Board of Studies

B.Sc. IT (Honors)

Department of Computer Science and Applications

Government College (A), Rajahmundry

Accredited with 'A+' grade by NAAC

ACADEMIC CELL, GOVERNMENT COLLEGE
(AUTONOMOUS) RAJAHMUNDRY

PROCEEDINGS OF THE PRINCIPAL
GOVERNMENT AUTONOMOUS COLLEGE, RAJAHMUNDRY

PRESENT: Dr.R. David Kumar, M.Sc., M.Phil.., Ph.D.

RC. NO. 152/GCRJY/ACAD. CELL//BOS/2021/, DATED. 05.07. 2022

Sub: GCRJY-**Conduct of BoS Meetings for the Academic Year 2022-23** - Regarding

***

ORDER:

With reference to the subject cited, the lecturers-in-Charge of all the departments are hereby informed to conduct their respective Board of Studies (BoS) meetings by the end of July 2022.

You are also informed to intimate the date of your BoS meeting well in advance to the subject experts/University nominee/Industrial Nominee/members of BoS/Student nominee concerned to get their valuable views and suggestions in the deliberations to frame the concrete syllabi for your subjects keeping in view the objectives of the college and interest of the stake holders. The date should also be indicated to Academic Cell in advance.

You are further suggested to utilize the academic autonomy in incorporating the additional modules in the syllabi and identify the pedagogical strategies to implement the same.

Please note that your BoS document should contain the following contents in order

a) Proceedings of the Principal pertaining to BoS
b) Composition of BoS
c) Table showing the Allocation of Credits in the following table for both theory and Lab in case of science subjects

S. No	Semester	Course Code	Title of the Course (Paper)	Max. Marks (SEE)	Marks in CIA	Hrs./week			
						L	T	P	C

L= Lecture, T= Tutorial, P= Practical, C= Credits

d) Agenda wise Resolutions adopted in the meeting with detailed discussions
e) Table showing Members present with signatures
f) List of Examiners & Paper setters
g) Syllabus for each course in the **Proforma given** (both theory & Practical in case of Science subjects) followed by model question papers (theory & practical)
h) Unit wise Assignment questions at the end of syllabus of each course

You are requested to submit a separate document regarding addition/deletion of specific topics from the syllabus in each course (paper) with justification, if any.

ACADEMIC CELL, GOVERNMENT COLLEGE
(AUTONOMOUS) RAJAHMUNDRY

All the ***new Courses/certificate courses*** proposed for the calendar year 2022, Seminars/ workshops, field visits, study tours for 2022-23 should be placed before the respective Board and get them approved.

You are also requested to submit 2 hard copies & 2 soft copies (CDs) of BoS document to the Academic cell along with original bills and settle the bills after completion of the BoS meeting. You can approach the Academic Cell for necessary documents.

Most Important: You are requested to submit soft & hard copies of ***Resolutions (including discussion)*** separately to IQAC immediately after BoS meeting is completed.

PRINCIPAL
GOVERNMENT AUTONOMOUS COLLEGE
RAJAHMUNDRY

Copy to:

1. Lecturers-in-Charge of all the departments
2. File

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC with "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

CONSOLIDATED REPORT OF BOARD OF STUDIES FOR THE YEAR 2022-23

The Meeting Board of Studies of Computer Science & Applications department was convened on under the Chairmanship of Mr. Suneel Kumar Duvvuri, Head / Lecturer-in-charge of Department of Computer Science and Applications.

The following members are present

S.No.	Name	Designation	Signature
1.	Dr. V. Persis	University Nominee	
2.	Smt. E. Jyothi Kiranmayi	Local Nominee	
3.	Mr. R V Satyanarayana	Local Nominee	
4.	Sri S. Narendra Krishna Mohan	Industrial Nominee	
5.	Smt U Sandhya Rani	Faculty Member	
6.	Mr Devaraju Hanumanthu	Faculty Member	
6.	Sri P. Narasinga Rao	Faculty Member	
7.	Sri. D. Seetha Ramulu	Faculty Member	
8.	Sri K.Ramesh	Faculty Member	
9.	Kum S.Jaya Lakshmi	Faculty Member	
10.	Smt B.Parameswari	Faculty Member	
11.	Smt Ch.Sujatha	Faculty Member	
12.	Smt N.Priyanka	Faculty Member	
13.	Smt M.Tejaswi	Faculty Member	
14.	P. Dhatri	Student	

The following documents are submitted to the Academic coordinator and Controller of Examinations:

Resolutions of Board of Studies Meeting.

Syllabus of All semesters under CBCS pattern for All UG Computer Science Programmes.

Model Question Papers for All semesters under CBCS pattern

List of Revised Examiners (if any)

Any other new proposals. Date:

Chairman Board of Studies

Department of Computer Science & Applications

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC with "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

Board of Studies Dated:

Meeting of the Board of studies is held at in the Department of Computer Science & Applications, Govt. College (A), Rajahmundry with the following agenda.

Agenda

Curriculum Design for all the Semesters

Designing of Course Outcomes and Course Objectives

Identifying /inclusion of components of Skill Development, Employability and Entrepreneurship in the curriculum

Additional inputs into the curriculum

Designing Model Question Papers and identifying potential paper setters

Innovative Teaching – Learning Methodology (Learner Centric)

Curriculum for the Certificate Courses

Academic activities of the Department

Any other proposal with the permission of the chair

(Suneel Kumar Duvvuri)
CHAIRMAN
BOARD OF STUDIES

Government College (Autonomous), Rajahmundry

(Accredited by NAAC "A+" Grade)

Board of Studies Meeting on Department Of Computer Science & Applications

List of Paper Setters and Examiners

S No	Name of the Lecturer /Reader/Professor	Papers	College	City
1.	Prof P Suresh Varma	ALL	Dept of CSE, AKNU	Rajahmundry
2.	Dr V Persis	ALL	Dept of CSE, AKNU	Rajahmundry
3.	Dr M Kamala Kumari	ALL	Dept of CSE, AKNU	Rajahmundry
4.	Dr P Venkateswara Rao	ALL	Dept of CSE, AKNU	Rajahmundry
5.	R V Satyanarayana	ALL	GDC (P R) KAKINADA	Kakinada
6.	G Balavenkata Padmanadh	ALL	GDC (P R) KAKINADA	Kakinada
7.	Dr N Sridhar	ALL	GDC TUNI	Tuni
8.	E Jyothikiranmayi	ALL	GDC (W) NIDADAVOLE	Niddadavole
9.	Rebba Ashok Kumar	ALL	GDC CHINTALPUDI	Chintalapudi
10.	Smt M Rajini	ALL	GDC (SCIM) TANUKU	Tanuku
11.	Dr K Satya Rajesh	ALL	GDC (CSTS) JANGAREDDIGUDEM	Jangareddigudem
12.	Vijayadeep gummadi	ALL	GDC KAIKAKULURU	Kaikakuluru
13.	T Jayakrishna	ALL	GDC (SRR & CVR) VIJAYAWADA	Vijayawaada
14.	D Meenakshi	ALL	GDC TIRUVURU	Tiruvuru
15.	Smt N Swarnajyothi	ALL	GDC (VRK) MOVVA	Movva
16.	U Sarala	ALL	GDC AVANIGADDA	Avanigadda
17.	Dr A Sivaprasad	ALL	GDC TEKKALI	Tekkali
18.	I Srilakshmi	ALL	GDC (W) SRIKAKULAM	Srikakulam
19.	Sri B Raghuram	ALL	GDC SEETHAMPETA	Seethampeta
20.	Sri B Srinivas	ALL	GDC (M) SRIKAKULAM	Srikakulam
21.	Dr K V Sobha Rani	ALL	GDC (P R) KAKINADA	Kakinada
22.	R Venakata phani Kumar	ALL	GDC (P R) KAKINADA	Kakinada
23.	G Satya suneetha	ALL	GDC (W) KAKINADA	Kakinada

