Star-Delta connection Transformer.
10. Explain type of losses in Transformer.
11. Draw connection diagram of Yy_0, and Yy_6 3-Ø transformers.
12. Name the accessories of 3 phase transformer and explain function of Breather.
13. Draw the sketch of Buchholz Relay and explain its working.
14. Draw connection and vector diagram of Yd_1, Dy_{11} and Yy_6 3- Ø transformers.

Unit– II
Poly Phase Induction Motors
1. Calculate the approximate full load current of 20 H.P. 3 Phase induction motor.
2. Explain the types and working of 3 phase induction motor.
3. Explain the D.O.L. starter of 3 phase induction motor.
4. Explain the star delta transformer in 3 phase induction motor.
5. Explain the ratings on name plate on 3 phase induction motor.
6. Write the application of 3 phase induction motor.
7. Explain the speed torque chrematistics of 3 phase induction motor.
8. Explain the different power stages in 3 phase induction motor.
9. Draw and explain slip-torque characteristic of 3-phase Induction Motor
10. Compare between Slip ring and Squirrel cage Induction Motor.
11. State different methods of speed control of polyphone induction motor.
12. Derive the equation of starting torque for 3-ø induction motor and obtain condition of maximum starting torque from it.
13. Draw the equivalent circuit of polyphase induction motor.

Unit– III
Alternator

1. Explain the condition to connect alternator to infinite busbar.
2. Write short note on cooling of alternator.
3. Derive the E.M.F. equation of alternator.
4. Explain the characteristics of fix armature and moving field alternator.
5. Give the name of methods for determining the voltage regulation in Alternator.
6. State the advantages for keeping Alternator armature system stationary in Alternator.
7. Explain one method of checking phase difference for synchronization of Alternators.
8. Derive the equation of "pitch factor" for Alternator.
9. Explain the synchronous impedance method of voltage regulation of an Alternator by performing O.C and S.C tests.
10. Draw and explain the equivalent circuit and phasor diagram of an Alternator with R and R-L loads.
11. Explain two bright and one dark lamp method of determining synchronization of Alternators.

Unit–IV
Synchronous Motor

1. Why the synchronous motor is a constant speed motor ?
2. Draw "V" curve and invert "V" curve for Synchronous Motor.
3. Compare Induction Motor and Synchronous Motor.
4. Give the name of different methods for starting Synchronous Motor.
5. State the applications of Synchronous Motor.
6. Why Synchronous Motor is not self-starting?
7. Write effects of hunting.

Unit-V
Single Phase Induction Motors

1. Write the short note on Linear induction motor.
2. Explain single phase induction motor is not self starting ?
3. Explain capacitor start and capacitor run single phase induction motor.
4. Write the application of single phase induction motor.
5. Explain two field rotating theory for 1-phase Induction Motor.
6. State advantages and disadvantages of shaded pole Induction Motor.
7. List the methods of starting of 1-ø induction motor and explain working of ceiling fan induction motor.

H B PATEL
SUBJECT COORDINATOR

Subject :⇒ Digital Electronics &
Digital Instruments

4th Sem DEE

FAQs

Ch.1 : Number Systems

1. Conversion of Numbers from one system to other System :-

   (a) Convert Decimal number $(537)_{10}$ into binary number.
   (b) Convert binary number $(111.111)_2$ into decimal number.
   (c) " Decimal number $(247)_{10}$ into Octal number.
   (d) " Octal number $(0.536)_8$ & $(5701)_8$ into decimal.
   (e) " Octal number $(7632)_8$ into decimal number
   (f) " Octal number $(237.5)_8$ into binary number.
   (g) " Hexadecimal number $(D56)_{16}$ into decimal number.
   (h) " Decimal number $(3875)_{10}$ into Hexadecimal.
   (i) " Hexadecimal number $(50DC)_{16}$ into binary.
   (j) " binary number (11110111001.11001101) into Hexadecimal.
   (h) " Octal number $(45307.631)_8$ into hexadecimal.

