Subject	Topics	Percent	References
Classical Mechanics	Kinematics, Newton's laws, Work and energy, Momentum and collisions, Oscillatory motion, Rotational motion about a fixed axis, Central forces and celestial mechanics, Lagrangian and Hamiltonian formalism, Motion in a non-inertial reference frame.	22%	1, 2
Electricity and Magnetism	Electrostatics, Currents and DC circuits, Magnetic fields in free space, Lorentz force, Induction, Maxwell's equations and their applications, Electromagnetic waves, AC circuits, Magnetic and electric fields in matter	18%	1, 3
Optics and Wave Phenomena	Wave properties, Superposition, Interference, Diffraction, Geometrical optics, Polarization, Doppler effect	8%	1, 4, 5
Thermodynamics and Statistical Mechanics	The laws of thermodynamics, Thermodynamic processes, Equations of state, Ideal gases, Kinetic theory, Ensembles, Statistical concepts and calculation of thermodynamic quantities, Thermal expansion and heat transfer	10%	1, 6
Quantum Mechanics	Fundamental concepts, Solutions of the Schrödinger equation (Square well, Harmonic oscillator and hydrogen atom), Spin, Angular momentum, Wave function symmetry, Elementary perturbation theory.	12%	7, 8
Modern Physics	**Nuclear and Radiation Physics**: Nuclear properties, Radioactive decay, Interaction of radiation with matter, Radiation detection, Fission and fusion reactions **Solid-state Physics**: Crystal structure, X-ray diffraction, Thermal properties, Electron	٢٦٪	٩، ٧ ١٠، ٧

	theory of metals, Semiconductors. **Atomic Physics**: Properties of electrons, Bohr model, Energy quantization, Atomic structure, Atomic spectra, Electron rules, Black-body radiation, X-ray, Atoms in electric and magnetic fields. **Special Theory of Relativity**: Introductory concepts, Time dilation, Length contraction, Simultaneity, Energy and momentum, Lorentz transformation, Velocity addition.		١١ ،٧ ٨
Laboratory Methods	Data and error analysis, Dimensional analysis, Electronics, instrumentations.	6%	

٤. قائمة المراجع لاختيار القبول

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