24.	Smt U Subhashini	ALL	GDC RAVULAPALEM	Ravulapalem
25.	Dr N Manisha	ALL	GDC (ASNM) PALAKOL	Palakol
26.	Kum P Purnachandravathi	ALL	GDC MYLAVARAM	Mylavaram
27.	B Rajkumar	ALL	GDC (SRR & CVR) VIJAYAWADA	Vijayawada
28.	B Hemaraju	ALL	GDC TEKKALI	Tekkali
29.	P Jyothi	ALL	GDC PATHAPATNAM	Pathapatnam
30.	S Vani Kumari	ALL	GDC (W) SRIKAKULAM	Pathapatnam
31.	Simma Madhavi Latha	ALL	GDC (W) SRIKAKULAM	Pathapatnam
32.	V Chandrasekhar	ALL	GDC SEETHAMPETA	Seethampeta
33.	Smt J Sharmila Rani	ALL	GDC (M) SRIKAKULAM	Srikakulam
34.	Smt K Anusha Devi	ALL	GDC PADERU	Paderu

GOVERNMENT COLLEGE (AUTONOMOUS):RAJAHMUNDRY

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
SCHEME OF EVALUATION

MODEL OF SEMESTER END EXAMINATION QUESTION PAPER (THEORY)

(As Approved in the BOS meeting held on)

EVALUATION SCHEME

Standard Operating Procedure for Continuous Internal Assessment (Internal Marks – 50) The Internal marks in all the courses/subjects will be awarded based on continuous internal assessment made during the semester concerned. For each Courses/subject 50 marks are allotted for internal assessment and 50 marks are allotted for the End Semester Examination.

Continuous Internal Evaluation (CIA):

It has been decided to introduce Continuous Internal assessment marks for a total of 50 marks, which are to be distributed as follows:

S.No.	Component			Distribution of Marks
1	CIE I (after completion of 50% of syllabus)			20
2	CIE II (Online Exam)			10
3	ATTENDANCE	Above 95%	5	5
		91% to 95%	4	
		86% to 90%	3	
		81% to 85%	2	
		75% to 80%	1	
		Below 75%	0	
Pedagogical Strategies				
4	ASSIGNMENT			5

5	Participation or Paper Presentation in Student Seminars/Workshops/Group Discussions/ Quiz/ Student Study Project/Field Visit/Survey	5
6	Viva-voce	5
TOTAL		50

Component I : CIE I & CIE II (20+10 = 30 Marks)

Two Internal Examinations, out of which one is Mandatorily Online examination, for each Course shall be conducted for assessment. These examinations will be conducted during August/September (CIE –I) and January/February (CIE-II). CIE-I carries 20 marks and CIE-II carries 10 marks. CIE- I will be conducted after completion of 50% of syllabus. The second internal examination, i.e., CIE – II, which is mandatorily online examination will cover the entire syllabus and consists of 20 multiple choice questions having ½ mark for each question. The sum of both the CIEs will be considered for awarding marks for CIA.

Suggestive Question Paper Pattern for CIE I & CIE II (Based on Blooms Taxonomy):

Though the faculty concerned are empowered to adopt their own pattern for question paper, a general and suggestive model for question paper is given below based on Blooms Taxonomy.

Q No	Learning Objective	Marks
1	Memory based (Remember)	2
2	Understand (Comprehension)	2
3	Application	3
4	Analysis	3
5	Evaluation	5
6	Creativity	5
	TOTAL	20 marks

The active verbs used to frame the question based on Blooms Taxonomy is given below for the convenience.

Active verbs developed based on Bloom's Taxonomy

Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	Identify	Manipulate	survey	grade	produce
discover	indicate	Paint	advertise	measure	rearrange
duplicate	Infer	Prepare	appraise	predict	rewrite
enumerate	relate	produce	Break down	rank	role-play

CIE II will consist of multiple choice questions (MCQs). Number of questions and distribution of marks is at the discretion of the faculty concerned. However, a half an hour exam consisting of 20 MCQs with ½ mark for each question is suggestible in view of the huge number of students. All the HoDs should supply a question bank of MCQs of all the courses covering the entire syllabus along with key to the Computer Science department to enable them to conduct the online examination in the designated laboratories. Alternatively, all the HoDs may upload the MCQs in the portal through their logins.

Further, all the HoDs should submit their schedule of CIE II to IQAC in advance to monitor the systematic conduct of the online examination.

Important Note:

Students who absent themselves from any CIE will lose the marks for the respective test. However, if

a student is not able to write the CIE I / II because of his/her participation in an important event related to NSS/NCC or Games/Sports representing the College/University/health grounds, the student has to get the prior permission of the Principal through the proper channel and submit the same to the Office of the Controller of Examinations. Deadline is 7 days after the CIE. Applications submitted after the deadline will not be considered for the retest.

Component III: Attendance (5 Marks)

Attendance mark will be awarded to the students based on their attendance percentage on a particular course. Faculty of each course has to award the attendance mark based on their subject attendance. The marks split-up is given below

Above 95%	5
91% to 95%	4
86% to 90%	3
81% to 85%	2
75% to 80%	1
Below 75%	0

Component IV: Assignment (5 Marks)

One Assignment for each course must be submitted by a student in each semester. The marks allotted to this component will be awarded based on the performance of the student. The assignment topic may be assigned either individually or group. Assignment should be submitted by the student in the first half of the semester. Also maximum of 7 days should be given to students to submit the assignment. Assignments should be evaluated by the faculty concerned and the same to be verified by the student. The assignment should be kept in department for the Academic Audit by IQAC and also for external academic audit conducted by office of Commissionerate of Collegiate Education. The marks should be awarded by the faculty.

Component V (Pedagogical Strategies):

Participation /Paper Presentation in Student Seminars/Workshops/Group Discussions/ Quiz/ Student Study Project/Field Visit/Survey (5 Marks)

For this component, the marks will be provided to student, if he/she participate/win in the external

college technical events. To score marks, the student has to participate / present papers related to subject in the technical events organized in the other colleges/other departments in the college.

	Participation	Second Prize	First Prize / Best Paper
Workshop / Seminar / Technical Symposium	2	3	5
National / International Conference	3	4	5

In case of Classroom seminar, one seminar for each course must be presented by a student in each semester. Each student should be given individual topic for seminar, the student has to submit the seminar topic as assignment and the same will be presented minimum of 10 minutes in the class through ICT. The seminar presented by the student should be evaluated by the subject faculty and based on the performance of the presentation, the marks will be awarded.

Similarly, reports on field visits, educational tours, study projects in prescribed format will be considered for awarding marks in this component.
For a student who has not participated in any events in that semester, the student will be awarded "0" for this component. If a student participates more than one event and win prize, the best would be considered for the subject.

In case of Quiz, preferably online quiz, it should be conducted after the CIE II and well before the SEE. Faculty concerned has to announce the schedule for the quiz and create the quiz in the ERP (College Management System). The subject staff has to upload all the questions (unit-wise) in the ERP. Quiz should be created with 30 questions (ERP should choose 30 questions randomly out of 100 questions uploaded).The timing for quiz should be 30 minutes. No negative marking. Each question carries 1 mark. The marks secured should be converted to5.

