Fundamentals_Engineering

FE Other

DAY	Topic/ Number of Questions	Knowledge Area	√	DAY	Topic/ Number of Questions	Knowledge Area	√
1	1.Mathematics 8–12	A.Analytic geometry and trigonometry		58	10. Strength of Materials 9–14	C. Stress and strain caused by axial loads, bending loads, torsion, or transverse shear forces	
2	1.Mathematics 8–12	B.Differential equations		59	10. Strength of Materials 9–14	D. Shear and moment diagrams	
3	1.Mathematics 8–12	C.Numerical methods (e.g., algebraic equations, roots of equations,approximations, precision limits, convergence)		60	Rest	Rest	
4	1.Mathematics 8–12	D.Linear algebra (e.g., matrix operations)		61	10. Strength of Materials 9–14	E. Analysis of beams, trusses, frames, and columns	
5	1.Mathematics 8–12	E.Single-variable calculus		62	10. Strength of Materials 9–14	F. Loads and deformations (e.g., axial-extension, torque-angle of twist, moment-rotation)	
6	Rest	Rest		63	10. Strength of Materials 9–14	G. Stress transformation and principal stresses, including stress-based yielding and fracture criteria (e.g., Mohr's circle, maximum normal stress, Tresca, von Mises)	
7	2.Probability and Statistics6–9	A.Estimation (e.g., point, confidence intervals)		64	10. Strength of Materials 9–14	H. Material failure (e.g., Euler buckling, creep, fatigue, brittle fracture, stress concentration factors, factor of safety, and allowable stress)	
8	2.Probability and Statistics6–9	B.Expected value and expected error in decision making		65	11. Materials 6–9	A. Physical (phase diagrams) properties of materials (e.g., alloy phase diagrams, phase equilibrium, and phase change)	
9	2.Probability and Statistics6–9	C.Sample distributions and sizes (e.g., significance, hypothesis testing,non-normal distributions)		66	Rest	Rest	
10	2.Probability and Statistics6–9	D.Goodness of fit (e.g., correlation coefficient, standard errors, R2)		67	11. Materials 6–9	B. Mechanical properties of materials	
11	3.Chemistry 5–8	A.Oxidation and reduction (e.g., reactions, corrosion control)		68	11. Materials 6–9	C. Chemical properties of materials	
12	Rest	Rest		69	11. Materials 6–9	D. Thermal properties of materials	
13	3.Chemistry 5–8	B.Acids and bases (e.g., pH, buffers)		70	11. Materials 6–9	E. Electrical properties of materials	
14	3.Chemistry 5–8	C.Chemical reactions (e.g., stoichiometry, equilibrium, bioconversion)		71	11. Materials 6–9	F. Material selection	
15	4.Instrumentation and Controls4–6	A.Sensors (e.g., temperature, pressure, motion, pH, chemical constituents)		72	Rest	Rest	
16	4.Instrumentation and Controls4–6	B.Data acquisition (e.g., logging, sampling rate, sampling range, filtering,amplification, signal interface, signal processing, analog/digital [A/D],digital/analog [D/A], digital)		73	12. Fluid Mechanics 12–18	A. Fluid properties (e.g., Newtonian, non-Newtonian, liquids and gases)	
17	4.Instrumentation and Controls4–6	C.Logic diagrams		74	12. Fluid Mechanics 12–18	B. Dimensionless numbers (e.g., Reynolds number, Froude number, Mach number)	
18	Rest	Rest		75	12. Fluid Mechanics 12–18	C. Laminar and turbulent flow	
19	5.Engineering Ethics and Societal Impacts 5–8	A.Codes of ethics (e.g., identifying and solving ethical dilemmas)		76	12. Fluid Mechanics 12–18	D. Fluid statics (e.g., hydrostatic head)	
20	5.Engineering Ethics and Societal Impacts 5–8	B.Public protection issues (e.g., licensing boards)		77	12. Fluid Mechanics 12–18	E. Energy, impulse, and momentum equations (e.g., Bernoulli equation)	
21	5.Engineering Ethics and Societal Impacts 5–8	C.Societal impacts (e.g., economic, sustainability, life-cycle analysis,environmental, public safety)		78	Rest	Rest	
22	6. Safety, Health, and Environment 6–9	A. Industrial hygiene (e.g., carcinogens, toxicology, exposure limits, radiation exposure, biohazards, half-life)		79	12. Fluid Mechanics 12–18	F. Pipe and duct flow and friction losses (e.g., pipes, valves, fittings, laminar, transitional and turbulent flow)	
23	6. Safety, Health, and Environment 6–9	B. Basic safety equipment (e.g., pressure-relief valves, emergency shutoffs, fire prevention and control, personal protective equipment)		80	12. Fluid Mechanics 12–18	G. Open-channel flow (e.g., Manning's equation, drag)	
24	Rest	Rest		81	12. Fluid Mechanics 12–18	H. Fluid transport systems (e.g., series and parallel operations)	
25	6. Safety, Health, and Environment 6–9	C. Gas detection and monitoring (e.g., O2, CO, CO2, CH4, H2S, radon)		82	12. Fluid Mechanics 12–18	I. Flow measurement (e.g., pitot tube, venturi meter, weir)	
26	6. Safety, Health, and Environment 6–9	D. Electrical safety		83	12. Fluid Mechanics 12–18	J. Turbomachinery (e.g., pumps, turbines, fans, compressors)	
27	6. Safety, Health, and Environment 6–9	E. Confined space entry and ventilation rates		84	Rest	Rest	
28	6. Safety, Health, and Environment 6–9	F. Hazard communications (e.g., SDS, proper labeling, concentrations, fire ratings, safety equipment)		85	12. Fluid Mechanics 12–18	K. Ideal gas law (e.g., mixtures of nonreactive gases)	
29	7. Engineering Economics 6–9	A. Time value of money (e.g., present worth, annual worth, future worth, rate of return)		86	12. Fluid Mechanics 12–18	L. Real gas law (e.g., z factor)	
30	Rest	Rest		87	13. Basic Electrical Engineering 6–9	A. Electrical fundamentals (e.g., charge, current, voltage, resistance, power, energy)	
31	7. Engineering Economics 6–9	B. Cost analysis (e.g., incremental, average, sunk, estimating)		88	13. Basic Electrical Engineering 6–9	B. Current and voltage laws (e.g., Kirchhoff, Ohm)	
32	7. Engineering Economics 6–9	C. Economic analyses (e.g., break-even, benefit-cost, optimal economic life)		89	13. Basic Electrical Engineering 6–9	C. AC and DC circuits (e.g., real and imaginary components, complex numbers, power factor, reactance and impedance, series, parallel, capacitance and inductance, RLC circuits)	
33	7. Engineering Economics 6–9	D. Uncertainty (e.g., expected value and risk)		90	Rest	Rest	
34	7. Engineering Economics 6–9	E. Project selection (e.g., comparison of projects with unequal lives, lease/buy/make, depreciation, discounted cash flow, decision trees)		91	13. Basic Electrical Engineering 6–9	D. Measuring devices (e.g., voltmeter, ammeter, wattmeter)	
35	8. Statics 9–14	A. Vector analysis		92	13. Basic Electrical Engineering 6–9	E. Three-phase power (e.g., motor efficiency, balanced loads, power equation)	
36	Rest	Rest		93	14. Thermodynamics and Heat Transfer 9–14	A. Thermodynamic laws (e.g., first law, second law)	
37	8. Statics 9–14	B. Force systems (e.g., resultants, concurrent, distributed)		94	14. Thermodynamics and Heat Transfer 9–14	B. Thermodynamic equilibrium	
38	8. Statics 9–14	C. Force couple systems		95	14. Thermodynamics and Heat Transfer 9–14	C. Thermodynamic properties (e.g., entropy, enthalpy, heat capacity)	
39	8. Statics 9–14	D. Equilibrium of rigid bodies (e.g., support reactions)		96	Rest	Rest	
40	8. Statics 9–14	E. Internal forces in rigid bodies (e.g., trusses, frames, machines)		97	14. Thermodynamics and Heat Transfer 9–14	D. Thermodynamic processes (e.g., isothermal, adiabatic, reversible, irreversible)	

