



SRI BHARATHI

ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
Kaikkurichi, Pudukkottai -622 303

www.sbec.edu.in

NAAC DOCUMENTS



Quality Indicator Frame Work

Criterion – 1

CURRICULAR ASPECTS

Submitted by

IQAC

Internal Quality Assurance Cell

Sri Bharathi Engineering College for Women



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Criterion 1	Curricular Aspects	100
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1.1 Curricular Planning and Implementation(20)

1.1.1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment

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(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
DEPARTMENT OF INFORMATION TECHNOLOGY

PREFACE OF THE COURSE FILE

Batch : 2017-2021

Academic Year : 2020-2021 / ODD

Program : INFORMATION TECHNOLOGY

Year & Semester : 4th Year / 7th Semester

Course Code : CS8792 NBA Course Code: C402

Name of the Course : Cryptography and Network Security

Faculty in-charge : G.SUGAPRIYA,AP/CSE


Signature of the Faculty In-charge


HoD / IT


Dr. **S.THILAGAVATHI M.E., Ph.D.**,
PRINCIPAL
SRI BHARATHI ENGINEERING
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Kaikkurichi - 622 303, Pudukkottai Dt.

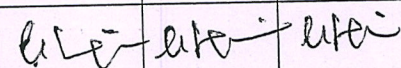

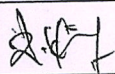
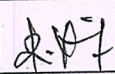


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DEPARTMENT OF INFORMATION TECHNOLOGY

REVIEW OF COURSE FILE

(To be pasted on the inner side of the file-backside).(#-State Yes/No.)

S.N	Details Date:	R-I-*	R-II-*&	R-III-*&	R-IV-*&\$	R-V-*&\$@
1.	Preface of the course file	Yes				
2.	Vision, Mission, PEOs, POs, PSOs, Blooms taxonomy	Yes				
3.	Subject handlers of yesteryears					
4.	Timetable/Workload of the staff – Distribution of teaching load – Roles and Responsibilities	Yes				
5.	Syllabus signed by staff & HoD	Yes				
6.	Lecture Schedule signed by staff & HoD	Yes				
7.	Course Committee meeting circular and minutes	Yes				
8.	Identification of Curricular gap and Content Beyond the syllabus	Yes				
9.	Self-study topics	Yes				
10.	Previous AU Question papers	Yes				
11.	Unit wise Q&A and Objective type questions	Yes				
12.	Unit wise course material	Yes				
13.	Assignment question paper with sample answer sheets and mark entry		Yes			
14.	Tutorial question paper with key and mark entry		Yes			
15.	Class test/IA test Q Paper with Key, sample answer papers and mark entry		Yes			
16.	IA Test- result analysis-CAP-evidence-root cause analysis.		Yes			
17.	Retest –Q paper-Attendance-marks		Yes			
18.	AU Web portal entry sheet		Yes			
19.	Very poor performance in first two tests-action taken.-communication to parents-evidence					
20.	Absence for two tests-action taken-communication to parents-evidence.					
21.	Indiscipline of student reported, if any					
22.	Special class/coaching class/remedial class/attendance-CAP					
23.	Conduct of Seminar, Quizzes - proof					
24.	Content beyond the syllabus - proof			Yes		
25.	Student feedback on faculty			Yes		
26.	Course end survey					
27.	Internal Assessment sheet			Yes		
28.	AU question paper with students feedback					
29.	Discrepancy of the question paper and correspondence, if any					
30.	AU result analysis-Details of arrear students.					
31.	AU grade sheet					Yes
32.	CO – PO & PSO attainment sheet					Yes
	Signature of Course handling faculty					
	Signature of HoD/IT					

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PRINCIPAL

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SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
KAIKKURICHI, PUDUKKOTTAI - 622 303

ACADEMIC YEAR (2020-21) ODD SEMESTER

DEPARTMENT OF CSE & IT


INDIVIDUAL STAFF WORKLOAD

S. NO	STAFF NAME	SUBJECT CODE & NAME	YEAR & DEPT	NO OF HOURS	TOTAL HOURS
1.	Ms.P.Subha	CS8792- Cloud Computing	IV CSE & IT	05	13
		EC8552- Computer Architecture and Organization	III ECE	05	
		CS8711-Cloud Computing Laboratory	IV CSE & IT	03	
2.	Ms.G.Bhuvaneswari	MG8591-Principles of Management	IV CSE	05	13
		GE8151- Problem Solving and Python Programming	I YEAR	05	
		GE8161-Problem Solving and Python Programming Laboratory	I YEAR	03	
3.	Ms.S.Jayapraha	CS8079-Human Computer Interaction	IV CSE &IT	05	13
		CS8501- Theory of Computation	III CSE	05	
		CS8383- Object Oriented Programming Laboratory	II CSE	03	
4.	Ms.G.Sugapriya	CS8791- Cryptography and Network Security	IV CSE &IT	05	13
		CS8391-Data Structures	II CSE	05	
		CS8381- Data Structures Laboratory	II CSE	03	


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PRINCIPAL

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S. NO	STAFF NAME	SUBJECT CODE & NAME	YEAR & DEPT	NO OF HOURS	TOTAL HOURS
5.	Ms.G.Sasikala	CS8392-Object Oriented Programming	II CSE	05	13
		CS8392-Object Oriented Programming	III EEE	05	
		CS8383- Object Oriented Programming Laboratory	III EEE	03	
6.	Ms.K.Priyanka	OCS752-Introduction to C programming	IV EEE	05	13
		GE8151- Problem Solving and Python Programming	I YEAR	05	
		GE8161-Problem Solving and Python Programming Laboratory	I YEAR	03	
7	Mr.R.Vijay	IT8075-Software Project Management	IV CSE & IT	05	13
		CS8592- Object Oriented Analysis and Design	III CSE	05	
		IT8761- Security Laboratory	IV CSE & IT	03	
8	Mrs.A.Nushrath Fathima	CS8591- Computer Networks	III CSE	05	13
		EC8702-Ad hoc and Wireless Sensor Networks	IV ECE	05	
		CS8581- Networks Laboratory	III CSE	03	
9	Ms.K.Priya	EC8393-Fundamentals of Data Structures In C	II ECE	05	08
		EC8381- Fundamentals of Data Structures in C Laboratory	II ECE	03	
10	Mrs.V.Yogam	EC8551- Communication Networks	III ECE	05	11
		EC8563- Communication Networks Laboratory	III ECE	03	
		CS8582- Object Oriented Analysis and Design Laboratory	III CSE	03	


HOD / CSE

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Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE PLAN

Subject code : CS8792	Branch/Year/Sem/Section: B.Tech
Subject Name: CRYPTOGRAPHY AND NETWORK SECURITY	IT/IV/VII
Staff Name : G.SUGAPRIYA,AP/CSE	Batch : 2017-2021
	Academic year : 2020-2021

COURSE OBJECTIVES

- To understand Cryptography Theories, Algorithms and Systems.
- To understand necessary Approaches and Techniques to build protection mechanisms in order to secure computer networks.

