BANGLADESH SCHOOL MUSCAT

ACADEMIC YEAR 2026-2027

GRADE: XII SCIENCE

SUBJECTS
PHYSICS
CHEMISTRY
MATHEMATICS
BIOLOGY
INFORMATION TECHNOLOGY(IT)

Grade: XII			Subject: Physics Unit 4
Name of the book	**Term 1**	**Term 2**	**Term 3**
PEARSON EDEXCEL INTERNATIONAL A LEVEL PHYSICS STUDENT BOOK 2 **BY** **MILES HUDSON**	**Topic 1 : Further Mechanics** • 1.Law of conservation of Momentum • 2. Types of collisions • 3. Circular motion • 5.Centripetal Force and acceleration **Topic 2: Electric and Magnetic Field** • Coulomb's law and Electric fields • Electric potential • Uniform Electric Field • Capacitors and Capacitance • Charging and Discharging capacitors • Magnetic files and electromagnets • Magnetic force • Electromagnetic Induction • Faraday's law and Lenz's law	**Topic 3: Particle Physics** • Particle accelerators • Atomic models • Fundamental particles • Standard model • Use of Units such as MeV, GeV and MeV/c^2 and atomic mass unit • Applying laws conversion for particle interactions	Revisions and Solving Past Papers Topic for revision classes 1. Further Mechanics 2. Electric and Magnetic field 3. Particle Physics
Types of Questions and Distribution of Marks	**MOCK Exam 1 Marks: 45** **Pattern IAL**	**Qualifying Exam Marks: 90** **Pattern IAL**	**MOCK Exam 2 Marks: 90** **Pattern IAL**

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Grade: XII			Subject: Physics Unit - 5
Name of the Book	**Term 1**	**Term 2**	**Term 3**
PEARSON EDEXCEL INTERNATIONAL 'A'LEVEL PHYSICS STUDENT BOOK 2 BY MILES HUDSON & ADVANCED PHYSICS FOR YOU	**Thermal Physics** • Specific Heat Capacity • Specific Latent Heat • Kinetic Theory of Gases **Nuclear Decay** • Background radiation • Types of nuclear radiation • Probability and Decay • Half-life, Half-life graphs **Nuclear fission and fusion** • Energy-mass equivalence • Binding energy per nucleon • Nuclear fusion, fission • Nuclear Reactors **Oscillations** • Simple Harmonic Motion, Angular Velocity • SHM Energy **Damped and Forced Oscillations** • Damped Oscillations • Resonance • Resonance problems and Damping solutions	**Astrophysics &Cosmology** **Gravitational fields** • Gravitational field strength • Electric & gravitational fields **Stellar properties** • The Stefan-Boltzmann Law • Wien's Law • Star Classes • Hertzsprung-Russell diagram • Stellar Evolution • Hubble's Law • Standard Candles • Doppler Red Shift	**REVISION** Thermal Energy Solving Question Papers **REVISION** Nuclear Decay Solving Question Papers **REVISION** Oscillations Solving Question Papers **REVISION** Astrophysics and Cosmology Solving Question Papers
Types of Questions and Distribution of Marks	**Mock Exam 1** **Marks Unit 5: 45** **Pattern: IAL**	**Qualifying Exam** **Marks Unit 5: 90** **Pattern: IAL**	**Mock Exam 2** **Marks Unit 5: 90** **Pattern: IAL**

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Grade: XII			**Subject: Physics Unit 6**
Name of the Book	**Term 1**	**Term 2**	**Term 3**
PEARSON EDEXCEL INTERNATIONAL 'A'LEVEL PHYSICS STUDENT BOOK 2 **BY MILES HUDSON&** **PEARSON EDEXCEL INTERNATIONAL 'A' LEVEL PHYSICS LAB BOOK**	**Prior Learning Review and Consolidation:** • Uncertainty, Error & % Uncertainty calculations • Using Micrometer Screw Gauge & Vernier Calliper **Core Practical 1:** • Investigate the relationship between the force exerted on an object and its change of momentum. **Core Practical 2:** • Investigate the relationship between pressure and volume of a gas at fixed temperature. **Core Practical 3:** • Determine the Time Period using a simple pendulum	**Core Practical 4:** • Determine the value of an unknown mass using the resonant frequencies of the oscillation of known masses.	**REVISION** Thermal Energy Solving Question Papers **REVISION** Nuclear Decay Solving Question Papers **REVISION** Oscillations Solving Question Papers **REVISION** Astrophysics and Cosmology Solving Question Papers
Types of Questions and Distribution of Marks	**Mock Exam 1** **Marks Unit 6: 25** **Pattern: IAL**	**Qualifying Exam** **Marks Unit 6: 50** **Pattern: IAL**	**Mock Exam 2** **Marks Unit 6: 50** **Pattern: IAL**