Semester End Examinations (SEE)

The question paper is of 2 ½ duration for 50 marks. The suggestive question paper model given in section 1.1.1.may be used for framing the question. This kind of question paper will be helpful in CO-PO Mapping and thereby graduate attributes.
(Prepared by IQAC & Academic Cell and submitted to the Chairman, IQAC & Principal on 3 April 2019)

GOVERNMENT COLLEGE (AUTONOMOUS) : RAJAHMUNDRY

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

SCHEME OF VALUATION

FOR PRACTICAL EXAMINATIONS

(As Approved in the BOS meeting held on , 2022 For 2022-2023)

S.No.	Description	Marks
1.	Procedure Explanation with Coding (including Algorithm & Flowchart if any)	20
2.	Execution of Program	10
3.	VIVA VOCE	10
4.	RECORD **	10
	EXTERNAL PRACTICAL EXAM (at the end of II, IV& VI Semester)	50
5.	Internal Practical Exam (At the end of I, III & V Semester)	50
	GRAND TOTAL	100

** Award of marks for number of practicals recorded in the Record.

10 Practicals and Above 10

8 Practicals 08

6 Practicals 06

5 Practicals 05

Less than 5 00

B.Sc., Information Technology(Hons) Complete Courses Structure (w.e.f. 2022 – 2023)

Semester	Course	Title	Hrs/W	Credits	Remarks
I	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course Libre Office	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Skill Development Course - I	2	2	
	Major 1 (Core 1)	Programming Fundamentals Using C	4	3	
		Programming Fundamentals Using C Lab	3	2	
	Major 2 (Core 2)	Computer System Architecture & Organization	6	5	
	Minor 1 (Gen Elective)		6	5	Student can choose an elective from other dept\ Maths/Physics/statistics
		Total	29	24	
II	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course GIMP	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Skill Development Course - I	2	2	
		Skill Development Course - I	2	2	
	Major 1 (Core 1)	Object Oriented Programming Using Java	4	3	
		Object Oriented Programming Using Java Lab	3	2	
	Major 2 (Core 2)	Web technologies	4	3	
		Web technologies Lab	3	2	
	Minor 1 (Gen Elective)		6	5	Student can choose an elective from other dept\ Maths/Physics/statistics
		Total	32	26	
III	Ability Enhancement Courses	English	4	3	
		Skill Enhancement Course Linux & Ubuntu	2	2	Mapped to Spoken Tutorial/NPTEL/SWAYAM
		Life Skills –I	2	2	
		Life Skills –II	2	2	
		Skill Development Course - I	2	2	
	Major 1 (Core 1)	Relational Database Management System	4	3	
		Relational Database Management System Lab	3	2	
	Major 2 (Core 2)	Fundamentals of Software Engineering	4	3	
		Software Engineering Lab	3	2	
	Minor 1 (Gen Elective)	M/P/St	6	5	Student can choose an elective from other dept\

						Maths/Physics/statistics
			Total	32	26	
IV	Major 1 (Core 1)	Operating Systems		3	3	
		Operating Systems Lab		3	2	
	Major 2 (Core 2)	Computer Networks		6	5	
	Major 3 (Core 3)	Data Structures		3	3	
		Data Structures Lab		3	2	
	Minor 1 (Gen Elective)	Computer Graphics		6	5	
		Embedded Systems		6	5	
	Minor 2 (Gen Elective)	Visual Programming		3	3	
		Visual Programming Lab		3	2	
		JQuery and Ajax		3	3	
		JQuery and Ajax Lab		3	2	
	Minor 3 (Gen Elective)	Fundamentals of IoT		6	5	
		Software Quality testing and Assurance		6	5	
			Total	36	30	
V	Major 1 (Core 1)	Python programming		3	3	
		Python programming lab		3	2	
	Major 2 (Core 2)	Foundations of Machine Learning		3	3	
		Machine Learning Lab		3	2	
	Major 3 (Core 3)	Information Security		3	3	
		Information Security Lab		3	2	
	Minor 1(Subject specific elective)	Big Data analytics	Elective - A	3	3	
		Big Data analytics Lab	Elective - A	3	2	
		Foundation of Data Science	Elective - B	3	3	
		R Programming Lab	Elective - B	3	2	
		Computer Vision	Elective - C	3	3	
		Computer Vision Lab	Elective - C	3	2	
	Minor 2 (Subject specific elective)	PHP & MySQL	Elective - D	3	3	
		PHP & MySQL Lab	Elective - D	3	2	

		RFID and Sensor networks	Elective - E	6	5	
		Android Programming	Elective - F	3	3	
		Android Programming Lab		3	2	
	Minor 3 (Gen Elective)	Project Work		5	5	
			Total	35	30	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAMAHENDRAVARAM

DEPARTMENT OF COMPUTER SCIENCE

B.Sc. IT(Hons) PROGRAMME – COURSE STRUCTURE

UNDER CBCS PATTERN

We have made significant changes to the following syllabus based on the feedback from learners and educators.

S. No	Semester	Course Code	Title of the course	Changes in the Syllabus
1	I	IT101	Programming Fundamentals Using C	1. Pointers, Structures and Unions is shifted from Additional Input to UNIT V
2	I	IT102	Computer System Architecture & Organization	1. DMA, Classification of parallel Processors is shifted from UNIT –IV to UNIT V
3	II	IT103	Object Oriented Programming Using JAVA	1. Managing Errors and Exceptions is shifted from UNIT –IV to UNIT V
4	II	IT133	Web Technologies	1. Paper is replaced System Analysis and Design 2. ALL Units 3. Unit 1 HTML 4. Unit 2 CSS 5. Unit 3 Java Script 6. Unit 4 XML 7. Unit 5 XSLT
5	III	IT105	Relational Database management System	1. PL/SQL, Processor, Cursors is shifted from UNIT –IV to UNIT V
6	III	IT106	Fundamentals of Software Engineering	1. Software Quality and Testing is shifted from Additional Input to UNIT

				V
7	IV	IT121	Operating Systems	1. Android Operating System is shifted from UNIT –IV to UNIT V
8	IV	IT122	Computer Networks	1. Application Layer is shifted from Additional Input to UNIT V
9	IV	IT123	Data Structures	1. Sorting and Searching is shifted from UNIT –IV to UNIT V
10	IV	IT134	Computer Graphics	1. Basic color models and Computer Animation is shifted from Additional Input to UNIT V
11	IV	IT135	Embedded Systems	1. All Units 2. Unit 1 Microprocessors and Microcontrollers 3. Unit 2 Introduction to Embedded Systems 4. Unit 3 Typical Embedded Systems 5. Unit 4 Embedded Systems Firmware Design and Development 6. Unit 5 Embedded Programming Concepts
12	IV	IT125	Visual Programming	1. Accessing Databases is shifted from Additional Input to UNIT V
13	IV	IT136	JQuery and Ajax	1. All Units 2. Unit 1 Introduction to JQuery 3. Unit 2 JQuery CSS

				Methods 4. Unit 3 jQuery UI, Need of jQuery UI in real web sites 5. Unit 4 jQuery validation plug-in 6. Unit 5 Intro to AJAX Need of AJAX in real web sites
12	IV	IT126	Fundamentals of IoT	1. Hadoop is shifted from UNIT –IV to UNIT V
13	IV	IT137	Software Quality testing and Assurance	1. Logic Based Testing is shifted from Additional Input to UNIT V
13	V	**The following courses are introduced in V Semester**		
		IT138 Python programming IT139 Foundations of Machine Learning IT140 Information Security IT141 BigData and Analytics IT142 Foundation of Data Science IT143 Computer Vision IT144 PHP & Mysql IT145 RFID and Sensor networks IT146 ANDROID Programming IT147 Project Work		

B Sc IT (Hons) Syllabus (w.e.f: 2022-23 A.Y)– COURSE STRUCTURE UNDER CBCS PATTERN