TEXTBOOKS:

T1. William Stallings, Cryptography and Network Security: Principles and Practice, PHI 3rd Edition, 2006.

REFERENCES:

- R1.** C K Shyamala, N Harini and Dr. T R Padmanabhan: Cryptography and Network Security, Wiley India Pvt.Ltd
- R2.** Behrouz A. Foruzan, Cryptography and Network Security, Tata McGraw Hill 2007.
- R3.** Charlie Kaufman, Radia Perlman, and Mike Speciner, Network Security: PRIVATE

WEB SOURCES:

- W1.** <https://cns.edu>
- W2.** <https://justcryptography.com> › [rsa-algorithm](#)
- W3.** <https://www.softwaretestinghelp.com> › [aes-encryption-algorithm](#)
- W4.** www.educba.com/des-algorithm/

TEACHING METHODOLOGIES:

- BB - BLACK BOARD
- PPT - POWER POINT PRESENTATION

Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
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CS8792

CRYPTOGRAPHY AND NETWORK SECURITY

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Security trends - Legal, Ethical and Professional Aspects of Security, Need for Security at Multiple levels, Security Policies - Model of network security – Security attacks, services and mechanisms – OSI security architecture – Classical encryption techniques: substitution techniques, transposition techniques, steganography- Foundations of modern cryptography: perfect security – information theory – product cryptosystem – cryptanalysis.

UNIT II SYMMETRIC KEY CRYPTOGRAPHY

9

Mathematics Of Symmetric Key Cryptography: Algebraic structures - Modular arithmetic-Euclid's algorithm- Congruence and matrices - Groups, Rings, Fields- Finite fields- Symmetric Key Ciphers: SDES – Block cipher Principles of DES – Strength of DES – Differential and linear cryptanalysis - Block cipher design principles – Block cipher mode of operation – Evaluation criteria for AES – Advanced Encryption Standard - RC4 – Key distribution.

UNIT III PUBLIC KEY CRYPTOGRAPHY

9

MATHEMATICS OF ASYMMETRIC KEY CRYPTOGRAPHY: Primes – Primality Testing – Factorization – Euler's totient function, Fermat's and Euler's Theorem - Chinese Remainder Theorem – Exponentiation and logarithm - **ASYMMETRIC KEY CIPHERS:** RSA cryptosystem – Key distribution – Key management – Diffie Hellman key exchange - ElGamal cryptosystem – Elliptic curve arithmetic-Elliptic curve cryptography.

UNIT IV MESSAGE AUTHENTICATION AND INTEGRITY

9

Authentication requirement – Authentication function – MAC – Hash function – Security of hash function and MAC – SHA – Digital signature and authentication protocols – DSS- Entity Authentication: Biometrics, Passwords, Challenge Response protocols- Authentication applications - Kerberos, X.509

UNIT V SECURITY PRACTICE AND SYSTEM SECURITY

9

Electronic Mail security – PGP, S/MIME – IP security – Web Security - **SYSTEM SECURITY:** Intruders – Malicious software – viruses – Firewalls.

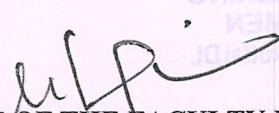
TOTAL:45PERIODS


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SIGNATURE OF THE FACULTY IN-CHARGE


HOD/IT



Page 2 of 6

4.	Principles of cryptosystem -RSA cryptosystem	T1	259 - 277	BB	1	22
5.	Key distribution	T1	211- 219	BB	1	23
6.	Key management	T1	286-292	BB	1	24
7.	Diffie Hellman key exchange	T1	293- 296	BB	1	25
8.	ElGamal cryptosystem	R2	286-289	BB	1	26
9.	Elliptic curve arithmetic- Elliptic curve cryptography.	T1	297- 307	BB	1	27
10.	Authentication schemes to simulate Network security tool using Firewalls.	W1	-	BB	1	28

LEARNING OUTCOME:

At the end of unit , the students will be able to

- Understand the how to identify Prime numbers,
- About RSA Encryption
- In detail about key distribution, management & exchange, ECC

UNIT – IV MESSAGE AUTHENTICATION AND INTEGRITY (9)

1.	Authentication requirement – Authentication function	T1	312- 323	BB	1	29
2.	MAC	T1	324-326	BB & VIDEO	1	30
3.	Hash function	T1	328-334	BB/PPT	1	31
4.	Security of hash function and MAC	T1	335 -337	BB	1	32
5.	SHA	T1	357-364	BB	1	33
6.	Digital signature and authentication protocols	R2	357-362	BB/PPT	1	34
7.	DSS	R2	363-374	BB	1	35
8.	EntityAuthentication: Biometrics, Passwords, Challenge Response protocols	R2	381-398	BB	1	36
9.	Authentication applications - Kerberos, X.509	R2	407-409	BB	1	37

LEARNING OUTCOME:

At the end of unit , the students will be able to

- Understand the Authentication, MAC, Hash.
- About DSS, Entity Authentication.

Unit – V SECURITY PRACTICE AND SYSTEM SECURITY (9)

1.	Electronic Mail security	R2	429-431	BB	1	38
2.	PGP, S/MIME	R2	432-459	BB	2	40
3.	IP security	R2	500-531	BB	1	41
4.	Web security	T1	527 - 559	BB	2	43
5.	Intruders	T1	566 - 580	BB	1	44

1.	Security trends	T1	39-49	BB	1	1
2.	Legal, Ethical and Professional Aspects of Security, Need for Security at Multiple levels, Security Policies	T1	33-39	BB	1	2
3.	Model of network security, Security attacks, services and mechanisms	T1	55-77	BB	1	3
4.	OSI security architecture	T1	77-83	BB	2	5
5.	Classical encryption techniques: substitution techniques, transposition techniques, steganography	T1	140-146	BB/PPT	1	6
6.	Foundations of modern cryptography: perfect security	T1	132-140	BB/PPT	1	7
7.	Information theory	T1	146-153	BB	1	8
8.	Product cryptosystem, Cryptanalysis.	T1	272-278	BB	1	9

LEARNING OUTCOME:

At the end of unit , the students will be able to

- Basics of the information security.
- Concept of Information theory.
- Necessary of cryptanalysis.

