Please note, for the purpose of the FOS exam, both these fields are considered within one area. There will be 3 questions from Telecommunication, Signal and Image Processing and 3 from Fundamental Artificial Intelligence and Machine Learning. You can attempt at most 3 questions of those 6 and will need to attempt at least 1 question in at least 1 more area.


Circuits and Electronics (Dr. Murari)


RF Circuits and Applied Electromagnetics (Dr. Helaoui)


Microwave amplifiers. Chapters 2-4 from Microwave Transistor Amplifiers: Analysis and Design (2nd Ed.), G. Gonzalez, Prentice Hall.

RF and Microwave Circuits. Chapters 1-7, 10, 12 from Microwave Engineering (4th Ed), David M.Pozar, Wiley.

Software Engineering (Dr. Ioannou)


Data structures and algorithms. Chapters 2-5, 7, 9, 10 from Data Structures and Algorithm Analysis in Java, M.A. Weiss. Pearson.

Object-oriented design and design patterns. Chapters 1, 2, 4-6, 8-11 from Object oriented software engineering, practical development using UML and Java, T. Lethbridge, and R. Laganiere, McGraw-Hill.

Biomedical Engineering (Dr. Murari)


Power and Control Systems (Dr. Zareipour – Power Systems and Dr. Carriere – Control Systems)

Please note, for the purpose of the FOS exam, both these fields are considered within one area. There will be 3 questions from Power Systems and 3 from Control Systems. You can attempt at most 3 questions of those 6 and will need to attempt at least 1 question in at least 1 more area.


Control Systems. Chapters 2, 3, 4, 5, 6, 8 and 13 from Modern Control Systems (13th Ed.), R.C. Dorf, and R.H. Bishop, Pearson.

Computer Engineering (Dr. Murari)

Review of computer architecture, microcontrollers and their instruction sets; Interfacing using common input/output devices – e.g. SPI, GPIO; Strategies for interrupt handling and exception handling; Interfacing combining code using functions implemented in high level and assembly languages; Real time operating systems; Software and hardware optimizations to achieve real time operations; Processor characteristics needed to match the requirements for typical DSP applications; Hardware and software optimization techniques including multiple busses; Super-scalar and other highly parallel instruction sets, critical timing paths; Optimizing compilers and multi-processor operation. Digital Design and Computer Architecture (2nd Ed.), by D. Harris, and S.L. Harris, Morgan Kaufmann Publishers.