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41	8. Statics 9–14	F. Area properties (e.g., centroids, moments of inertia, radius of gyration, parallel axis theorem)		98	14. Thermodynamics and Heat Transfer 9–14	E. Heat transfer (e.g., conduction, convection, radiation)	
42	Rest	Rest		99	14. Thermodynamics and Heat Transfer 9–14	F. Mass and energy balances	
43	8. Statics 9–14	G. Static friction		100	14. Thermodynamics and Heat Transfer 9–14	G. Property and phase diagrams (e.g., T-s, P-h, P-v)	
44	8. Statics 9–14	H. Free-body diagrams		101	14. Thermodynamics and Heat Transfer 9–14	H. Combustion and combustion products (e.g., CO, CO2, NOX, ash, particulates)	
45	8. Statics 9–14	I. Weight and mass computations (e.g., slug, lbm, lbf, kg, N, ton, dyne, g, gc)		102	Rest	Rest	
46	9. Dynamics 9–14	A. Particle and rigid-body kinematics		103	14. Thermodynamics and Heat Transfer 9–14	I. Psychrometrics (e.g., relative humidity, wet bulb)	
47	9. Dynamics 9–14	B. Linear motion (e.g., force, mass, acceleration)		104	Rest	Rest	
48	Rest	Rest		105	Test,Review	Test,Review	
49	9. Dynamics 9–14	C. Angular motion (e.g., torque, inertia, acceleration)		106	Test,Review	Test,Review	
50	9. Dynamics 9–14	D. Mass moment of inertia		107	Test,Review	Test,Review	
51	9. Dynamics 9–14	E. Impulse and momentum (e.g., linear, angular)		108	Test,Review	Test,Review	
52	9. Dynamics 9–14	F. Work, energy, and power		109	Test,Review	Test,Review	
53	9. Dynamics 9–14	G. Dynamic friction		110	Rest	Rest	
54	Rest	Rest		111	Exam	Exam	
55	9. Dynamics 9–14	H. Vibrations (e.g., natural frequency)					
56	10. Strength of Materials 9–14	A. Stress types (e.g., normal, shear)					
57	10. Strength of Materials 9–14	B. Combined loading–principle of superposition