UNIT II SYMMETRIC KEY CRYPTOGRAPHY

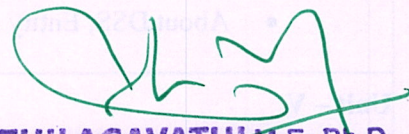
(9)

1.	Finite fields and number theory: Groups, Ring, Fields, Finite Fields	T1	140-146	BB	1	10
2.	Modular arithmetic – Euclids algorithm	T1	132-140	BB	1	11
3.	Congruence and matrices	T1	141-147	BB& VIDEO	1	12
4.	SDES	T1	92-120	BB/PPT	1	13
5.	Block cipher Differential and linear cryptanalysis - Block cipher design principles – Block cipher mode of operation	T1	222-238	BB/PPT	1.5	14.5
6.	Advanced Encryption Standard	T1	171-202	BB/PPT	1.5	16
7.	Triple DES	T1	217-226	BB/PPT	1	17
8.	RC4 , Key distribution	R2	401-414	BB	1	18

LEARNING OUTCOME:

At the end of unit , the students will be able to

- Concept of Number theory
- Fundamental ideas of symmetric key cryptography
- Distribution of keys


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UNIT – III PUBLIC KEY CRYPTOGRAPHY

1.	Primes – Primality Testing – Factorization	T1	236 – 238 & 243-244	BB	1	19
2.	Euler’s totient function, Fermat’s and Euler’s Theorem	T1	239 - 242	BB	1	20
3.	Chinese Remainder Theorem – Exponentiation and logarithm	T1	245 -251	BB	1	21

Unit – V							SECURITY PRACTICE AND SYSTEM SECURITY		(9)
1.	Electronic Mail security	R2	429-431	BB	1	38			
2.	PGP, S/MIME	R2	432-459	BB	2	40			
3.	IP security	R2	500-531	BB	1	41			
4.	Web security	T1	527 - 559	BB	2	43			
5.	Intruders	T1	566 - 580	BB	1	44			
6.	Viruses	T1	598 – 612	BB	1	45			
7.	Firewalls	T1	616 - 632	BB	1	46			
LEARNING OUTCOME:									
At the end of unit , the students will be able to									
<ul style="list-style-type: none"> • Understand the security about e-mail, PGP, IP, Web • About Intruders, Viruses, Firewalls 									

COURSE OUTCOMES:

At the end of the course, the student should be able to:

C402.1: Understand the fundamentals of networks security, security architecture, threats and vulnerabilities.

C402.2: Apply the different cryptographic operations of symmetric cryptographic algorithms.

C402.3: Apply the different cryptographic operations of public key cryptography.

C402.4: Gain Knowledge about the Asymmetric Key Ciphers.

C402.5: Apply the various Authentication schemes to simulate different applications.

C402.6: Understand various Security practices and System security standards.

Dr. S. THILAGAVATHI M.E., Ph.D.,
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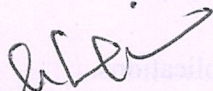
INTERNAL ASSESSMENT DETAILS

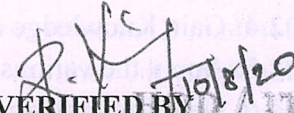
ASSESSMENT NUMBER	I	II	III
UNIT NO	1,2	3,4	5

ASSIGNMENT DETAILS

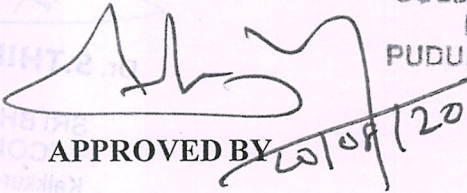
ASSIGNMENT NUMBER	I	II
Date of Submission	30.08.2021	29.09.2021

ASSIGNMENT NUMBER	DESCRIPTIVE QUESTIONS/TOPIC (Minimum of 8 Pages)
I	1. Substitution Techniques. 2. Block diagram for DES, Block Cipher Mode of Operation
II	1. RSA cryptosystem and its problems 2. Diffie Hellman key exchange and its problems


PREPARED BY
G.SUGAPRIYA AP/CSE


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KAIKKURICHI
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Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
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PUDUKKOTTAI DISTRICT



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Kaikkurichi, Pudukkottai.

DEPARTMENT OF INFORMATION TECHNOLOGY

Identification of Curricular Gap & Content Beyond Syllabus(CBS)

Name of the Faculty :G.SUGAPRIYA,AP/CSE

Course Code & Name: CS8792 CRYPTOGRAPHY AND NETWORK SECURITY

Degree & Program :B.E. /IT

Semester: VII

Academic Year: 2020 -2021 /ODD

I.Mapping of Course Outcomes with POs & PSOs.(before CBS)

Table.1 Mapping of COs, C, PSOs with POs - before CBS.

CO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
C402.1	2	1	1	-	-	-	-	-	-	-	-	-	3	2	-
C402.2	2	1	1	-	1	-	-	-	-	-	-	-	3	2	-
C402.3	3	2	2	1	1	-	-	-	-	-	-	-	2	3	-
C402.4	3	2	2	1	-	-	-	-	-	-	-	-	2	3	-
C402.5	3	2	2	-	3	-	-	-	-	-	-	-	2	2	-
C402.6	3	2	2	1	3	-	-	-	-	-	-	-	2	2	-
CS8792	2	1	1	-	2	-	-	-	-	-	-	-	3	2	-

II. Identification of content beyond syllabus.

Table.2 Identification of content beyond syllabus

Details of Content Beyond Syllabus(CBS) added	POs strengthened/ vacant filled	CO/Unit
Authentication schemes to simulate Network security tool using Firewalls.	PO5(1) Vacant filled	C402.4/ IV

III. Mapping of Course Outcomes with POs & PSOs. (After CBS)

Table.3 Mapping of COs, C, PSOs with POs- after CBS.