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Grade: XII			**Subject: Chemistry Unit-4**
Name of the book	**Term 1**	**Term 2**	**Term 3**
Pearson Edexcel International A Level Chemistry Student Book 2 **By** **Cliff Curtis, Jason Murgatroyd and David Scott.**	**Topic:1Kinetics** • The rate of reaction • Rate Constant • Order of Reaction • Rate equation **Topic 2: Entropy and Energetics** • Entropy • Lattice Energy **Topic 3: Chemical Equilibria** • Equilibrium Constant • Entropy to Equilibrium Constant **Topic 4: Acid-base Equilibria**	**Topic 4: Acid-base Equilibria** • Strong and weak Acids • Acid-Base Titration Topic 5: Carbonyls, Carboxylic Acids and Chirality • Chirality • Carbonyl compounds • Carboxylic acid • Carboxylic Acids and derivatives • Spectroscopy and chromatography	**Revision** Topic:1Kinetics Topic 2: Entropy and Energetics Topic 3: Chemical Equilibria Topic 4: Acid-base Equilibria Topic 5: Carbonyls, Carboxylic **Solving past papers from IAL**
Distribution of marks	**Mock 1 Exam** **Unit 4 : 45 marks** (Questions as per IAL pattern)	**Qualifying Exam** **Unit 4: 90 marks** (Questions as per IAL pattern)	**Mock 2 Exam** **Unit 4: 90 marks** (Questions as per IAL pattern)

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Grade: XII		**Subject: Chemistry Unit-5**	
Name of the book	**Term 1**	**Term 2**	**Term 3**
Pearson Edexcel International A Level Chemistry Student Book 2 **By** **Cliff Curtis, Jason Murgatroyd and David Scott.**	**Topic 1. Redox Equilibria**. ● oxidation and reduction ● standard electrode potential', E^{o} ● standard hydrogen electrode ● methods are used to measure standard electrode potentials **Topic 2. Transition metals and their chemistry** ● Principles of transition metal chemistry ● Transition metal reactions **Topic 3. Organic Chemistry:** ● Arenes	**Topic 3. Organic Chemistry:** ● Phenol **Topic 4. Organic nitrogen compounds:** ● Amines, Amides, Amino acids and proteins. ● Analysis of some inorganic and organic unknowns. **Topic 5. Organic synthesis** ● Organic structures.	**Revision** Topic 1. Redox Equilibria. Topic 2. Transition metals and their chemistry Topic 3. Organic Chemistry: Arenes Topic 4. Organic nitrogen compounds Topic 5. Organic synthesis **Solving past papers from IAL**
Distribution of marks	**Mock 1 Exam** **Unit 5 : 45 marks** (Questions as per IAL pattern)	**Qualifying Exam** **Unit 5: 90 marks** (Questions as per IAL pattern)	**Mock 2 Exam** **Unit 5: 90 marks** (Questions as per IAL pattern)