S.No	Semester	Course Code	Title of the Course (Paper)	Max Marks (SEE)	Marks in CIA	Hrs/Week			
						L	T	P	C
1.	SEM - I	IT101	Programming Fundamentals Using C	50	50	3	1	-	3
2.		IT101P	Programming Lab	50	0	-	-	3	2
3.		IT102	Computer System Architecture & Organization	50	50	5	1	-	5
4.	SEM - II	IT103	Object Oriented Programming Using JAVA	50	50	3	1	-	3
5.		IT103P	JAVA Programming Lab	50	0	-	-	3	2
6.		IT133	Web Technologies	50	50	5	1	-	5
7.		IT133P	Web Technologies Lab	50	0	-	-	3	2
8.	SEM- III	IT105	Relational Database Management System	50	50	3	1	-	3
9.		IT105P	Relational Database Management System Lab	50	0	-	-	3	2
10.		IT106	Fundamentals of Software Engineering	50	50	5	1	-	5
11.		IT106P	Software Engineering Lab	50	0	-	-	3	2
12.	SEM- IV	IT121	Operating Systems	50	50	3	1	-	3
13.		IT121P	Operating Systems Lab	50	0	-	-	3	2
14.		IT122	Computer Networks	50	50	5	1	-	5
15.		IT123	Data Structures	50	50	3	1	-	3
16.		IT123P	Data Structures Lab	50	0	-	-	3	2
17.		IT134	Computer Graphics	50	50	5	1	-	5
18.		IT135	Embedded Systems	50	50	5	1	-	5
19.		IT125	Visual Programming	50	50	3	1	-	3
20.		IT125P	Visual Programming Lab	50	0	-	-	3	2
21.		IT136	JQuery and Ajax	50	50	3	1	-	3
22.		IT136P	JQuery and Ajax Lab	50	0	-	-	3	2
23.		IT126	Fundamentals of IoT	50	50	5	1	-	5
24.		IT137	Software Quality testing and Assurance	50	50	5	1	-	5
25.	SEM- V	IT138	Python programming	50	50	3	-	-	3
26.		IT138P	Python programming lab	50	0	-	-	3	2
27.		IT139	Foundations of Machine Learning	50	50	3	-	-	3
28.		IT139P	Machine Learning Lab	50	0	-	-	3	2
29.		IT140	Information Security	50	50	3	-	-	3
30.		IT140P	Information Security Lab	50	0	-	-	3	2

31.		IT141	Big Data analytics	50	50	3	-	-	3
32.		IT141P	Big Data analytics Lab	50	0	-	-	3	2
33.		IT142	Foundation of Data Science	50	50	3	-	-	3
34.		IT142P	R Programming Lab	50	0	-	-	3	2
35.		IT143	Computer Vision	50	50	3	-	-	3
36.		IT143P	Computer Vision Lab	50	0	-	-	3	2
37.		IT144	PHP & MySQL	50	50	3	-	-	3
38.		IT144P	PHP & MySQL Lab	50	0	-	-	3	2
39.		IT145	RFID and Sensor networks	50	50	5	-	-	5
40.		IT146	Android Programming	50	50	3	-	-	3
41.		IT146P	Android Programming Lab	50	0	-	-	3	2
42.		IT147	Mini Project Work	50	50	5	-	-	5

L= Lecture, T= Tutorial, P= Practical, C= Credits

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (I Sem)			
Course Code IT 101	**TITLE OF THE COURSE** Programming Fundamentals Using C				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Learn data types and control structures of C
2. Learn to map problems to programming features of C.
3. Learn to write good portable C programs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Appreciate and understand the working of a digital computer
CO2	Analyze a given problem and develop an algorithm to solve the problem
CO3	Improve upon a solution to a problem
CO4	Use the 'C' language constructs in the right way
CO5	Design, develop and test programs written in 'C'.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction to computers - Characteristics and limitations of computer, Block diagram of computer, types of computers, computer generations.

Number systems: binary, hexa and octal numbering system. Input and output devices: Keyboard and mouse, inputting data in other ways.

Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory.

UNIT –II **[13 Hrs.]**

Problem Analysis and its Tools: Problem solving technique and Program Development Life Cycle, Problem Definition, Algorithm, Flow Charts, Types of Errors, Testing and Debugging. Basics of C: Historical development of C Language, Basic Structure of C Program, C Character Set, Identifiers and Keywords, constants, variables, Data types.

Operators and expressions: Arithmetic, Relational, Logical, Assignment, Unary, Conditional and Bitwise operators. Type conversions.

Input and output statements: getchar( ), getch( ), getche( ), putchar( ), printf( ), scanf( ), gets( ), puts( )

UNIT –III **[12 Hrs.]**

Control Statements: Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto.

Arrays: one dimensional Array, two dimensional arrays.

Strings: Input/ Output of strings, string handling functions, table of strings

UNIT –IV **[12 Hrs.]**

Functions: Function Prototype, definition and calling. Return statement. Nesting of functions. Categories of functions. Recursion, Parameter Passing by address & by value. Local and Global variables. Storage classes: automatic, external, static and register.

UNIT –V **[10 Hrs.]**

Pointers: Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic. Pointers and arrays, pointers and functions.

Structures and Unions: Using structures and unions, use of structures in arrays and arrays in structures. Comparison of structure and Union.

Text books:

1. E. Balagurusway, "Programming in C", Tata McGrwal Hill.
2. Computer fundamentals and c programming in c by Reemathareja, oxford university Press.

Reference books:

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: ―COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.

Web Links:

1. https://nptel.ac.in/courses/106/104/106104128/
2. https://nptel.ac.in/courses/106/105/106105171/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc. IT (Hons) Semester-I

Problem solving in C

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Convert (2547)10 to equivalent Binary, Octal and Hexa decimal Numbers
2. Difference between system software, Application software
3. List out various symbols used in flow chart design
4. Write a short note on Structure of C Program
5. Discuss various String handling functions in C
6. Explain one dimensional Array
7. Compare and Contrast Structures with Unions
8. How to declare Pointer

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Draw block diagram of computer? Explain each part of the computer

(Or)

10. Discuss about primary memory and secondary memory

11. Explain the structure of c program with example

(Or)

12. What is Decision control statement? Explain each with example

13. Write a C program to find the Multiplication of Two Matrices Discuss the different categories of functions? Illustrate with example

(Or)

14. Discuss the different categories of functions? Illustrate with example

15. What is a pointer and structure? Explain with example program

(Or)

16. List Storage classes with example

17. Comparison of structure and Union

(Or)

18. What is a pointer and Structure? Explain with example program

* * *

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Hons) (I Sem)			
Course Code IT 101P	**TITLE OF THE COURSE** Programming Fundamentals Using C Lab				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. The purpose of this course is to introduce to students to the field of programming in C language.
2. The students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

List Of Experiments

1. The course is designed to provide complete knowledge of C language.
2. Students will be able to develop logics which will help them to create programs
3. Learning the basic programming constructs they can easily switch over to any other language in future.
4. List of Experiments/Syllabus:
5. Find the biggest of three numbers using C.
6. Write a c program to find the sum of individual digits of a positive integer.
7. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
8. Write a c program to check whether a number is Armstrong or not.
9. Write a program to perform various string operations.
10. Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
11. Write a c program that uses functions to perform the following:
12. Addition of two matrices.
13. Multiplication of two matrices.

14. Write a c program that implements searching of given item in given list.
15. Write a c program to sort a given list of integers in ascending order.
16. Write a c program to perform various operations using pointers.
17. Write a c program to read data of 10 employees with a structure of 1.employee id 2.aadar no, 3.title, 4.joined date, 5.salary, 6.date of birth, 7.gender, 8.department.
18. Write a program for concatenation of two strings.
19. Write a program for length of a string

Reference books:

1. E. Balagurusway, "Programming in C", Tata McGrwal Hill.
2. Dr.Nandini, "C Programming Laboratory", S.Sidnal.

Virtual Lab Links:

1. https://cse02-iiith.vlabs.ac.in/

2. https://qrgo.page.link/CrFaj

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (I Sem)			
Course Code IT 102	**TITLE OF THE COURSE** Computer Organization and Architecture				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To analyze performance issues in processor and memory design of a digital computer.
2. To understand various data transfer techniques in digital computer
3. Processor performance improvement using instruction level parallelism Course

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to understand basic structure of computer
CO2	Ability to understand control unit operations
CO3	Ability to understand the concept of cache mapping techniques.
CO4	Ability to understand the concept of I/O organization.
CO5	Ability to design memory organization that uses banks for different word size operations.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Digital Computers and Information: Computer Generations, Functional Units of a Digital Computer, Performance Issues of a computer.