CO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
C402.1	2	1	1	-	-	-	-	-	-	-	-	-	3	2	-
C402.2	2	1	1	-	1	-	-	-	-	-	-	-	3	2	-
C402.3	3	2	2	1	1	-	-	-	-	-	-	-	2	3	-
C402.4	3	2	2	1	*1	-	-	-	-	-	-	-	2	3	-
C402.5	3	2	2	-	3	-	-	-	-	-	-	-	2	2	-
C402.6	3	2	2	1	3	-	-	-	-	-	-	-	2	2	-
CS8792	2	1	1	-	2	-	-	-	-	-	-	-	3	2	-

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TOPICS BEYOND THE SYLLABUS

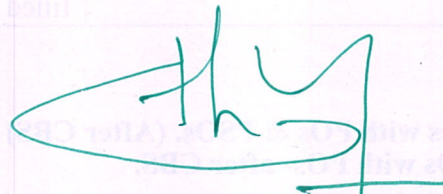
Authentication schemes to simulate Network security tool using Firewalls.

REASON BEYOND THE SELECTION

Facilitate the students to be aware of Network security simulation tool using Firewalls.

REFERENCE LINK

https://www.researchgate.net/publication/38112085_Network_Security_Using_Firewalls/link/0ffc26910cf24b07a41e757b/download



Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
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Kaikkurchi - 622 303, Pudukkottai Dt.

DR. S. THILAGAVATHI M.E., Ph.D.,
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DEPARTMENT OF INFORMATION TECHNOLOGY

Assignment Answer Paper

Name of the Student : Anushuya. T

AU Register Number: 912617205001

Assignment – 01			Date of Issue:	26.08.2020	Marks	10
Course code	CS8792	Course Title	Cryptography and network security			
Year	IV	Semester	VII	Date of Submission:	29.08.2020	

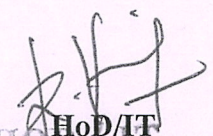
Q.No	Answers	CO
1.	1. Describe about Substitution Techniques. 2. Explain in detail about DES represent in , Block Cipher Mode of Operation	C402.2

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	6
Presentation Quality	2	1
Timely submission	2	2
Total marks	10	9

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COLLEGE FOR WOMEN
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IQAC Academic Audit Form

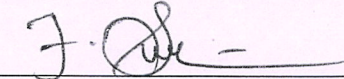
ACADEMIC YEAR: 2020-2021 ODD SEMESTER

Name of Department :	IT	Year / Sem :	IV / VII	No. of Students Registered :	09
Details of Examination :	CT - 1 / CT - 2 / CT - 3 / Model Test				


S.No.	Course Code	List of Reg.No Verified	Course Log Book Verified (Y/N)	Course File Verified (Y/N)	No of students Attended	No of Absentees	No of Failures	Pass %	Remarks
1.	M68591	912617205001	Yes	Yes	09	NIL	NIL	100%	-
2.	CS8792	912617205003	Yes	Yes	09	NIL	NIL	100%	-
3.	CS8791	912617205005	Yes	Yes	09	NIL	NIL	100%	-
4.	DECT54	912617205007	Yes	Yes	09	NIL	NIL	100%	-
5.	IT8075	912617205008	Yes	Yes	09	NIL	NIL	100%	-
6.	CS8079	912617205301	Yes	Yes	09	NIL	NIL	100%	-

Verified by

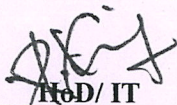
External Member Name and Signature:

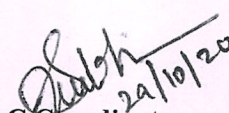
J. SATHIYARAJ. - 

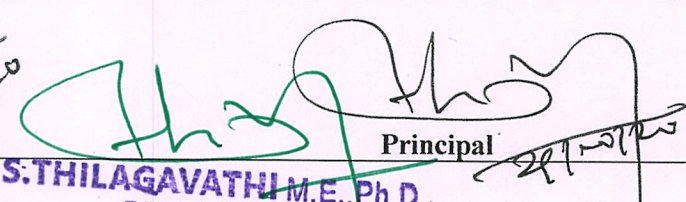
Internal Member Name and Signature:

G. SUBAPRIYA. 

Overall Remarks:


HOD/IT


IQAC Coordinator


Principal

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DEPARTMENT OF INFORMATION TECHNOLOGY

STUDENT FEEDBACK ON FACULTY

S.NO.	DESCRIPTION	SCORED OUT OF 4	SCORED OUT OF 100
1.	Syllabus coverage as prescribed by University.	3.8	95
2.	Technical knowledge of the Teacher.	3.5	87
3.	Teacher's communication skill.	4.0	100
4.	Regularity in taking classes.	4.0	100
5.	Helping the students in conducting the experiment through set of instructions and demonstrations.	3.5	87
6.	Tendency of inviting opinion and question on subject matter from students.	4.0	100
7.	Knowledge of the Teacher in latest development of field.	4.0	100
8.	Perfectness of Valuation.	3.4	85
OVERALL SCORE		3.8	95


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REPORT SHEET

S.NO	REG.NO	NAME	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1.	912617205001	ANUSHIYA T	4	4	4	4	4	4	4	4
2.	912617205002	GAYADHRI S	4	3	4	4	3	4	4	4
3.	912617205003	KALAIVANI K	4	4	4	4	4	4	4	4
4.	912617205004	MARYSELCIYA S	4	3	4	4	3	4	4	4
5.	912617205005	MERCY KIRUBA C	4	4	4	4	4	4	4	4
6.	912617205006	RUPASRI M	4	3	4	4	3	4	4	3
7.	912617205007	SHANMATHI S	3	4	4	4	4	4	4	4
8.	912617205008	VINODHINI M	4	3	4	4	3	4	4	4
9.	912617205301	HEMALATHA A	4	4	4	4	4	4	4	4
AVERAGE			3.8	3.5	4.0	4.0	3.5	4.0	4.0	3.8
PERCENTAGE			95	87	100	100	87	100	100	95

EXCELLENT	VERY GOOD	GOOD	AVERAGE	POOR
4	3	2	1	0

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PRINCIPAL
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Circular

Date: 17.09.2020

The second cycle test will be conducted through online from 24.09.2020 to 26.09.2020 for the III semester(II Year) and V Semester (III year) and VII semester(IV Year) students.

The following instructions are to be followed by the faculty members.


- Total marks for which the question paper to be set will be for 60 marks.
- It is the responsibility of the question paper to be setter to create online Google form /multiple Choice Questions (MCQ) and forward the link to the exam coordinators Mr.J.Sathyaraj, AP/EEE Mrs.G.Bhvaneswari, AP/CSE on or before 21.09.2020.
- Question Pattern-Part A-30 Single mark MCQ questions and Part B-15 two mark MCQ questions.
- All Staff members are requested to enable the shuffle question order option and limit to one response option in Google form settings.
- The exam coordinators (exam cell) are requested to make necessary arrangements for conducting the test.
- Faculty members are requested to take the report on Google forms and give the marks to the students on or before 28.09.2020.

