



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

WINTER-2024	
Exam Seat No.:	
Academic Year:2024-2025	Semester:I/II
Class:FY	Program:B.Tech
Branch Code:EE/COMP/CSD/IT/AIDS/R&A	Pattern:2023
Name of Course:Fundamentals of Electrical Engineering	Course Code:2300105A
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1a) Derive expression for RTC at any temperature $t^0\text{C}$ (6) CO1

Question No. 2

- 2a) State and Explain Superposition Theorem (6) CO1

Question No. 3

- 3a) Define following terms in AC fundamentals with its values. If any 1) Form Factor 2) Amplitude factor 3) Waveform 4) Time period 5) Admittance 6) Conductance 7) Susceptance 8) Peak value (8) CO1

OR

- 3b) Derive the expression for RMS Value of sinusoidal current. Find rms value of current if maximum value of current is 10 amp. (8) CO1

- 3c) Explain the concept of resonance in Series RLC circuit (8) CO1

OR

- 3d) A 8Ω resistance, 16Ω inductive reactance and unknown capacitor are connected in series across 100 V, 50Hz AC supply. The current drawn by current is found to be 12.5 A. Determine (8) CO1

1)Value of capacitance 2) The voltage across capacitor 3) Power Factor of the circuit.

Question No. 4

- 4a) Define terms 1) Phase 2) Phase sequence 3) Balanced load 4) Unbalanced System (8) CO1

OR

- 4b) For star and delta connected loads state numerical relationship between (8) CO1

1) Line current and phase current

2) Line voltage and phase voltage.

- 4c) Explain working principle of Fuse with neat circuit diagram. Also give formula for fuse rating. (8) CO5

OR

- 4d) What is difference between ELCB and MCB. Give its two advantages and disadvantages. (8) CO5

Question No. 5

- 5a) Differentiate between Core type and Shell type transformer. (8) CO1

OR

- 5b) Explain Fleming's left hand and right hand rule with diagram. State which rule is applicable for working of DC motor and DC generator? (8) CO1

- 5c) A 5 KVA transformer of 230/115V is fully loaded. Find 1) Primary full load current 2) Secondary full load current and 3) Secondary turns if Primary turns are 90. (8) CO1

OR

- 5d) Draw and explain schematic representation of types of motors 1) DC shunt motor 2) DC series motor 3) DC Cumulative compound motor . 4) 3) DC differential compound motor (8) CO1

..... End of question paper.....