Number Systems: Binary Numbers, Octal and Hexadecimal Numbers, Complements. Decimal

Codes: BCD Code &Alphanumeric Codes: ASCII Character Code, Parity Bit, gray code. Binary Logic and Gates: NAND,NOR, XOR gates.

UNIT –II **[13 Hrs.]**

Boolean algebra, Standard forms: Sum of Products and Product of Sums, Map Simplification, Half Adder, Full Adder, Multiplexer and Decoder,

Flip-Flops: SR Flip-Flop, D Flip-Flop, JK Flip-Flop, T Flip-Flop.

UNIT –III **[12 Hrs.]**

Instruction Cycle, Types of Instructions, Instruction Format: Three Address Instructions, Two Address Instructions, One Address Instructions , Zero Address Instructions, RISC Instructions, Interrupts, Addressing Modes

UNIT –IV **[12 Hrs.]**

Memory: Memory Hierarchy, RAM vs. ROM, DRAM, SRAM, Types of ROMs, Cache Memory, Virtual Memory, IO Device,

UNIT –V **[10 Hrs.]**DMA,

IO Processor, Flynn‟s Classification of parallel Processors.

Text books:

1. Digital Logic & Computer Design, M. Morris Mano, PHI.
2. Computer System Architecture, M. Morris Mano, Prentice Hall of India Pvt. Ltd., Third Edition, Sept. 2008
3. “Computer System Architecture”, John. P. Hayes.

Reference books:

1. Computer Architecture and Parallel Processing, Kai Hwang and Faye A. Briggs, McGraw Hill, International Edition1985.
2. Computer Architecture and Organization, William Stallings, PHI Pvt. Ltd., Eastern Economy Edition, Sixth Edition, 2003.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106092/
2. http://www.nptelvideos.in/2012/11/computer-organization.html

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc. IT (Hons) Semester-I

IT102: Computer Organization and Architecture

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is gray code? Develop 3 bit gray code for 0 to 7
2. Write Performance Issues of a computer
3. Explain JK Flip-Flop
4. Write a short note on Full Adder
5. Explain Instruction Cycle in detail
6. What is RISC Instructions
7. Explain how to access I/O devices in a system
8. What is parallel Processors

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Find the difference of (3250-72546)10 by using 10"s complement.

(Or)

10. Perform the following:

i) 11010 – 1101

ii) 101011 – 100110 by using 2"s complement

11. Explain Functional Units of a Digital Computer

(Or)

12. Represent the Boolean function F= A + B+C in a sum of minterms.

13. Draw the circuit for 3 to 8 decoder and explain

(Or)

14. Convert a D flip flop into SR flip flop and JK flip flop?

15. What are zero address instructions? Explain with the help of an example

(Or)

16. Explain about the RISC architecture

17. Explain cache memory and virtual memory

(Or)

18. Explain the operation of DMA with neat diagram and also discuss about the DMA operating modes.

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	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (II Sem)			
Course Code IT 103	**TITLE OF THE COURSE** Object Oriented Programming Using Java				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To understand the basic concepts and fundamentals of platform independent object oriented language.
2. To demonstrate skills in writing programs using exception handling techniques and multithreading.
3. To teach the students the differences between C++ and Java programming.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify classes, objects, members of a class and relationships among them needed for a specific problem
CO2	To make the student learn an object-oriented way of solving problems using java
CO3	Write Java application programs using OOP principles and proper program Structuring
CO4	Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO5	To teach the students basics of JAVA programs and its execution

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Fundamentals of Object Oriented Programming: Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP

Overview of JAVA Language: Introduction, Java Features, Simple java program structure, difference between C,C++ and Java, Java and Internet, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments

Constants, Variables and Data Types: Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, symbolic Constants, Type casting, Getting Value of Variables, Standard Default values.

UNIT –II **[13 Hrs.]**

OPERATORS AND EXPRESSIONS: Arithmetic operators, Relational operators, logical operators, Assignment Operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special Operators, Arithmetic operators, Precedence of Arithmetic operators.

DECISION MAKING & BRANCHING: Introduction, Decision making with If statement, Simple if statement, If Else statement, Nesting of if else statements, the else if ladder, the switch statement, the conditional operator.

DECISION MAKING &LOOPING: Introduction, The While statement, the Do-While statement, the for statement, Jumps in loops

UNIT –III **[12 Hrs.]**

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, static members, Nesting of methods, visibility controls

INHERITANCE: Inheritance and Types of Inheritances, Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes.

ARRAYS, STRINGS AND VECTORS: Arrays, One-Dimensional Arrays, Creating an Array, Two-Dimensional Arrays, Strings, Vectors, Wrapper classes

UNIT –IV **[12 Hrs.]**

INTERFACES: MULTIPLE INHERITANCE: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Life cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the „Runnable" Interface

UNIT –V **[10 Hrs.]**

MANAGING ERRORS AND EXCEPTIONS: Types of Errors: Compile-time errors, Run- time Errors, Exceptions, Exception handling, Multiple catch statements, Using finally statement.

Text books:

1. Herbert Schildt "Java - The Complete Reference", Tenth edition, Oracle Press
2. John R.Hubbard, Programming with Java, Second Edition, Schaum"s outline Series, TMH (Unit I-Unit-II)
3. Object Oriented Programming Through Java by P.Radha Krishna, University Press (2008) (Unit III & Unit-IV)
4. Deitel&Deitel. Java TM: How to Program, PHI(2007) (Unit V)

Reference books:

1. E. Balagurusamy, Programming with JAVA, Mc Graw Hill Education.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105191/
2. https://onlinecourses.nptel.ac.in/noc21_cs56/preview

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3

CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc. IT (Hons) Semester-II

IT103: OBJECT ORIENTED PROGRAMMINGUSING JAVA

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is Java Virtual Machine
2. Explain Benefits of OOP
3. Difference between C and Java
4. What is Type casting
5. Explain about Overloading methods? Give example program?
6. Explain Wrapper classes
7. What are the difference between an Interface and a Class
8. Write Types of Errors

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain the Basic concepts of OOP"s?

(Or)

10. Explain about Data types in Java

11. Explain the different types of Operators in Java

(Or)

12. Explain iterative statements in JAVA

13. What is Inheritance? Describe the different types of Inheritance

(Or)

14. Write a Java Program to multiply two Matrices

15. Explain the Life Cycle of a Thread

(Or)

16. Explain the concept of Exception handling mechanism in detail

17. Explain about Types of Errors

(Or)

18. Explain how exception handling in Java?

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Hons) (II Sem)			
Course Code IT 103P	**TITLE OF THE COURSE** Java Programming Lab				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	C programming	-	-	3	2

Objectives:

1. To make the student learn an object oriented way of solving problems using java.
2. To teach the students basics of JAVA programs and its execution.
3. To teach the students the differences between C++ and Java programming.

List Of Experiments

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading & Function Overriding methods in Java
4. Write a program to Illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

Reference books:

1. Harvey M. Deitel, “Java in the Lab” , Paul J. Deitel · 2002.
2. E. Balagurusamy, Programming with JAVA, Mc Graw Hill Education.

Virtual Lab Links:

1. https://java-iitd.vlabs.ac.in/List%20of%20experiments.html

2. https://qrgo.page.link/ZD5c7

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (II Sem)			
Course Code IT 133	**TITLE OF THE COURSE** WEB TECHNOLOGIES				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To provide knowledge on web architecture, web services, client side and server-side scripting technologies to focus on the development of web-based information systems and web services.
2. To provide skills to design interactive and dynamic web sites.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	To learn about Basic tags in HTML
CO2	To learn about the CSS
CO3	To learn about the Building Blocks of HTML, functions
CO4	To learn about working with Forms
CO5	To learn about Interacting with CSS

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

HTML: Basic HTML, Document body, Text, Hyperlinks, Lists, Tables, images, Multimedia objects, Frames, Forms, HTML document heading details.