Cc:

- All faculty
- Exam cell
- Office file


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17/09/20

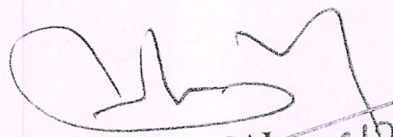

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PRINCIPAL
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Date: 17.09.2020

The second cycle test will be conducted through online from 24.09.2020 to 26.09.2020 for the VII semester (IV Year) students for 60 marks as per the timetable given below. Students are directed to prepare well and score good marks.

Date	10.00 am - 11.30 am	02.00 pm - 03.30pm
24.09.2020	CE8701-Estimation, Costing and Valuation Engineering (CIVIL) IT8075-Software Project Management (CSE/IT) EC8701-Antennas and Microwave Engineering (ECE) EE8702-Power System Operation and Control (EEE)	CE8702- Railways, Airports, Docks and Harbour Engineering (CIVIL) CS8791-Cryptography and Network Security (CSE/IT) GE8071-Disaster Management (ECE) EE8701-High Voltage Engineering (EEE)
25.09.2020	CE8703-Structural Design and Drawing (CIVIL) CS8792- Cloud Computing (CSE/IT) OCS752-Introduction to C Programming (ECE/EEE)	MG8591- Principles of Management (CSE/IT) EC8791-Embedded and Real Time Systems (ECE) EE8010-Power System Transients (EEE)
26.09.2020	EN8591-Municipal Solid Waste Management (CIVIL) OCE754-Medical Electronics (CSE/IT) EC8751-Optical Communication (ECE) EE8703-Renewable Energy Systems (EEE)	OTT752-Textile Effluent Treatments (CIVIL) EC8702-Adhoc and Wireless Sensor Networks (ECE) EI8075-Fibre Optics and Laser Instrumentation (EEE) CS8079-Human Computer Interaction (CSE/IT)


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 17/09/20

- Cc:
- All IV year B.E Classes
 - All faculty
 - Exam cell
 - Notice Board
 - Office file


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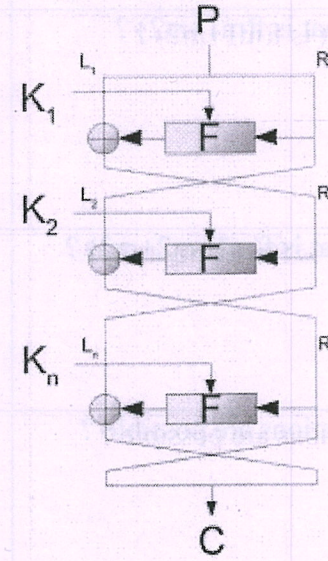
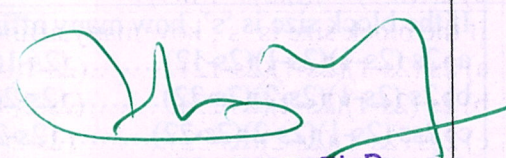
DEPARTMENT OF INFORMATION TECHNOLOGY

ACADAMIC YEAR -ODD SEM (2020-2021)
CS8792 CRYPTOGRAPHY AND NETWORK SECURITY
CYCLE TEST-I

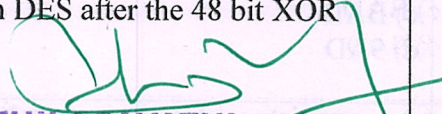
PART-A(30*1=30)

SL.NO	QUESTIONS	COURSE OUTCOME
1.	In affine block cipher systems if $f(m)=Am + t$, what is $f(m1+m2)$? a) $f(m1) + f(m2) + t$ b) $f(m1) + f(m2) + 2t$ c) $f(m1) + t$ d) $f(m1) + f(m2)$	C402.2
2.	In affine block cipher systems if $f(m)=Am + t$, what is $f(m1+m2+m3)$? a) $f(m1) + f(m2) + f(m3) + t$ b) $f(m1) + f(m2) + f(m3) + 2t$ c) $f(m1) + f(m2) + f(m3)$ d) $2(f(m1) + f(m2) + f(m3))$	C402.2
3.	If the block size is 's', how many affine transformations are possible ? a) $2s(2s-1)(2s-1)(2s-12).....(2s-1(s-1))$ b) $2s(2s-1)(2s-2)(2s-22).....(2s-2(s-2))$ c) $2ss(2s-1)(2s-2)(2s-22).....(2s-2(s-1))$ d) $2s(2s-1)(2s-2)(2s-22).....(2s-2(s-3))$	C402.2
4.	What is the number of possible 3 x 3 affine cipher transformations ? a) 168 b) 840 c) 1024 d) 1344	C402.2
5.	Super-Encipherment using two affine transformations results in another affine transformation. a) True b) False	C402.2
6.	If the key is 110100001, the output of the SP network for the plaintext: 101110001 is a) 110100011 b) 110101110 c) 010110111 d) 011111010	C402.2
7.	If the key is 110100001 where, If $k_i=0$, then $S_i(x)=((1\ 1\ 0\ 0\ 1\ 1\ 1\ 0\ 0))x+((1\ 1\ 1))$ and If $k_i=1$, then $S_i(x)=((0\ 1\ 1\ 1\ 0\ 1\ 1\ 0\ 0))x+((0\ 1\ 1))$ then the output of the SP network for the plaintext: 101110001 is a) 010110011	C402.2


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	b) 111000011 c) 110110111 d) 010110110	
8.	Confusion hides the relationship between the ciphertext and the plaintext. a) True b) False	C402.2
9.	The S-Box is used to provide confusion, as it is dependent on the unknown key. a) True b) False	C402.2
10.	This is an example of  a) SP Networks b) Feistel Cipher c) Hash Algorithm d) Hill Cipher	C402.2  Dr. S.THILAGAVATHI M.E., Ph.D., PRINCIPAL SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN Kaikkurchi - 622 303, Pudukkottai Dt.
11.	Which of the following slows the cryptographic algorithm – 1) Increase in Number of rounds 2) Decrease in Block size 3) Decrease in Key Size 4) Increase in Sub key Generation a) 1 and 3 b) 2 and 3 c) 3 and 4 d) 2 and 4	C402.2
12.	DES follows a) Hash Algorithm b) Caesars Cipher c) Feistel Cipher Structure d) SP Networks	C402.2
13.	The DES Algorithm Cipher System consists of _____ rounds (iterations) each with a round key	C402.2