2. Arithmetic Operations with binary numbers.

   (i) Binary addition ⇒ Add $(111.001)_2 + (1010.10)_2$
   (ii) Subtraction ⇒ Subtract $(1101.110)_2 - (100.011)_2$
   (iii) Multiplication ⇒ $(110111)_2 \times (1001)_2$
   (iv) Divisions ⟹ $(110101)_2 \div (111)_2$

3. Find 1's Complement of 10011.0101.

4. Find 2's Complement of 1101.

5. Explain BCD Codes.

6. Explain Gray Code.

7. Explain ASCII and Excess-3 Code.

Chapter 2. logic gates and wave shaping circuit

(1) Explain the following gates in detail.

    (a) AND gate
    (b) OR gate
    (c) NOT gate
    (d) EX-OR gate
    (c) EX-NOR gate

(2) Explain universal gate in details.(NAND and NOR)

(3) Verify the NOR and NAND gates are universal gates.

(4) Explain the working of transistor as a switch.

(5) Explain the working of diode as a switch.

(6) Cassificatiopn of logic families.

(7) What is clipping circuit? Draw the positive circuit using diode and explain its working. Draw the necessary waveforms.

(8) Explain CMOS logic circuit drawing diagram.

(9) Explain TTL AND gate.

Chapter 3. Boolean Algebra and combinational circuits

(1) Explain properties of Boolean algebra.

(2) Draw logic circuit for the Boolean expression Y = (A+B+C).(A B).(ABC)

(3) Explain Half adder and full adder.

(4) What is Demultiplexers? Exaplain 1 to 4 demultiplexer.

(5) What is multiplexers? Exaplain 8 to 1 multiplexer.

(6) What is decoder ? Explain 3 to 8 decoder.

(7) Explain De morgen's theorems.

(8) What is Encoder ? Explain decimal to BCD Encoder.

Chapter 6. Digital Instruments

(1) Comparison between the analog and digital instruments.

(2) Explain block diagram of digital frequency meter.

(3) Explain ramp type analogue to digital converter digital voltmeter.

(4) Write notes on digital multimeter.

(5) Draw the block diagram of digital energy meter and explain its working.

Chapter 4. Sequential Circuits

(1) Compare combinational circuit and sequential circuit.

(2) Explain JK flip flop with logic circuit and truth table.

(3) Explain Ŕ-S flip flop using logic circuit and truth table.

(4) Explain the race around condition in JK flip flop and list the methods to overcome it.

(5) State main types of flip flop and explain D flip flop.

(6) Compare static RAM with dynamic RAM.

(7) Explain random access memory with its classification.

(8) Explain 4 bit shift left register using JK flip flop.

Chapter 5. A to D and D to A convertes and display devices

(1) Explain the working of successive approximation A/D converter.

(2) Describe arrangement and working of dynamic scattering type LCD.

(3) Describe arrangement and working of LED.

(4) Comparison between LED and LCD.

(5) State the advantages and disadvantages of LED & LCD.

(6) Explain in short the types of A/D converters.

(7) Explain in short the types of A/D converters.

(8) Explain seven segment LED display.

(9) Describe the term linearity, resolution and settling time with reference to D/A converter.

T&D   FAQs   Ch. 1 Transmission Line Components

1. Compare the overhead system versus under ground System for transmission of power.

2. Explain String efficiency in detail.

3. Derive an expression for sag of line supported between two supports of the same the weight of

4. State the effect of system voltage and power factor on Transmission line efficiency.

5. Explain Conductors for overhead lines.

6. Explain Types of insulators.

7. Explain Desirable properties of insulators & materials used for insulators.

Ch. 2 Performance of Transmission Line

1. Explain Skin effect, Proximity effect, F   effect.

2. Explain load dispatch centre.

3. Derive expression for voltage regulation and efficiency for short transmission line.

4. Classification of Transmission lines.

5. Performance of Medium Transmission line.

Ch.3

Extra high Voltage Transmission

1. Comparison between HVAC & HVDC System
2. Advantages. of HVDCT.
3. Disadvantages of HVAC System over HVDC System
4. Types of HVDC System.
5. Explain Need of flexible A.C. Transmission System (FACTS) and Give the Classification & explain any one FACTS device.