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Grade: XII		Subject: Chemistry Unit-6	
Name of the book	**Term 1**	**Term 2**	**Term 3**
Pearson Edexcel International A Level Chemistry Student Book 2 **By** **Cliff Curtis, Jason Murgatroyd and David Scott.**	**Practicals:** **1**.Following the rate of the iodine-propanone reaction by a titrimetric method and investigating a 'clock reaction' (Harcourt-Esson, iodine clock). **2**. Investigating some electrochemical cells. Carry out redox titrations with both: (i)iron(II) ions and potassium manganate(VII) (ii) sodium thiosulfate and iodine **3**.The preparation of a transition metal complex.	**Practicals:** **1**. Analysis of some inorganic and organic unknowns. (i) carry out some of the reactions of amines (ii) prepare an azo dye (iii) carry out reactions of amino acids (iv) prepare nylon-6.6 **2**. The preparation of aspirin. **3**. Analysis of some inorganic and organic unknowns	**Revision** **Solving Papers from the Question Bank**
Distribution of marks	**Mock 1 Exam** **Unit 6 : 25 marks** (Questions as per IAL pattern)	**Qualifying Exam** **Unit 6: 50 marks** (Questions as per IAL pattern)	**Mock-2 Exam** **Unit 6: 50 marks** (Questions as per IAL pattern)

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Grade: XII		**Subject: Pure Mathematics 3 – P3**	
Name of the book	**Term - 1**	**Term -2**	**Term -3**
Edexcel IAL **Pure mathematics 3** **ISBN-9781292244921**	Chapter 1: Algebraic methods Chapter 2: Functions and graphs Chapter 3: Trigonometric functions Chapter 4: Trigonometric addition formulae Chapter 5: Exponentials and logarithms Chapter 6: Differentiation Chapter 7: Integration Chapter 8: Numerical methods Practice from IAL QP.	➢ Revision: Chapter 1-8 ➢ IAL Past Question Papers	• Revision: Full P3 syllabus. • REVISION AND PRACTICE from EDEXCEL IAL QUESTION PAPERS
Types of questions and distribution of Marks	**Mock Exam - 1** **Marks - 50**	**Qualifying Exam.** **Marks- 75** **(As per IAL Scheme)**	**Mock Exam - 2** **Marks - 75** **(As per IAL Scheme)**

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Grade: XII		**Subject: Pure Mathematics 4– P4**	
Name of the book	**Term - 1**	**Term -2**	**Term -3**
Edexcel IAL **Pure mathematics 3** **ISBN-9781292245126**	Chapter 1: Proof Chapter 2: Partial fractions Chapter 3: Coordinate geometry in the (x, y) plane Chapter 4: Binomial expansion Chapter 5: Differentiation Practice from IAL QP.	Chapter 6: Integration Chapter 7: Vectors ➢ Revision: Chapter 1-8 ➢ IAL past question Papers	• Revision: Full P4 syllabus. • REVISION AND PRACTICE from EDEXCEL IAL QUESTION PAPERS
Types of questions and distribution of Marks	**Mock Exam - 1** **Marks - 50**	**Qualifying Exam.** **Marks- 75** **(As per IAL Scheme)**	**Mock Exam - 2** **Marks - 75** **(As per IAL Scheme)**

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Grade: XII			Subject: Mechanics 1 – M1
Name of the book	**Term - 1**	**Term -2**	**Term -3**
Edexcel IAL **Mechanics 1** **ISBN-9781292244679**	Chapter 1: Mathematical models in mechanics Chapter 2: Constant acceleration Chapter 3: Vectors in mechanics Chapter 4: Dynamics of a particle moving in a straight line Chapter 5: Forces and friction Chapter 6: Momentum and impulse Chapter 7: Statics of a particle Practice from IAL QP.	Chapter 8: Moments ➢ Revision: Chapter 1-8 ➢ IAL past question Papers	• Revision: Full M1 syllabus. • REVISION AND PRACTICE from EDEXCEL IAL QUESTION PAPERS
Types of questions and distribution of Marks	**Mock Exam - 1** **Marks - 50**	**Qualifying Exam.** **Marks- 75** **(As per IAL Scheme)**	**Mock Exam - 2** **Marks - 75** **(As per IAL Scheme)**