	<ul style="list-style-type: none"> a) 12 b) 18 c) 9 d) 16 	
14.	<p>The DES algorithm has a key length of</p> <ul style="list-style-type: none"> a) 128 Bits b) 32 Bits c) 64 Bits d) 16 Bits 	C402.2
15.	<p>In the DES algorithm, although the key size is 64 bits only 48bits are used for the encryption procedure, the rest are parity bits.</p> <ul style="list-style-type: none"> a) True b) False 	C402.2
16.	<p>In the DES algorithm the round key is _____ bit and the Round Input is _____ bits.</p> <ul style="list-style-type: none"> a) 48, 32 b) 64,32 c) 56, 24 d) 32, 32 	C402.2
17.	<p>In the DES algorithm the Round Input is 32 bits, which is expanded to 48 bits via _____</p> <ul style="list-style-type: none"> a) Scaling of the existing bits b) Duplication of the existing bits c) Addition of zeros d) Addition of ones 	C402.2
18.	<p>The Initial Permutation table/matrix is of size</p> <ul style="list-style-type: none"> a) 16×8 b) 12×8 c) 8×8 d) 4×8 	C402.2
19.	<p>The number of unique substitution boxes in DES after the 48 bit XOR operation are</p> <ul style="list-style-type: none"> a) 8 b) 4 c) 6 d) 12 	C402.2
20.	<p>In the DES algorithm the 64 bit key input is shortened to 56 bits by ignoring every 4th bit.</p> <ul style="list-style-type: none"> a) True b) False 	C402.2
21.	<p>In brute force attack, on average half of all possible keys must be tried to achieve success.</p> <ul style="list-style-type: none"> a) True b) False 	C402.1


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22.	If the sender and receiver use different keys, the system is referred to as conventional cipher system. a) True b) False	C402.1
23.	Divide (HAPPY) ₂₆ by (SAD) ₂₆ . We get quotient – a) KD b) LD c) JC d) MC	C402.1
24.	Dividing (11001001) by (100111) gives remainder – a) 11 b) 111 c) 101 d) 110	C402.1
25.	. pi in terms of base 26 is a) C.DRS b) D.SQR c) D.DRS d) D.DSS	C402.1
26.	The time required to convert a k-bit integer to its representation in the base 10 in terms of big-O notation is a) $O(\log_2 n)$ b) $O(\log n)$ c) $O(\log_2 2n)$ d) $O(2\log n)$	C402.1
27.	In base 26, multiplication of YES by NO gives – a) THWOE b) MPAHT c) MPJNS d) THWAE	C402.1
28.	. Division of (131B6C3) base 16 by (1A2F) base 16 yeilds – a) 1AD b) DAD c) BAD d) 9AD	C402.1
29.	An encryption scheme is unconditionally secure if the ciphertext generated does not contain enough information to determine the corresponding plaintext, no matter how much cipher text is available. a) True b) False	C402.1
30.	The estimated computations required to crack a password of 6 characters from the 26 letter alphabet is- a) 308915776 b) 11881376 c) 456976 d) 8031810176	C402.1

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PART-B(15*2=30)

31.	Reduce the following big-O notations: $O[ax^7 + 3x^3 + \sin(x)] =$ a) $O[ax^7]$. b) $O[\sin(x)]$. c) $O[x^7]$. d) $O[x^7 + x^3]$.	C402.1
32.	Reduce the following big-O notations: $O[e^n + an^{10}] =$ a) $O[an^{10}]$. b) $O[n^{10}]$. c) $O[e^n]$. d) $O[e^n + n^{10}]$.	C402.1
33.	Reduce the following big-O notations: $O[n! + n^{50}] =$ a) $O[n! + n^{50}]$. b) $O[n!]$. c) $O[n^{50}]$. d) None of the Mentioned	C402.1
34.	Use Caesar's Cipher to decipher the following HQFUBSWHG WHAW a) ABANDONED LOCK b) ENCRYPTED TEXT c) ABANDONED TEXT d) ENCRYPTED LOCK	C402.1
35.	Caesar Cipher is an example of a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher	C402.1
36.	Monoalphabetic ciphers are stronger than Polyalphabetic ciphers because frequency analysis is tougher on the former. a) True b) False	C402.1
37.	Which are the most frequently found letters in the English language ? a) e,a b) e,o c) e,t d) e,i	C402.1
38.	Choose from among the following cipher systems, from best to the worst, with respect to ease of decryption using frequency analysis. a) Random Polyalphabetic, Plaintext, Playfair b) Random Polyalphabetic, Playfair, Vignere c) Random Polyalphabetic, Vignere, Playfair, Plaintext d) Random Polyalphabetic, Plaintext, Beaufort, Playfair	C402.1
39.	On Encrypting "thepepsiisintherefrigerator" using Vignere Cipher System using the keyword "HUMOR" we get cipher text- a) abqdnwewuwjphfvrrtrfznsdokvl b) abqdvmmuwjphfvvyryrfzndokvl	C402.1

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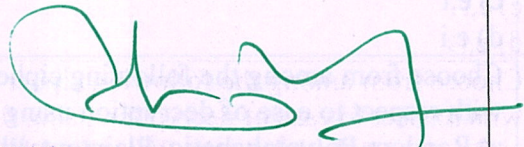
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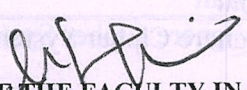
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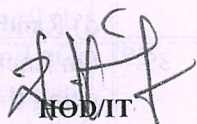
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	c) tbqyrvmwuwjphfvvyyrfzndokvl d) baiuvmwuwjphfoeiyrzfzndokvl	
40.	On Encrypting "cryptography" using Vignere Cipher System using the keyword "LUCKY" we get cipher text a) nlazeiibljji b) nlazeiibljii c) olaaeiibljki d) mlaaeiibljki	C402.1
41.	The Index of Coincidence for English language is approximately a) 0.068 b) 0.038 c) 0.065 d) 0.048	C402.1
42.	If all letters have the same chance of being chosen, the IC is approximately a) 0.065 b) 0.035 c) 0.048 d) 0.038	C402.1
43.	Consider the cipher text message with relative frequencies: 4 0 10 25 5 32 24 15 6 11 5 5 1 2 6 6 15 19 10 0 6 28 8 2 3 2 The Index of Coincidence is a) 0.065 b) 0.048 c) 0.067 d) 0.042	C402.1
44.	Consider the cipher text message: YJIHX RVHKK KSKHK IQQEV IFLRK QUZVA EVFYZ RVFBX UKGBP KYVVB QTAJK TGBQO ISGHU CWIKX QUXIH DUGIU LMWKG CHXJV WEKIH HEHGR EXXSF DMIL UPSLW UPSLW AJKTR WTOWP IVXBW NPTGW EKBYU SBQWS Relative Frequencies – 3 7 2 2 5 5 7 9 11 4 14 4 2 1 3 4 6 5 6 5 7 10 9 8 4 2 The Index of Coincidence is – a) 0.065 b) 0.048 c) 0.067 d) 0.044	C402.1
45.	A symmetric cipher system has an IC of 0.041. What is the length of the key 'm'? a) 1 b) 3 c) 2 d) 5	C402.1


