Higher	Plan						
	Mon 4	Mon 5	Tue 6	Wed 1	Thu 6	Fri 5	Overall
7/1	Finish prac- tice assign- ment 2 Feedback on assignment marked so far	Finish prac- tice assign- ment 2	Revision Area 1	Finish prac- tice assign- ment 1 Task 2	Revision Area 2	Finish practice assign- ment 1 Task 3	77 (64 hours)
14/1	Assignment preparation Systems dia- grams how to	Assignment preparation Systems diagrams consolida- tion	Revision Area 3	Revision Area 3	Revision Area 4	Practice Assignment task Systems diagram moving bridge	71
21/1	Assignment preparation Pneumatics	Assignment preparation Consolida- tion Pneu- matics	Revision Area 5	Practice Assignment task Pneumatics car assem- bly	Revision Area 6	Practice Assignment task Pneumatics car assembly	65
28/1	Assignment preparation Electronics	Assignment preparation Consolida- tion Electronics	Revision Area 7	Practice Assignment task Design Electronics - op-amp motor for moving bridge	Revision Area 8	Practice Assignment task Simulate Electronics - op-amp mo- tor for moving bridge	59
4/2	Assignment preparation Structures	Assignment preparation Consolida- tion Structures	Revision Area 9	Practice Assignment task Bridge De- sign and nodal anal- ysis	Revision Area 10	Practice Assignment task Bridge simulate	53
11/2	Revision Area 11	Revision any topics that need additional time	Revision any topics that need additional time	Engineering prelim 1:10 to 3.30pm Revision based on pupil choice	Final prepa- ration for assignment task		47
18/2							42
25/2	Final Assign- ment 1	Final As- signment 2	Final As- signment 3	Final As- signment 4	Final As- signment 5	Final Assignment 6	39
4/3	Final Assign- ment 7	Final As- signment 8	Final As- signment 9	Final As- signment 10	Revision targeted based on prelim 1	Revision targeted based on prelim 1	33
11/3	Check assign- ments are labelled cor- rectly for SQA Revision tar- geted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Assignments to the office to be sent to SQA Revision targeted based on prelim 1	27
18/3	Revision tar- geted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	Revision targeted based on prelim 1	21
25/3	Second Pre- lim	Revision general	Revision general	Revision general	Revision general	Revision general	15
15/4	Targeted re- vision based on prelim 2	Targeted revision based on prelim 2	Targeted revision based on prelim 2	Targeted revision based on prelim 2	Targeted revision based on prelim 2		9
22/4	Make person- al Study plan for Exam leave	Pupil iden- tified revi- sion	Pupil iden- tified revi- sion	Pupil iden- tified revi- sion	Exam Leave starts today		4
						Final Exam Friday 17th May 1 to 3.30	

1	The Sys- tems ap- proach	" complex system, sub-system and control diagrams " role of negative feedback in a system " closed-loop, two-state and proportional feedback " using error detection in a closed-loop system
2	Energy and efficiency	" calculations related to energy audits: — inputs — outputs — energy losses — efficiency " applied calculations involving efficiency, work done and power, using: Ew = Fd P = E/t Ek = $\frac{1}{2}$ mv2 Ep = mgh Ee = VIt Eh = cm Δ T Efficiency η = Eout/Ein = Pout/Pin
3	Calcula- tions	" manipulating and combining given formulae to obtain answers " solving structural problems using trigonometric functions and substitution in simultaneous equations
		Relevant formulae are provided in the Engineering Science Data Booklet for Higher.
4	Engineer- ing roles and disci- plines	" role of the professional engineer within a project, including communication and team working " skills and specialist knowledge required within projects
5	Impacts of engineer- ing	" examples of social and economic impacts (positive and negative) of engineering " examples of environmental impacts (positive and negative) of engineering " sustaina- bility of engineering solutions " emerging technologies and their impact
6	Analogue electronic control systems	" variable resistors, light and temperature sensors in voltage dividers " using input transducer characteristics, relevant to the above bullet, to design voltage dividers to meet a specification " function and purpose of BJTs " designing a BJT circuit as a cur- rent amplifier " calculating the current gain (hFE) of an npn transistor " function and purpose of MOSFETs " designing a MOSFET (n-channel enhancement mode) circuit as a voltage-operated switch " comparing BJT and MOSFET transistors in a given applica- tion " function of op-amp configurations: — inverting — non-inverting — comparator — difference amplifier — summing amplifier — voltage followers " calculating relation- ship between input and output voltages for different op-amp configurations
7	Digital electronic control systems	^{••} Digital electronic control: - logic functions: AND, OR, NOT, NAND, NOR, EOR and combinations with up to four inputs - conversion to NAND equivalent - developing Boolean expressions from truth tables, logic diagrams or circuit specifications - constructing truth tables and logic diagrams from written specifications ^{••} Programmable control: - controlling a motor using pulse-width modulation - control routines with up to four inputs and four outputs, processing analogue inputs - using infinite and finite loops and time delays - using logic and arithmetic operations to make decisions - using high-level programs to monitor inputs and initiate digital outputs - using high-level programs to make decisions using arithmetic and logic functions
8	Drive sys- tems	[¨] diagrams of drive systems [¨] selecting and calculating appropriate drive systems: – simple and compound gear trains – belt drives and chain drives – rack and pinion – worm and wheel – worm and nut [¨] purpose of couplings (rigid and flexible), radial and thrust bearings (plain, ball, roller, journal) [¨] purpose of friction in brakes and clutches [¨] calculating torque: T = Fr [¨] calculating power in a drive system: P = 2 π nT
9	Pneumat- ics	sequential control circuits, with up to three cylinders $$ electro-pneumatic control circuits
10	Structures and forces	"equilibrium of concurrent and non-concurrent forces in 2D " resolving triangle/ polygon of forces, resultant/equilibrant " calculating reaction forces in simply- supported beams or structures: — where loads are not exclusively horizontal or vertical — with hinge and roller supports — with uniformly distributed loads (partial or full length) " using nodal analysis to calculate the size and nature of forces in frames " di- agrams of structures
11	Materials	" stress/strain (load/extension) graphs " properties of materials: $-$ brittleness $-$ elasticity $-$ ductility $-$ plasticity $-$ strength $-$ malleability " using strain gauges " calculating Young's Modulus of elasticity " calculating factor of safety " calculating elastic strain energy: Es = $\frac{1}{2}$ Fx