UNIT –II **[13 Hrs.]**

Cascading Style Sheets: Introduction, Levels of style sheets: inline, internal, external. Style specification formats, selector forms, property- value forms, font properties. - List properties, colour properties, Alignment of text, Box model, Background images, the **** and ** ** tags

UNIT –III **[12 Hrs.]**

Java Script: Dynamic HTML, JavaScript-The basics, variables, String manipulation, Mathematical functions, Statements, Operators, Arrays, Functions, Data validation.

UNIT –IV **[12 Hrs.]**

XML: Introduction, The syntax of XML, XML document structure, document type definition: Elements, attributes, entities, namespaces and xml-schemas.

UNIT –V **[10 Hrs.]**

XSLT, document object model, Web Services: Web Services Description Language (WSDL), Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI).

Text books:

1. Harvey M. Deitel and Paul J. Deitel, “Internet & World Wide Web How to Program”, 4/e, Pearson Education.
2. Robert W . Sebesta “Programming world wide web” 7th edition, Pearson Education.

Reference books:

1. Uttam Kumar Roy, Web Technologies from Oxford University Press

Web Links:

1. https://nptel.ac.in/courses/106/106/106106182/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

I B.Sc. IT (Hons) Semester-II

IT133: WEB TECHNOLOGIES

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What are the applications of WWW
2. Write the properties and values in Style Sheets
3. Explain about anchor tag with an example
4. Explain about frames
5. Write how to insert an image into a web page using HTML
6. Explain features of CSS
7. Write about string manipulation in Java Script
8. How to declare variables in Java Script

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain the types of Lists with examples

(Or)

10. Explain about Forms and Form Controls with example program.

11. Explain the types of CSS with examples

(Or)

12. Create a Web Form and write java Script code for Data Validation in that form

13. What is HTML? Explain the Advantages and Disadvantages of HTML

(Or)

14. What is Document Type Definition (DTD)? Explain how a DTD is created with an example

15. Explain the concept of XML Schema

(Or)

16. What is Document object model in XML? Explain

17. Explain Universal Description, Discovery and Integration (UDDI)

(Or)

18. Explain about Simple Object Access Protocol (SOAP)

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (II Sem)			
Course Code IT 133P	**TITLE OF THE COURSE** Web Technologies Lab				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

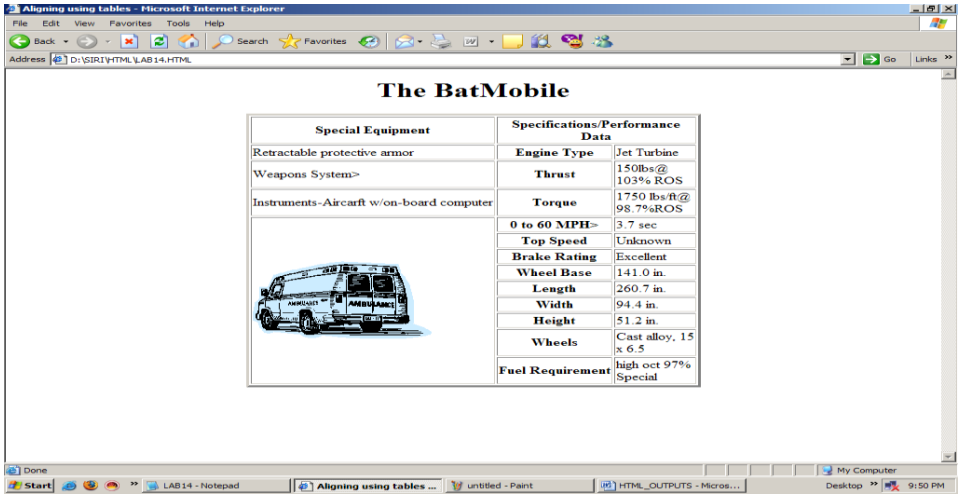
Objectives:

1. To provide knowledge on web architecture, web services, client side and server-side scripting technologies to focus on the development of web-based information systems and web services.
2. To provide skills to design interactive and dynamic web sites.

List Of Experiments

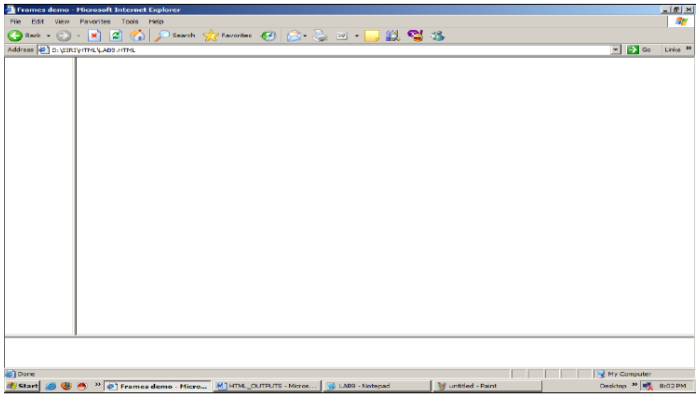
1. Write a HTML program illustrating text formatting.
2. Illustrate font variations in your HTML code.
3. Prepare a sample code to illustrate links between different sections of the page.
4. Create a simple HTML program to illustrate three types of lists.
5. Embed a real player in your web page.
6. Embed a calendar object in your web page.
7. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
8. Create nested table to store your curriculum.
9. Create a form that accepts the information from the subscriber of a mailing system.

10.Design the page as follows:

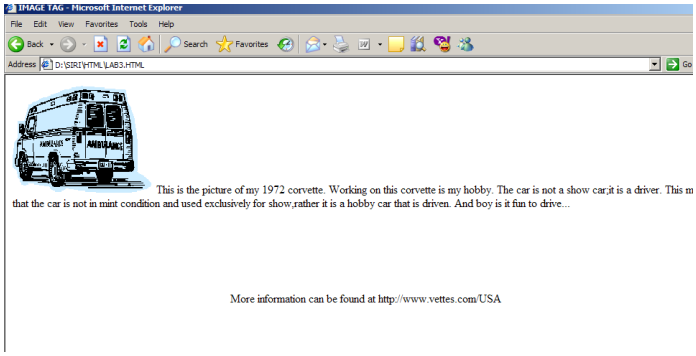


11.**Using "table" tag, align the images as follows:**

12. Divide the web page as follows:

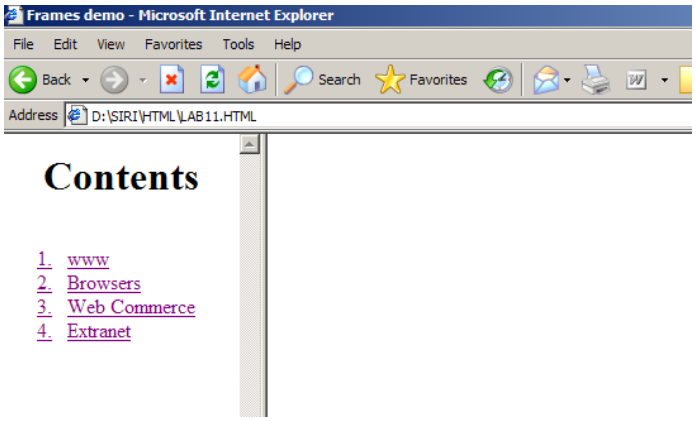


13. Design the page as follows:



14. Illustrate the horizontal rulers in your page.

15. Create a help file as follows:



16. Create a form using form tags (assume the form and fields).
17. Create a webpage containing your bio-data (assume the form and fields).
18. Write a html program including style sheets.
19. Write a html program to include audio or video into webpage.
20. Write a html program to layers of information in web page.

Reference books:

1. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.
2. Robert W . Sebesta "**Programming world wide web**" 7th edition, Pearson Education.