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Grade: XII			**Subject: Biology (Unit 4)**
Name of the books	**Term 1**	**Term 2**	**Term 3**
1. Pearson Edexcel International A Level Biology - Student Book 2 **2. Lab book** **3. IAL Biology Revision Guide** **4. IAL Biology Question Bank**	**Topic 5A**: Photosynthesis • The importance of ATP • Chloroplasts and chlorophyll • The biochemistry of photosynthesis **Topic 5B:** Ecology • Ecology and ecosystems • The effect of abiotic and biotic factors on populations • Niche • Statistics and ecology • **Topic 5C:** Environment and Climate • Transfer of energy between trophic levels • Productivity • Greenhouse gases • Global warming, climate change, and evidence • Climate change and evolution Topic-wise revision of IAL Question Papers, Assignments, and Presentation	**Topic 6A:** Microbiology • Bacteria and viruses • Microbial techniques • Measuring the growth of bacterial cultures • Case studies of TB and HIV/AIDS **Topic 6B:** Immunity • Non- specific and specific responses to infection • Developing immunity • Antibiotic resistance **Topic 6C:** Decomposition and Forensics • Microorganisms and decomposition • Forensic science and the time of death • The process of decay • Polymerase chain reaction • DNA profiling **Full specification of IAL Unit 4 for the Qualifying Examination** Topic-wise revision of IAL Question Papers, Assignments, and Presentation	**Full Specification of IAL Unit 4** Topic-wise revision of IAL Question Papers
Distribution of Marks	**Mock Test I: As per the IAL Scheme** **Unit 4: 50 marks**	**Qualifying Exam: As per the IALScheme** **Unit 4: 90 marks**	**Mock Test II: As per the IALScheme** **Unit 4: 90 marks**

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Grade: XII			**Subject: Biology (Unit 5)**
Name of the books	**Term 1**	**Term 2**	**Term 3**
1. **Pearson Edexcel International A Level Biology - Student Book 2** 2. **Lab book** 3. **IAL Biology Revision Guide** 4. **IAL Biology Question Bank**	**Topic 7A:** Cellular Respiration • Respiration in cells • Different stages of aerobic respiration • Anaerobic respiration • Respiration Quotient **Topic 7B:** Muscles, Movement, and the Heart • Different types of muscle tissue • Contraction of skeletal muscles • Cardiac muscle and control of heartbeat • Principles of Homeostasis • The response of the breathing system to exercise **Topic 7C:** Control of the Internal Environment • Homeostasis and hormones • Osmoregulation • Thermoregulation Topic-wise revision of IAL Question Papers, Assignments, and Presentation	**Topic 8A:** The Nervous System and Neurones • Structure and function of neurones • The effect of drugs on the nervous system • Sensory systems and the detection of light • Synapses and habituation **Topic 8B:** Coordination in Animals and Plants • The central and peripheral nervous system • The chemical balance of the brain • Chemical control systems in plants • Phytochromes **Topic 8C:** Gene Technology • Genetically Modified Organisms • Microarrays and Bioinformatics **Full specification of IAL Unit 5 for Qualifying Examination** Topic-wise revision of IAL Question Papers, Assignments, and Presentation	**Full Specification of IAL Unit 5** Topic-wise revision of IAL Question Papers
Distribution of Marks	**Mock Test I: As per the IALScheme** **Unit 5: 50 marks**	**Qualifying Exam: As per the IALScheme** **Unit 5: 90 marks**	**Mock Test II: As per the IALScheme** **Unit 5: 90 marks**