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ANSWER KEY

SL.NO	ANSWER	SL.NO	ANSWER	SL.NO	ANSWER	SL.NO	ANSWER	SL.NO	ANSWER
1.	A	11.	B	21.	A	31.	C	41.	C
2.	C	12.	C	22.	B	32.	C	42.	D
3.	C	13.	D	23.	A	33.	B	43.	C
4.	D	14.	C	24.	D	34.	B	44.	D
5.	A	15.	B	25.	C	35.	B	45.	D
6.	B	16.	A	26.	A	36.	B		
7.	A	17.	A	27.	C	37.	C		
8.	B	18.	C	28.	D	38.	C		
9.	A	19.	A	29.	A	39.	B		
10.	B	20.	B	30.	A	40.	A		


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DEPARTMENT OF INFORMATION TECHNOLOGY
ACADEMIC YEAR 2020-2021 (ODD SEMESTER)
STUDENTS MARK STATEMENT- CO BASED

CYCLE TEST-I

SUBJECT CODE & TITLE: CS8792 CRYPTOGRAPHY AND NETWORK SECURITY
YEAR/SEM: IV/VII **MONTH & YEAR: SEP 2020**

S.NO	REG NO	STUDENT NAME	C402.1 (40)	C402.2 (20)	TOTAL (60)	TOTAL (100)
1.	912617205001	ANUSHIYA T	24	18	42	70
2.	912617205002	GAYADHRI S	33	15	48	80
3.	912617205003	KALAIVANI K	37	18	55	92
4.	912617205004	MARYSELCIYA S	37	17	54	90
5.	912617205005	MARYSELCIYA S	40	18	58	97
6.	912617205006	RUPASRI M	36	17	53	88
7.	912617205007	SHANMATHI S	38	19	57	95
8.	912617205008	VINODHINI M	40	16	56	94
9.	912617205301	HEMALATHA A	40	19	59	98

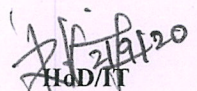
MARKS RANGE:

<20	20-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
					1	1	1	6

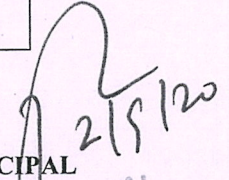
Total No.of Candidates Present	09
Total No.of Candidates Absent	NIL
Total No.of Students Pass	09
Total No. of Students Fail	NIL
Percentage of Pass	100%

SIGNATURE OF THE FACULTY IN-CHARGE


Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.


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SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI
PUDUKKOTTAI - 622 303

PRINCIPAL


PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303
PUDUKKOTTAI DISTRICT



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(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
KAIKKURICHI, PUDUKKOTTAI- 622 303

INTERNAL MARK STATEMENT(OUT OF 20)

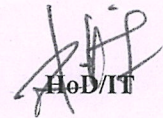
Semester No. : 06

Course Code / Name : CS8792 CRYPTOGRAPHY AND NETWORK SECURITY

Branch : B.TECH - INFORMATION TECHNOLOGY

S.NO	REG NO	STUDENT NAME	TOTAL(20)
1	912617205001	ANUSHIYA T	17
2	912617205002	GAYADHRI S	18
3	912617205003	KALAIVANI K	18
4	912617205004	MARYSELCIYA S	19
5	912617205005	MARYSELCIYA S	17
6	912617205006	RUPASRI M	18
7	912617205007	SHANMATHI S	18
8	912617205008	VINODHINI M	19
9	912617205301	HEMALATHA A	16

SIGNATURE OF THE FACULTY IN-CHARGE


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PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.

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Tamil Nadu - 622 303, India

ANNA UNIVERSITY RESULT STATEMENT

Semester No. : 06

Course Code / Name : CS8792 CRYPTOGRAPHY AND NETWORK SECURITY

Branch : B.TECH - INFORMATION TECHNOLOGY

S.NO	REG NO	STUDENT NAME	GRADE
1	912617205001	ANUSHIYA T	U
2	912617205002	GAYADHRI S	U
3	912617205003	KALAIVANI K	U
4	912617205004	MARYSELCIYA S	B
5	912617205005	MARYSELCIYA S	U
6	912617205006	RUPASRI M	U
7	912617205007	SHANMATHI S	B
8	912617205008	VINODHINI M	B
9	912617205301	HEMALATHA A	U

SIGNATURE OF THE FACULTY IN-CHARGE

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PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai. Dt.

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SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI
PUDUKKOTTAI - 622 303.

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Department of Information Technology

Internal Assessment - Attainment of Course Outcomes (Through Direct Assessment)

ACADEMIC YEAR - 2020 - 2021

BATCH

2017 - 2021

COURSE CODE/TITLE

CS8792 (C402) Cryptography and Network Security

COURSE OUTCOME

1	2	3	4	5	6
65	65	65	65	65	65

YEAR/SEM

IV / VII

TARGET(%)

COURSE COORDINATOR

G Sugapriya, AP/CSE

TOTAL STRENGTH

9

ATTAINMENT LEVEL

Level

Range

1

UP TO 60% of the students scored more than target

2

61 - 79% of the students scored more than target

3

80% & ABOVE of the students scored more than target

S.NO

REG NO

NAME OF THE STUDENT

IAT 1 - MARKS ALLOTTED

IAT 2 - MARKS ALLOTTED

IAT 3 - MARKS ALLOTTED

Assignment / Mini Project / Tutorial / Seminar

TOTAL COURSE OUTCOME

C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6
1	912617205001.00	ANUSHIYA T	43	29															8	8			8	43	37	42	51	55	45
2	912617205002.00	GAYADHRI S	49	33															8	9			9	49	41	42	50	49	42
3	912617205003.00	KALAIVANI K	41	28															8	8			8	41	36	43	52	49	40
4	912617205004.00	MARYSELCIYA S	45	30															8	9			9	45	38	43	51	51	43
5	912617205005.00	MERCYKIRUBA S	58	38															8	9			9	58	46	43	52	58	47
6	912617205006.00	RUPASRI M	58	38															9	7			7	58	47	42	52	59	46
7	912617205007.00	SHANMATHI S	56	38															7	9			9	56	45	42	50	53	45
8	912617205008.00	VINODHINI M	41	27															9	8			8	41	36	41	50	55	44
9	912617205301.00	HEMALATHA A	40	27															8	9			9	40	35	43	51	51	43