Uttam Kumar Roy, Web Technologies from Oxford University Press

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/labs/index.php

2. http://vlabs.iitb.ac.in/bootcamp/labs/dbms/exp8/exp/theory.php

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (III Sem)			
Course Code IT 105	**TITLE OF THE COURSE** Relational Database Management System				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Design database for large volumes
2. Develop database for large volumes
3. Varieties of data with optimized data processing techniques.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Design and model of data in database.
CO2	Store, Retrieve data in database.
CO3	Will be able to comprehend and evaluate the role of DBMS in IT.
CO4	Stores data in a row-based table structure which connects related data elements.
CO5	Functions that maintain the security, accuracy, integrity and consistency of the data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System ,Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management

System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not necessary.

UNIT –II **[13 Hrs.]**

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modeling.

UNIT –III **[12 Hrs.]**

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC).Normal Forms: Introduction, Functional Dependencies, Normal Forms: I, II, III.

UNIT –IV **[12 Hrs.]**

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query, Embedded SQL

UNIT –V **[10 Hrs.]**

PL/SQL: Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Text books:

1. Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323
2. S. Sumathi, Fundamentals for Relational Database Management System, S.Esakkirajan-Springer.
3. Database Management Systems, Dr. Rajiv Chopra, S Chand Publications.

Reference books:

1. Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002(Unit-I,II).
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications

Web Links:

1. https://nptel.ac.in/courses/106/106/106106093/
2. https://nptel.ac.in/courses/106/106/106106220/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-III

IT105:Relational Database Management System

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is file processing system? Explain its draw backs
2. Explain Evaluation of Database management System
3. What are different types of attributes in DBMS? Explain
4. Write advantages of ER modeling
5. Explain Join operations in relational algebra.
6. Write a short note on Embedded SQL
7. What is a cursor? Explain its types.
8. Explain Structure of PL/SQL

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain DBMS Architecture in detail.

(Or)

10. What is data model? Explain different data models in DBMS.

11. Explain about Extended Entity Relationship (EER) model.

(Or)

12. What is ER model? Explain its concepts.

13. What is Normalization? Explain 1 NF, 2NF and 3NF with examples

(Or)

14. List and explain Codd"s relational database rules

15. Discuss about nested and correlated nested queries with suitable examples

(Or)

16. Explain procedures in PL/SQL

17. Discuss About Packages in PL/SQL

(Or)

18. Explain the Types of Triggers.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (III Sem)			
Course Code IT105P	**TITLE OF THE COURSE** Relational Database Management Systems				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Working on existing database systems.
2. Designing of database.
3. Creating relational database, analysis of table design.

List Of Experiments

1. Draw ER diagrams for train services in a railway station.
2. Draw ER diagram for hospital administration.
3. Creation of college database and establish relationships between tables.
4. Write a view to extract details from two or more tables.
5. Write a stored procedure to process students results.
6. Write a program to demonstrate a function.
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins.
9. Write a program to demonstrate of Aggregate functions.
10. Creation of Reports based on different queries.
11. Usage of file locking table locking, facilities in applications

Reference books:

1. Database Management Systems, Dr. Rajiv Chopra, S Chand Publications.
2. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications.

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/labs/index.php

2. http://vlabs.iitb.ac.in/bootcamp/labs/dbms/exp8/exp/theory.php

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (III Sem)			
Course Code IT 106	**TITLE OF THE COURSE** FUNDAMENTALS OF SOFTWARE ENGINEERING				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Analytical Thinking, problem-solving	3	1	-	3

Course Objectives:

1. Fundamental knowledge of software engineering
2. Able to understand and apply the basic project management practices in real life Projects

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to gather and specify requirements of the software projects.
CO2	Ability to analyze software requirements with existing tools
CO3	Able to differentiate different testing methodologies
CO4	Able to understand and apply the basic project management practices in real life projects
CO5	Ability to work in a team as well as independently on software projects

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

INTRODUCTION: Software Engineering Process paradigms - Project management – Process and Project Metrics – software estimation - Empirical estimation models - Planning – Risk analysis - Software project scheduling.

UNIT –II **[13 Hrs.]**

REQUIREMENTS ANALYSIS: Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT –III **[12 Hrs.]**

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

UNIT –IV **[12 Hrs.]**

USER INTERFACE DESIGN AND REAL TIME SYSTEMS: User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

UNIT –V **[10 Hrs.]**

SOFTWARE QUALITY AND TESTING: Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering.

CASE tools –projects management, tools - analysis and design tools – programming tools - integration and testing tool - Case studies.

Text books:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010
2. Software Engineering, Rod Stephens, Wiley Publications.

Reference books:

1. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, “Fundamentals of Software Engineering”, Pearson Education, 2003 for Unit-I & Unit-II
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press for Unit-III, Unit-IV & Unit-II

Web Links:

1. https://nptel.ac.in/courses/106/105/106105087/
2. http://vlabs.iitkgp.ac.in/se/
3. https://nptel.ac.in/courses/106/105/106105182/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-III

IT106: FUNDAMENTALS OF SOFTWARE ENGINEERING

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain the process and project metrics.
2. What is software estimation
3. Explain the golden rules used for user interface design
4. Write Feasibility Study
5. Explain metrics for software quality
6. Explain Cohesion
7. Explain size oriented and function oriented functions
8. Write the uses of Black Box testing

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Why it is important to manage project? Explain software management

(Or)

10. Write about software planning and project scheduling.

11. Explain the requirement engineering process with the help of a diagram and also explain the spiral model of requirements.

(Or)

12. Describe the process of creating an analysis model and list out its elements.

13. What is software architecture? Why it is so important? Explain structural partitioning

(Or)

14. Explain the various user interface analysis and design models

15. How a user interface design is evaluated?

(Or)

16. Explain about Verification and Validation Techniques?

17. Write about Black Box testing

(Or)

18. Explain the project analysis and design tools.

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Hons) (II Sem)			
Course Code IT 106P	**TITLE OF THE COURSE** FUNDAMENTALS OFSOFTWARE ENGINEERING				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. Fundamental knowledge of software engineering

List Of Experiments

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.
9. Prepare FTR. Version control and change control for software configuration item

Reference books:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010
2. Software Engineering, Rod Stephens, Wiley Publications.

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/bootcamp/labs/dbms/exp8/exp/theory.php

2. http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/labs/index.php

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT121	**TITLE OF THE COURSE** OPERATING SYSTEMS				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Understand Operating System Architectural design and its services.
2. Specify objectives of modern operating systems and describe.
3. Understand and identify potential threats to operating systems and the security features design to guard against them

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Know Computer system resources and the role of operating system in resource Management with algorithms
CO2	Understand Operating System Architectural design and its services
CO3	Gain knowledge of various types of operating systems including Unix and Android
CO4	Comprehend different approaches for memory management.
CO5	Describe the functions of a contemporary operating system.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction,

Types of Operating Systems– Multi programming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems

UNIT –II **[13 Hrs.]**

Processor and User Modes: Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT –III **[12 Hrs.]**

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT –IV **[12 Hrs.]**

Memory Management- Physical and Virtual Address Space; Memory Allocation Strategies– Fixedand -Variable Partitions, Paging, Segmentation, Virtual Memory.

File and I/O Management, OS security: Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization

UNIT –V **[10 Hrs.]**

Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

Text books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and

GregGagne(7thEdition) Wiley India Edition

2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Remzi H. Arpaci-Dusseau,"Operating Systems", Andrea C. Arpaci-Dusseau

Reference books:

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH).
2. Operating Systems Dhananjay M.Dhamdhere. McGraw-Hill Higher education.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106144/
2. https://nptel.ac.in/courses/106/102/106102132/
3. https://nptel.ac.in/courses/106/108/106108101/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

IT121 :: OPERATING SYSTEMS

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Write about Resource Abstraction.
2. What is Time Sharing Systems
3. Explain threading issues.
4. What are Threading Issues
5. Discuss some necessary and sufficient conditions for deadlock.
6. Write Security Policy Mechanism
7. Explain about Virtual memory.
8. Explain benefits of Android Operating System

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain various types of Operating Systems

(Or)

10. What is Operating System? Explain functions of Operating System.

11. Explain in detail about Process Scheduling.

(Or)

12. Explain system view of the process and resources.

13. Explain about deadlock Detection and recovery

(Or)

14. Discuss classical process synchronization problems

15. Explain the following

a. Segmentation

b. Fixed and variable partitions?