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Grade: XII			Subject: Biology (Unit 6)
Name of the books	**Term 1**	**Term 2**	**Term 3**
1. **Pearson Edexcel International A Level Biology - Student Book 2** 2. **Lab book** 3. **IAL Biology Revision Guide** 4. **IAL Biology Question Bank**	**Core Practical-10** • Investigate the effects of light intensity, light wavelength, temperature, and availability of carbon dioxide on the rate of photosynthesis using a suitable aquatic plant. **Core Practical -11** • Carry out a study of the ecology of a habitat, such as using quadrats and transects. **Core Practical -12** • Investigate the effects of temperature on the development of organisms. **Core Practical -13** • Investigate the growth rate of microorganisms in a liquid culture. **Statistical test:** • The Chi-squared test • Mathematical skills for biologists Topic-wise revision IAL Question Papers	**Core Practical-14** • Investigate the effect of different antibiotics on bacteria. **Core Practical-15** • Use an artificial hydrogen carrier (redox indicator) to investigate respiration in yeast. **Core Practical-16** • Use a simple respirometer to determine the rate of respiration and RQ of a suitable material (such as germinating seeds or small invertebrates). **Core Practical-17** • Investigate the effects of exercise on tidal volume, breathing rate, respiratory minute ventilation, and oxygen consumption using data from spirometer traces. **Statistical test:** • The Student's t-test • Correlation coefficient • Mathematical skills for biologists **Full specification of IAL Unit 6 for Qualifying Examination** Topic-wise revision IAL Question Papers	**Core Practical -18** • Investigate the production of amylase in germinating cereal grains. **Statistical test:** • The Chi-squared test • The Student's t-test • Correlation coefficient • Mathematical skills for biologists **Full Specification of IAL Unit 6** Topic-wise revision IAL Question Papers
Distribution of Marks	**Mock Test I: As per the IAL Scheme** **Unit 6: 25 marks**	**Qualifying Exam: As per the IALScheme** **Unit 6: 50 marks**	**Mock Test II: As per the IALScheme** **Unit 6: 50 marks**

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Grade: XII	SUBJECT: INFORMATION TECHNOLOGY(IT)UNIT 3		
Name of the book	**Term 1**	**Term 2**	**Term 3**
Pearson Edexcel International A Level Information Technology Student Book	**Topic 1: Manipulating data** Deals with data. How it is collected, stored and manipulated. Access to database software would be useful but students will need to be able to draw their diagrams. **Topic 2: Enabling technologies** Deals with the technologies which may be used when setting up or interacting with a system. Some of the technology, such as user interfaces, is likely to be familiar to students, but all of it is under constant development.	**Topic 3: Using IT systems in organisations** It is probable that many students will have some experience of IT systems, even if it is only a school network. Their experiences may form a useful starting point for some topics but it is important that they realise that many organisations, and their systems, are much larger and more complex than anything they may have experienced themselves. **Topic 4: Systems development** Deals with project management techniques. The Waterfall and Agile approaches are looked at in detail but the management tools included are suitable for most other project management methods as well.	**Topic 5: Emerging technologies** This topic covers several fast-developing areas of IT. Students are likely to have some experience of the technologies, particularly in the realms of personal entertainment and their own mobile devices. This experience may make a good starting point but it is essential that students look at bigger systems and new applications of the technology as well.
Types of Questions and Distribution of marks	**Mock Test 1** **Written exam(2 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment)**	**Qualifying Exam** **Written exam(2 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment)**	**Mock Test 2** **Written exam(2 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment)**

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Grade: XII	SUBJECT: INFORMATION TECHNOLOGY(IT)UNIT 4		
Name of the book	**Term 1**	**Term 2**	**Term 3**
Pearson Edexcel International A Level Information Technology Student Book	**1.Database applications** Understand why database software is used to hold and manipulate data. **User needs** Be able to analyse the needs of users in a range of contexts. **User experience** Understand how the characteristics of the user affect aspects of the database design **Topic 2: Relational database concepts** **Structuring data** Be able to construct and amend relational databases	**Topic 2: Relational database concepts (contd)** Be able to evaluate the appropriateness and effectiveness of a data structure in relation to the requirements of given scenario. Understand the need for and function of relational data structures. Understand the need to ensure that stored data is suitable for processing and the methods used to achieve it **Topic 3: Database solutions** **Using database software** Be able to update, insert, modify and delete data. Be able to create relational data structures to handle given data sets.	**Topic 3: Database solutions(contd)** Be able to import data from external sources, Be able to export data to external sources. Be able to create appropriate system outputs for a database solution that aid users effectively. Understand the need to test that solutions to a problem work as intended and are fit for purpose. Be able to evaluate the effectiveness and appropriateness of a completed solution and identify whether the solution is fit for purpose. • **Revision** Practice the previous years papers.
Types of Questions and Distribution of marks	**Mock Test 1** **Practical exam(3 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment**	**Qualifying Exam** **Practical exam(3 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment**	**Mock Test 2** **Practical exam(3 Hrs):80 Marks** **[IAL pattern]** **(Internal Assessment**

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