Ch. 4

Distribution System Components

1. Write design steps of feeder and distributor.
2. What is distributed generation and explain Advantages & Disadvantages of distributed generation.
3. Explain different methods. of feeding primary Distribution.
4. Classification of Distribution System & Its importance in Electrical Supply System.
5. Methods of feeding secondary Distribution

Ch.5 Substation and Cables

1. What is Substation, Explain Classification of Substations.

2. Explain Construction of Underground Cable.

3. Explain the function of Different equipment used in Substation.

4. Points to be Considered for location of Substation.

5. State the Advantages and disadvantages of underground Cables over overhead lines.

6. Classification of Cables.

7. Compare indoor and outdoor Substation.

ALPHA COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

Subject: Utilization of Electrical Energy (3340903)
Sem: 4th Diploma Engineering

FAQ

Chapter 1: Illumination

1. Define (i) Illumination (ii) Luminous flux.
2. Explain Utilization factor in short.
3. Explain Cosine law of illumination.
4. Explain Inverse square law of illumination.
5. Give the advantages of Electronic Ballast.
6. Define the following terms. (i)Absorption factor (ii) Illumination (iii) Lamp efficiency (iv) MSCP (v) Lumen (vi) Space height ratio (vii) Utilization factor
7. State and explain Inverse square law of Illumination.
8. Explain construction and working of electronic ballast. State its advantages.

Chapter 2: Electrical Heating and Welding

1. Give classification of electrical heating. Also give advantages of Electric heating.
2. List the modes of transfer of heat.
3. Explain working principle of Resistance heating.
4. Give applications of resistance furnace.
5. Explain the factors affecting induction heating.
6. Give advantages of electric welding.
7. State the causes of failure of heating element. Also explain properties of good heating element.
8. Explain coreless induction furnace.
9. Explain working principle of dielectric heating. Obtain equation of power for it. Also give its applications.
10. Give classification of induction furnace. Explain construction and working of horizontal core type induction furnace. Also state its disadvantages.
11. State advantages of electric welding. Compare resistance welding and arc welding.
12. A 20 KW, 220 volt, single phase resistance oven employs circular nichrome wire for its heating element. If the wire temperature is not exceeding 11270 and the temperature of the charge is to be 4270 then calculate the length and diameter of the wire required. Assume radiating efficiency as 0.6 and emissivity as 0.9. The specific resistance of nichrome- alloy is $1.09 \times 10\text{-}6$ Ω-m.

Chapter 3: Electric Drives and Elevators

1. Define (i) Electric Drive (ii) Mechanical Drive.
2. Draw block diagram of Electric drive.
3. Give advantages & disadvantages of electric drive.

4. Compare the individual drive & the group drive.
5. Explain AC drive & DC drive.
6. Explain Diesel electric drive in detail & list the advantages and disadvantages of diesel electric drive.
7. State and explain different factors to be considered while selecting motor in electric drive.
8. Explain how hydraulic elevator works & briefly explain types of elevator machine.
9. State and explain safety measures in traction elevators.
10. Give comparison between Hydraulic & Traction elevator.

Chapter 4: Electric Traction

1. Explain Main Line service in short.
2. Define Speed time curve & list components of speed time curve.
3. List the requirements of an Ideal Traction system.
4. Explain KANDO system.
5. State different types of traction systems. Give advantages and disadvantages of electric traction system over other form of traction system.
6. Draw the speed time for following train services and compare them. (i) Main line service (ii) Suburban service (iii) Urban service.
7. A train has a schedule speed of 30 kmph on a level track. The distance between two stations being 1 km., station stopping time is 20 seconds. Assuming braking retardation of 3 kmphps and maximum speed 25 percentages greater than average speed, calculate acceleration to run the service. Assume trapezoidal speed time curve.

Chapter 5: Domestic Electrical Appliances

1. List probable faults occurred in storage water heater.
2. Explain Halogen Lamp.
3. Explain trouble shooting in vacuum cleaner.
4. Explain Carbon filament lamp.
5. Explain working principle of microwave oven.
6. List different types of fault can occur in iron with causes.
7. Explain construction and working of High Pressure Mercury Vapour lamp. Also state its applications.
8. Explain concept of star system for energy conservation.
9. Explain construction and working of mixer-grinder. Which type of motor is used in it?
10. Which troubles can be exist in running winding of ceiling fan? Explain the method to test it.
11. Explain working principle of microwave oven. State its frequency range.

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