Fundamentals_Engineering

FE ELECTRICAL AND COMPUTER

DAY	Topic/ Number of Questions	Knowledge Area	√	DAY	Topic/ Number of Questions	Knowledge Area	√
1	1.Mathematics11–17	A.Algebra and trigonometry		53	10. Power Systems 8–12	B. Transmission and distribution (e.g., real and reactive losses, efficiency, voltage drop, delta and wye connections)	
2		B.Complex numbers		54		C. Transformers (e.g., single-phase and three-phase connections, reflected impedance)	
3		C.Discrete mathematics		55	Rest	Rest	
4		D.Analytic geometry		56	10. Power Systems 8–12	D. Motors and generators (e.g., synchronous, induction, dc)	
5		E.Calculus (e.g., differential, integral, single-variable, multivariable)		57	11. Electromagnetics 4–6	A. Electrostatics/magnetostatics (e.g., spatial relationships, vector analysis)	
6	Rest	Rest		58		B. Electrodynamics (e.g., Maxwell equations, wave propagation)	
7	1.Mathematics11–17	F.Ordinary differential equations		59		C. Transmission lines (high frequency)	
8		G.Linear algebra		60		3	
9		H.Vector analysis		61	Rest	Rest	
10	2.Probability and Statistics4–6	A.Measures of central tendencies and dispersions (e.g., mean, mode,standard deviation)		62	12. Control Systems 6–9	A. Block diagrams (e.g. feedforward, feedback)	
11		B.Probability distributions (e.g., discrete, continuous, normal, binomial,conditional probability)		63		B. Bode plots	
12	Rest	Rest		64		C. Closed-loop response, open-loop response, and stability	
13	2.Probability and Statistics4–6	C.Expected value (weighted average)		65		D. Controller performance (e.g., steady-state errors, settling time, overshoot)	
14	3.Ethics and Professional Practice4–6	3.Ethics and Professional Practice4–6		66	13. Communications 5–8	A. Basic modulation/demodulation concepts (e.g., AM, FM, PCM)	
15		A.Codes of ethics (e.g., professional and technical societies, NCEES Model Lawand Model Rules)		67	Rest	Rest	
16		B.Intellectual property (e.g., copyright, trade secrets, patents, trademarks)		68	13. Communications 5–8	B. Fourier transforms/Fourier series	
17		C.Safety (e.g., grounding, material safety data, PPE, radiation protection)		69		C. Multiplexing (e.g., time division, frequency division, code division)	
18	Rest	Rest		70		D. Digital communications	
19	4.Engineering Economics5–8	A.Time value of money (e.g., present value, future value, annuities)		71	14. Computer Networks 4–6	A. Routing and switching	
20		B.Cost estimation		72		B. Network topologies (e.g., mesh, ring, star)	
21		C.Risk identification		73	Rest	Rest	
22		D.Analysis (e.g., cost-benefit, trade-off, break-even)		74	14. Computer Networks 4–6	C. Network types (e.g., LAN, WAN, internet)	
23		2		75		D. Network models (e.g., OSI, TCP/IP)	
24	Rest	Rest		76		E. Network intrusion detection and prevention (e.g., firewalls, endpoint detection, network detection)	
25	5. Properties of Electrical Materials 4–6	A. Semiconductor materials (e.g., tunneling, diffusion/drift current, energy bands, doping bands, p-n theory)		77		F. Security (e.g., port scanning, network vulnerability testing, web vulnerability testing, penetration testing, security triad)	
26		B. Electrical (e.g., conductivity, resistivity, permittivity, magnetic permeability, noise)		78	15. Digital Systems 8–12	A. Number systems	
27		C. Thermal (e.g., conductivity, expansion)		79	Rest	Rest	
28	6. Circuit Analysis (DC and AC Steady State) 11–17	A. KCL, KVL		80	15. Digital Systems 8–12	B. Boolean logic	
29		B. Series/parallel equivalent circuits		81		C. Logic gates and circuits	
30	Rest	Rest		82		D. Logic minimization (e.g., SOP, POS, Karnaugh maps)	
31	6. Circuit Analysis (DC and AC Steady State) 11–17	C. Thevenin and Norton theorems		83		E. Flip-flops and counters	
32		D. Node and loop analysis		84		F. Programmable logic devices and gate arrays	
33		E. Waveform analysis (e.g., RMS, average, frequency, phase, wavelength)		85	Rest	Rest	
34		F. Phasors		86	15. Digital Systems 8–12	G. State machine design	
35		G. Impedance		87		H. Timing (e.g., diagrams, asynchronous inputs, race conditions and other hazards)	
36	Rest	Rest		88	16. Computer Systems 5–8	A. Microprocessors	
37	7. Linear Systems 5–8	A. Frequency/transient response		89		B. Memory technology and systems	
38		B. Resonance		90		C. Interfacing	
39		C. Laplace transforms		91	Rest	Rest	
40		D. Transfer functions		92	17. Software Engineering 4–6	A. Algorithms (e.g., sorting, searching, complexity, big-O)	
41	8. Signal Processing 5–8	A. Sampling (e.g., aliasing, Nyquist theorem)		93		B. Data structures (e.g., lists, trees, vectors, structures, arrays)	
42	Rest	Rest		94		C. Software implementation (e.g., iteration, conditionals, recursion, control flow, scripting, testing)	
43	8. Signal Processing 5–8	B. Analog filters		95	Rest	Rest	
44		C. Digital filters (e.g., difference equations, Z-transforms)		96	Test,Review	Test,Review	
45	9. Electronics 7–11	A. Models, biasing, and performance of discrete devices (e.g., diodes, transistors, thyristors)		97		Test,Review	
46		B. Amplifiers (e.g., single-stage/common emitter, differential, biasing)		98		Test,Review	
47		C. Operational amplifiers (e.g., ideal, nonideal)		99		Test,Review	
48	Rest	Rest		100		Test,Review	
49	9. Electronics 7–11	D. Instrumentation (e.g., measurements, data acquisition, transducers)		101	Rest	Rest	
50		E. Power electronics (e.g., rectifiers, inverters, converters)		102	Exam	Exam	
51	10. Power Systems 8–12	A. Power theory (e.g., power factor, single and three phase, voltage regulation)		103			
52		B. Transmission and distribution (e.g., real and reactive losses, efficiency, voltage drop, delta and wye connections)		104			

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