End of Term 1 Exam Coverage	هيكل اختبار نهاية الفصل الدراسي الأول
Grade 12 Advanced - Physics	**الصف الثاني عشر - متقدم - الفيزياء**
Academic Year 2026-2027	العام الدراسي 2026-2027
Inspire	**انسباير**

Number of questions/ عدد الأسئلة		Marks Per Question درجة السؤال	Maximum grade الدرجة القصوى
[1⇢16]	Number Of MCQ (16) عدد الاسئلة الموضوعية	2 ,3, 4	100
[17⇢20]	Number of FRQs (4) عدد الاسئلة المقالية	8 ~11	

Exam duration مدة الاختبار	Mode of implementation طريقة التطبيق	Calculator الآلة الحاسبة
150 minutes 150دقيقة	Electronic & Paper إلكتروني وورقي	Allowed مسموح بها

PHYSICS
CENTRALIZED EXAMS
EOT 1 COVERAGE 2026-2027
APPROVED/معتمد
NOVEMBER .6.2026

⚠ Questions might appear in a different order in the actual exam ⚠ قد تظهر الأسئلة بترتيب مختلف في الاختبار الفعلي

Q. T	Q.Nº	Learning outcome	Reference	Page
Multiple Choice Question أسئلة اختيار من متعدد	1	• -Define potential energy and gravitational potential energy. • -Relate gravitational potential energy to mass and height (GPE = mgh). • -Show that work done by gravity is opposite to the change in gravitational potential energy. • -Discuss energy transformations when an object moves vertically upward or downward.	Student Textbook Example Problem 4 Check Your Progress Practice problems 31,32,33,34 Get it	14-18 19 22 20 25
	2	• -Define elastic potential energy and give examples. • -Interpret mass as rest energy ($E = mc^2$) and identify other forms of energy.	Student Textbook Check Your Progress 35	20-22 22
	3	• -Compare elastic and inelastic collisions. • -Explain the loss of kinetic energy in inelastic collisions. • -Use conservation principles to distinguish and analyze elastic and inelastic collisions.	Student Textbook Example Problem 6 Practice problems 44	29-31 31 32
	4	• -Describe thermal radiation and the emission spectrum of an object. • -Relate the frequency at which the emission spectrum peaks to the object's temperature. • -Describe where classical electromagnetic wave theory agrees with and fails to explain thermal-radiation data.	Student Textbook	46-48
	5	• -Explain Planck's concept of quantization of energy. • -Describe that emitted or absorbed radiation corresponds to a change in vibrational energy. • -Calculate quantized energy using E = nhf.	Student Textbook Practice Problems 1,2,3,4	48 52
	6	• -Define the photoelectric effect, photoelectrons, photons, and threshold frequency. • -Explain how the photoelectric effect occurs when light shines on a metal surface. • -Define the electron volt (eV).	Student Textbook Check Your Progress 16,17,20,21	49-51 58
	7	• -Calculate photon energy from wavelength or frequency. • -Explain that maximum photoelectron kinetic energy is independent of incident-light intensity, while photoelectric current is proportional to intensity.	Student Textbook Example Problems 1,2 Practice Problems	51-56 54,56,56
	8	• -Calculate photon energy, maximum kinetic energy of emitted electrons, and the work function in photoelectric-effect problems. • -Interpret the graph of maximum kinetic energy versus photon frequency and identify threshold frequency and Planck's constant.	Student Textbook Check Your Progress 20 Example problem 1 Practice problem 5-11	50,53 55 54 54
	9	• -Calculate the momentum of a photon. • -Explain the Compton effect and how it supports the particle theory of light. • -Describe that photon-particle collisions obey conservation of energy and momentum.	Student Textbook Check Your Progress 18,24	57,58 58
	10	• -Describe de Broglie's hypothesis of the wave nature of matter and its experimental verification by electron diffraction. • -Define and calculate the de Broglie wavelength of a moving particle.	Student Textbook Example Problem 3 Practice Problems 25-28 Check Your Progress 29,31	59 60 60 61
	11	• -State Heisenberg's uncertainty principle. • -Describe the limitation on simultaneously measuring a particle's position and momentum.	Student Textbook Check Your Progress 32	61 61
	12	• -Describe electron distribution according to Thomson's model and how Rutherford's alpha-particle scattering experiment led to the nuclear model. • -Explain why Rutherford's planetary model cannot explain atomic stability and observed line-emission spectra.	Student Textbook Check Your Progress 41	62-63 74
	13	• -Describe emission from gas-discharge sources and the use of a spectroscope. • -Distinguish continuous emission spectra from discrete line spectra. • -Explain how emission and absorption spectra act as unique fingerprints and can identify unknown samples.	Student Textbook Get it Check Your Progress 40,42,43, 44	64-66 65, 66 74
	14	• -Describe Bohr's model: stationary states, quantized energy levels, ground state, and excited states. • -Explain absorption or emission of a photon during transitions between energy levels and describe key limitations of the Bohr model.	Student Textbook Practice Problems 33, 35 Check Your Progress 45	67-69 72 74
	15	• Describe quantized orbital radii and total energies in the Hydrogen atom and their dependence on principal quantum number n. • -Explain the zero-energy reference and negative bound-state energy. • -Distinguish the Lyman, Balmer, and Paschen spectral series.	Student Textbook Get it Check Your Progress 46	69-71 70,71 74
	16	• Describe the quantum model using electron clouds, de Broglie wave-particle duality, and Heisenberg's uncertainty principle. • -Describe spontaneous and stimulated emission, coherent light, and the operation and applications of lasers.	Student Textbook Get it Check Your Progress 47-50	75-79 76-79 79
Free Response Questions أسئلة مقالية	17	• -Calculate translational and rotational kinetic energies and solve problems involving rotational kinetic energy. • -Calculate gravitational work and relate it to the change in gravitational potential energy. • -Apply conservation of mechanical energy to solve problems in physical situations.	Student Textbook Example Problem 4,5 Practice Problems 39-43 Check Your Progress 47, 50,51	23-25 19,27 28 32
	18	• -Analyze one-dimensional collisions to calculate momenta, velocities, kinetic energies, and other physical quantities before or after the collision. • -Use conservation principles to distinguish and analyze elastic and inelastic collisions.	Example Problem 6 Practice Problems 45, 46 Check Your Progress 49	31 32 32
	19	• -Calculate photon energy, maximum kinetic energy of emitted electrons, and the work function in photoelectric-effect problems. • -Interpret a graph of maximum kinetic energy versus incident-photon frequency to determine threshold frequency and Planck's constant.	Student Textbook Example Problem 2 Practice problems 12-15 Check Your Progress 20,21	55 56 56 58
	20	• -Calculate the change in an atom's energy during transitions between Bohr energy levels. • -Calculate the energy, frequency, and wavelength of emitted or absorbed photons. • -Calculate Hydrogen orbital radius and total energy for a given principal quantum number n.	Get it Example Problem 4 Example Problem 5 Practice Problems 37-39 Check Your Progress 42	74 72 73 73 74