CO's Target Value

39.0 32.5 32.5 39.0 39.0 32.5

No. of Students scored above CO's Target Value

9 9 9 9 9 9

Percentage of Students scored above Target

100.0 100.0 100.0 100.0 100.0 100.0

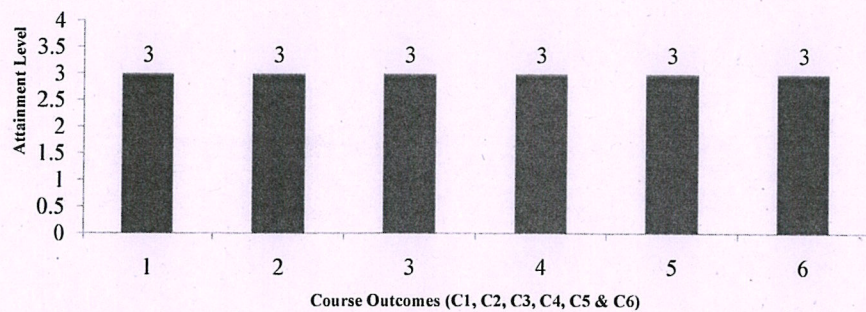
CO Attainment

3 3 3 3 3 3

CO attainment Values to plot the Graph

3 3 3 3 3 3

Course Outcomes Vs Attainment Level



[Signature]
Faculty Incharge

[Signature]
Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
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Kaikkurichi - 622 303, Pudukkottai Dt.

[Signature]
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SRI BHARATHI ENGINEERING FOR WOMEN
DEPARTMENT OF CSE
COURSE OUTCOME ATTAINMENT - UNIVERSITY EXAMINATION
ACADEMIC YEAR :2020 - 2021 (ODD SEM)

YEAR /SEM: IV CSE / VII


Batch:2017 - 2021

SUBJECT :CS8792 (C402) CRYPTOGRAPHY AND NETWORK SECURITY


CO Attainment Level: 1 - (UPTO 60%) 2- (61%-79%) 3-(80% and Above)

TOTAL STRENGTH : 9

S.NO	Register No	NAME	Univ. Grade
1	912617205001	ANUSHIYA T	U
2	912617205002	GAYADHRI S	U
3	912617205003	KALAIYANI K	U
4	912617205004	MARYSELCIYA S	B
5	912617205005	MERCYKIRUBA S	U
6	912617205006	RUPASRI M	U
7	912617205007	SHANMATHI S	U
8	912617205008	VINODHINI M	B
9	912617205301	HEMALATHA A	B
No. of O Grade			0
No. of A+ Grade			0
No. of A Grade			0
No. of B+ Grade			0
No. of B Grade			3
No. of U Grade			6
No. of UA Grade			0
Target for course outcome Attainment			60
No of students above the target			3
CO-Attainment University (%)			33.33


Faculty


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Overall Attainment Sheet – COs - POs & PSOs attainment calculation

CO	CO-Attainment Internal (CO-INT) (Avg. Attainment of All section) (%)	CO-Attainment University (CO-UNI) (Avg. Attainment of All section) (%)	Direct CO Attainment (0.20xCO-INT + 0.80xCO-UNI) (%)	CO Attainment Level
C402.1	100.0	33.33	46.7	1
C402.2	100.0	33.33	46.7	1
C402.3	100.0	33.33	46.7	1
C402.4	100.0	33.33	46.7	1
C402.5	100.0	33.33	46.7	1
C402.6	100.0	33.33	46.7	1

Closure of the Quality Loop:

CO	CO-Target for Academic Year						CO Attainment Gap	Action Proposed to Bridge
	14-15		15-16		16-17			
C402.1	65	79.71	65	69	65	46.7	-	-
C402.2	65	79.71	65	71.17	65	46.7	-	-
C402.3	65	79.71	65	63.15	65	46.7	-	-
C402.4	65	79.71	65	75.11	65	46.7	-	-
C402.5	65	79.71	65	73.57	65	46.7	-	-
C402.6	65	79.71	65	68.44	65	46.7	-	-

Expected CO-PO Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C402.1	2	1	1	1	-	-	-	-	1	1	-	-	3	2	-
C402.2	2	1	1	1	-	-	-	-	1	1	-	-	3	2	-
C402.3	3	2	2	1	-	-	-	-	1	1	-	-	2	2	-
C402.4	3	2	2	1	-	-	-	-	1	1	-	-	2	2	-
C402.5	3	2	2	1	-	-	-	-	1	1	-	-	2	2	-
C402.6	2	2	1	1	-	-	-	-	1	1	-	-	2	2	-
C402	2.3	1.7	1.5	1	-	-	-	-	1	1	-	-	2.3	2	-

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C402.1	0.7	0.3	0.3	0.3	-	-	-	-	0.3	0.3	-	-	1.0	0.7	-
C402.2	0.7	0.3	0.3	0.3	-	-	-	-	0.3	0.3	-	-	1.0	0.7	-
C402.3	1.0	0.7	0.7	0.3	-	-	-	-	0.3	0.3	-	-	0.7	0.7	-
C402.4	1.0	0.7	0.7	0.3	-	-	-	-	0.3	0.3	-	-	0.7	0.7	-
C402.5	1.0	0.7	0.7	0.3	-	-	-	-	0.3	0.3	-	-	0.7	0.7	-
C402.6	0.7	0.7	0.3	0.3	-	-	-	-	0.3	0.3	-	-	0.7	0.7	-
C402	0.8	0.6	0.5	0.3	-	-	-	-	0.3	0.3	-	-	0.8	0.7	-

Attainment of POs and PSOs:

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C402	2.3	1.7	1.5	1	-	-	-	-	1	1	-	-	2.3	2	-
Attainment	0.84	0.56	0.5	0.33	-	-	-	-	0.33	0.33	-	-	0.78	0.67	-

Comments by Program Coordinator	1. 2.
Remarks by HoD	

Name and Signature of the Faculty Member

(Signature)
S. SUBAPRIYA

(Signature)
Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

(Signature)
HOD/IT
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI

AKOTTAI - 622-3934