B IV - 01
2018-19

Dr G.R.DAMODARAN COLLEGE OF SCIENCE(AUTONOMOUS),COIMBATORE - 14

DEPARTMENT OF COMPUTER SCIENCE

Scheme of Examination (under CBCS) - B.Sc (Computer Science)

For the candidates admitted from the Academic Year 2018 - 2019

Sem	Part	Course	Course Title	Credits	Marks			Hrs/ week	Exam Duration
					CAM	TEE	Total		
V	III	Core	Cyber Security	4	25	75	100	4	Theory TEE : 3Hrs, Practicals TEE :3Hrs
	III	Core	Java Programming	4	25	75	100	5	
	III	Core	Operating Systems	4	25	75	100	4	
	III	Core	Software Engineering	4	25	75	100	5	
	III	Elective	Elective - I	4	25	75	100	5	
	III	Core	Java Programming Lab	3	40	60	100	5	
	IV	Skilled Based Subject	Aptitude*	2	25	75	100	2	
VI	III	Core	Computer Networks	4	25	75	100	3	
	III	Core	Web Technology	4	25	75	100	4	
	III	Core	Web Technology Lab	3	40	60	100	5	
	III	Core	Project and Viva Voce	7	25	75	100	12	
	III	Elective	Elective - II	4	25	75	100	4	
	IV	Skilled Based Subject	Soft Skills *	2	25	75	100	2	
			Total	**49**	**1195**	**3105**	**1300**	**60**	

NA : Not Applicable,Basic / Advanced Tamil - CA only

* Both CAM and TEE marks will be evaluated internally.

Elective List- I

1 Augmented Reality
2 Big Data Analytics
3 Open Source Software
4 Computer Graphics and Multimedia
5 Embedded Systems and its Applications
6 Software Testing
7 Air and Sea Navigation
8 Scripting Languages
9 Quantum Computing

Elective List- II

1 Mobile Programming
2 Cloud Computing
3 Introduction to Internet of Things
4 Software Quality and Assurance
5 Enterprise Resource Planning
6 Intellectual Property Rights
7 SOA and Web Services
8 Network and Information Security

BIV - 02

Dr G R DAMODARAN COLLEGE OF SCIENCE (Autonomous), COIMBATORE 2018 - 19
Department of Computer Science
B Sc (Computer Science)
Effective from the academic year: 2018 – 2019
FIFTH SEMESTER

ELECTIVE I: QUANTUM COMPUTING

Objective of the subject: The objective of this course is to provide an introduction to quantum computation. Mathematical models of quantum computation, their relationships to each other, and to physical systems. Prerequisite knowledge on Discrete Structures, Computer Architecture and Linear Algebra is needed.

UNIT I: FUNDAMENTALS OF QUANTUMNESS (10 hrs)

Evolution of Quantum Computing-Global perspectives – History – Future directions – Quantum bits – Multiple Qubits– Quantum Computation – Single Qubit Gates – Multiple Qubit Gates – Measurements in Bases other than Computational Basis - Quantum Circuits – Qubit Copying Circuits – Examples: Bell states, quantum teleportation – Cost effectiveness compared to Digital Electronics – longevity of the technology.

UNIT II: COMPUTATIONAL SCIENCES (10 hrs)

Models for Computation – Turing Machine – Analysis of Computational Problems – Quantifying Computational Resources – Computational Complexity - Perspectives of Computer Science – level of perfection compared to Digital Electronics – Rapidity – Storage Capacity – life of the data – security of the data - features

UNIT III: QUANTUM COMPUTATION (10 hrs)

Quantum Algorithms - Single Qubit Operations - Controlled Operations –Measurements - Universal Quantum Gates - Two Level Unitary Gates - Single Qubit and CNOT Gate – proneness to hacking

UNIT IV: QUANTUM ALGORITHMS (10 hrs)

Probabilistic versus Quantum Algorithms – Phase Kick-Back – The Deutsch Algorithm – The Deutsch-Jozsa Algorithm – Simon's Algorithm.

UNIT V: CASE STUDY (10 hrs)

Quantum Qubit Simulator- CAD for Quantum Computer Simulator –QUACK (Quantum Computer Simulator for MATLAB) -Open Source Tool for Quantum Computing

REFERENCEBOOKS:

1. Michael A. Nielsen and Issac L. Chuang, Quantum Computation and Quantum Information, Cambridge University Press, 2012
2. P. Kaye, R. Laflamme, and M. Mosca, An introduction to Quantum Computing, Oxford University Press, 2007.
3. V. Sahni, Quantum Computing, Tata McGraw-Hill Publishing Company, 2007.
4. Eleanor Rieffel and Wolf Gang Polak, Quantum Computing: A Gentle Introduction, MIT Press, 2011.
5.Mermin N.D, Quantum Computer Science: An Introduction, Cambridge University Press 2007

G. Radhamani