Physics 2 for OCR	[Textbook by Gurinder Chadha and David Sang]	
	ISBN	978-0-521-73830-9

Unit 1	THE NEWTONIAN WORLD

		Page	
Chapter 1	MOMENTUM	1	
	Fun - and physics - on screen	1	
	The idea of momentum	1	
	Modelling collisions	2	
	Springy collisions	2	
	Sticky collisions	3	Q1
	Defining linear momentum	3	
	Worked example 1	4	Q2-3
	Understanding collisions	5	
	Two types of collision	5	
	A perfectly elastic collision	5	
	An inelastic collision	6	Q4
	Solving collision problems	7	
	Worked example 2	7	Q5-6
	Momentum in space	8	Q7-8
	Explosions and crash-landings	9	
	An explosion in the laboratory	10	
	Worked example 3	10	
	More fireworks	11	
	Down to Earth	11	Q9-11
	Summary	12	
	Questions 1 - 4	13	

		Page	
Chapter 2	MOMENTUM AND NEWTON'S LAWS	14	
	Isaac Newton's big ideas	14	
	Understanding motion	15	
	Newton's first law of motion	15	
	Newton's second law of motion	15	
	Worked example 1	15	
	Special case of Newton's second law	16	
	Worked example 2	16	Q1-3
	Newton's third law of motion	17	
	Impulse of a force	18	
	Worked example 3	19	
	Worked example 4	20	Q4-9
	Newton's laws and the conservation of momentum	21	Q10-11
	Summary	22	
	Questions 1 - 3	23	

Unit 1	THE NEWTONIAN WORLD

		Page	
Chapter 3	CIRCULAR MOTION	25	
	Describing circular motion	25	
	Around the clock	25	Q1
	Angles in radians	26	
	Defining the radian	26	
	Worked example 1	27	Q2
	Steady speed, changing velocity	27	Q3-4
	Centrpetal forces	28	Q5-6
	Vector diagrams	29	
	Acceleration at steady speed	29	Q7
	Thinking like Newton	30	
	Calculating force and acceleration	30	
	Newton's second law of motion	30	
	Calculating orbital speed	31	Q8-12
	The origins of centripetal forces	32	Q13-15
	Summary	34	
	Questions 1 - 3	34	

		Page	
Chapter 4	GRAVITATIONAL FIELDS	36	
	Ideas about gravity	36	
	Gravitational forces and fields	37	
	Newton's law of gravitation	38	Q1-2
	Gravitational field strength g	40	
	Worked example 1	41	Q3-9
	Orbitinig under gravity	42	
	Worked example 2	43	Q10
	The orbital period	43	
	Worked example 3	45	Q11
	Orbiting the Earth	45	Q12
	Elliptical orbits	46	
	Observing the Earth	46	
	Geostationary orbits	46	
	Parking in space	47	Q13
	Summary	48	
	Questions 1 - 4	49	

Unit 1	THE NEWTONIAN WORLD

		Page	
Chapter 5	OSCILLATIONS	52	
	Free and forced oscillations	52	
	Free or forced?	52	Q1
	Two or more forces	52	
	Observing oscillations	53	
	A mass-spring system	53	
	A long pendulum	53	
	A loudspeaker cone	53	Q2
	Describing oscillations	54	
	Amplitude, period and frequency	54	Q3
	Phase	55	Q4
	Worked example 1	56	
	Simple harmonic motion	56	
	The requirements for s.h.m.	57	Q5-6
	The changes in velocity in s.h.m.	57	
	Graphical representations of s.h.m.	57	
	Displacement x against time t graph	58	
	Velocity v against time t graph	59	
	Acceleration a against time t graph	59	Q7-10
	Frequency and angular frequency	60	Q11-13
	Equations of s.h.m.	61	
	Worked example 2	61	Q14-15
	Acceleration and displacement	62	
	Maximum speed of an oscillator	63	Q16-19
	Big ideas in physics	63	
	Energy changes in s.h.m.	64	
	Energy graphs	64	Q20-22
	Damped oscillations	65	
	Investigating damping / Energy and damping	66	Q23
	Resonance	67	
	Observing resonance	67	
	Defining resonance	68	
	Resonance and damping	68	
	Using resonance	69	Q24
	Summary	70	
	Questions 1 - 4	71	

		Page	
Chapter 6	THERMAL PHYSICS	74	
	Modelling the microscope	74	Q1
	The kinetic model	75	
	Atoms of a gas	75	
	Observing Brownian motion	75	Q2
	Fast molecules	76	
	Explaining pressure	77	
	Changes of state	78	
	Energy changes	78	
	Heating ice	79	
	Evaporation	81	Q3
	Internal energy	81	
	Molecular energy	82	
	Changing internal energy	82	
	The meaning of temperature	83	
	The thermodynamic (Kelvin) scale	83	Q4-5
	Calculating energy changes	85	
	Specific heat capacity	85	
	Worked example 1	85	Q6-8
	Ice, water, steam	86	
	Determining specific heat capacity c	86	
	Worked example 2	87	
	Sources of error	87	Q9-12
	Specific latent heat	88	
	Worked example 3	88	Q13
	Summary	89	
	Questions 1 - 3	89	

Unit 1	THE NEWTONIAN WORLD

		Page	
Chapter 7	IDEAL GASES	91	
	Measuring gases	91	Q1-3
	Boyle's law	92	
	Worked example 1	92	Q4
	Changing temperature (Charles' law)	93	
	Three variables, one equation	93	
	Worked example 2	94	Q5-8
	Real and ideal gases	95	
	Modelling gases	95	
	Ideal gas equation	96	
	Calculating the number n of moles	97	
	Worked example 3	97	
	Worked example 4	97	Q9-14
	Temperature and molecular kinetic energy	98	
	Temperature and molecular speeds	99	
	Mass, kinetic energy and temperature	100	Q15-20
	Summary	100	
	Questions 1 - 3	101	