(Or)

16. Explain in detail about Demand-paging.

17. Discuss about Android Development Framework

(Or)

18. Explain the Android Process Management.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (IV Sem)			
Course Code IT121P	**TITLE OF THE COURSE** OPERATING SYSTEM				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. Experiment with Unix commands and shell programming
2. Choose the best CPU scheduling algorithm for a given problem instance
3. Identify the performance of various page replacement algorithms

List Of Experiments

1. Write a program to implement Round Robin CPU Scheduling algorithm.
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm.
4. Write a program to Priority CPU Scheduling algorithm.
5. Simulate Sequential file allocation strategies.
6. Simulate Indexed file allocation strategies.
7. Simulate Linked file allocation strategies.
8. Simulate MVT and MFT memory management techniques.
9. Simulate Single level directory File organization techniques.
10. Simulate Two level File organization techniques.
11. Simulate Hierarchical File organization techniques.
12. Write a program for Bankers Algorithm for Dead Lock Avoidance.
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.

    FIFO

    LRU

    LFU

15. Simulate Paging Techniques of memory management.

Reference books:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne(7thEdition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson

Virtual Lab Links:

1. https://qrgo.page.link/DxUWD 
2. https://qrgo.page.link/75D2v 

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT122	**TITLE OF THE COURSE** COMPUTER NETWORKS				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Connections, Communications, and Services.	3	1	-	3

Course Objectives:

1. To provide fundamental concepts on data communication.
2. Introduction to the fundamental concepts of the design of computer networks..
3. To get familiarized with the basic protocols of computer networks

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles.
CO2	Describe the technical issues related to the local Area Networks.
CO3	Identify the common technologies available in establishing LAN infrastructure.
CO4	How computer networks are organized with the concept of layered approach
CO5	How signals are used to transfer data between nodes.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network.

UNIT –II **[13 Hrs.]**

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, Multiple Access Protocols, Ethernet, Data Link Layer Switching.

UNIT –III **[12 Hrs.]**

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service. Internet Working, The Network Layer in the Internet

UNIT –IV **[12 Hrs.]**

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay To learn Networks.

UNIT –V **[10 Hrs.]**

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Text books:

1. Andrew S. Tanenbaum, “Computer Networks”, Fifth Edition, Pearson Education.
2. BhushanTrivedi, Computer Networks , Oxford University Press.
3. James F.Kurose, Keith W.Ross, “Computer Networking”, Third Edition, Pearson Education.

Reference books:

1. BehrouzAForouzan,“DataCommunicationsandNetworking”,FourthEdition,TMH (2007).

2. Kurose&Ross,“COMPUTERNETWORKS”–ATop-downapproachfeaturingthe Internet”, Pearson Education – Alberto Leon –Garciak.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105081/
2. https://nptel.ac.in/courses/106/106/106106091/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
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GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

IT122 :: COMPUTER NETWORKS

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain the uses of Computer Networks
2. What is Guided Transmission
3. Discuss about Wireless Transmission
4. What is Multiple Access Protocols
5. Explain Sliding Window Protocols
6. Write Internet Transport Protocols
7. Explain about Ethernet
8. What is World Wide Web

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What is Computer Network? Explain its types give examples

(Or)

10. Explain about Data Communication

11. Briefly explain the Error Detection and Correction.

(Or)

12. Explain how Multiple Access Protocols used in Networks.

13. Explain the various issues in Network Layer Design

(Or)

14. How working Network Layer in the Internet

15. What is Transport Protocols? Explain the Elements of Transport Protocols

(Or)

16. Explain the Congestion Control Algorithms.

17. Write about Domain Name System

(Or)

18. Explain the Content Delivery.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT123	**TITLE OF THE COURSE** Data Structures				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	C Programming	3	1	-	3

Course Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks,queues,lists,trees and graphs.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to analyze algorithms and algorithm correctness.
CO2	Ability to summarize searching and sorting techniques.
CO3	Ability to describe stack,queue and linked list operation.
CO4	Ability to have knowledge of tree and graphs concepts.
CO5	Solving problems with the help of fundamental data structures.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Concept of Abstract Data Types (ADTs): Data Types, Data Structures, Primitive and Non-primitive Data Structures, Linear and Non-Linear Data Structures. Linear Lists: ADT, Array and

Linked representations, Pointers.

Arrays: One Dimensional – Two Dimensional – Multi Dimensional Operations – Sparse Matrices.

Linked Lists: Single Linked List, Double Linked List, Circular Linked List, applications.

UNIT –II **[13 Hrs.]**

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications – Tower of Hanoi Problem. Queues: Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications

UNIT –III **[12 Hrs.]**

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Threaded Binary Trees, Heap Trees, B Trees, B+ Trees Indexing

UNIT –IV **[12 Hrs.]**

Graphs: Graph and its Representations, Graph Traversals: BFS, DFS, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

UNIT –V **[10 Hrs.]**

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Hear Sort, Sequential and Binary Searching.

Text books:

1. Robert Lafore, Data Structures & Algorithms in Java, Second Edition, Pearson Education (2008)
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, Mc-Graw-Hill, 2002
3. Samanta D, Classic Data Structures , Prentice-Hall of India, 2001.
4. Heilman G I, Data Structures and Algorithms with OOPs Tata McGraw-Hill, 2002 (chapters

1 and 14)

Reference books:

1. Tremably P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw -Hill

Web Links:

1. https://nptel.ac.in/courses/106/103/106103069/
2. https://nptel.ac.in/courses/106/102/106102064/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

Data Structures

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is data structure? Explain various data types
2. Explain Sparse Matrices
3. What is a Tree? How binary trees are represented in memory
4. Write about Dequeues
5. Write the Applications of Depth First Search
6. Write BST Applications
7. Define Sorting. What are the advantages and disadvantages of Merge Sort
8. What is Binary Search

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What is circular linked list? Write a program to explain the concept of Circular Linked list

(Or)

10. Write an algorithm and explain how to convert an infix expression into post fix expression using stack

11. What is Deque? What are the different techniques used to represent Deque? Explain

(Or)

12. What is a Binary tree? What are various traversing methods in Trees

13. What is graph? Explain various representation of Graphs

(Or)

14. What are the various ways to find minimal spanning tree? Explain

15. What is searching? Explain Binary Search Algorithm with example

(Or)

16. Explain Bubble sorting technique with example

17. Write an algorithm Binary Search

(Or)

18. Explain the Quick Sort.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (IV Sem)			
Course Code IT123P	**TITLE OF THE COURSE** Data Structures				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques.
3. To Understand basic concepts about stacks, queues, lists, trees and graphs

List Of Experiments

1. Write a program to read „N" numbers of elements into an array and also perform the following operation on an array
2. Add an element at the begging of an array
3. Insert an element at given index of array
4. Update a element using a values and index
5. Delete an existing element
6. Write a program using stacks to convert a given infix expression to postfix
7. Write Programs to implement the Stack operations using an array
8. Write Programs to implement the Stack operations using Liked List.
9. Write Programs to implement the Queue operations using an array.
10. Write Programs to implement the Queue operations using Liked List.
11. Write a program for Binary Search Tree Traversals
12. Write a program to search an item in a given list using the following Searching Algorithms.
    *Linear Search *Binary Search.
13. Write a program for implementation of the following Sorting Algorithms
    * Bubble Sort * Insertion Sort *Quick Sort
14. Write a program to find out shortest path between given Source Node and Destination Node

in a given graph using Dijkstrar‟s algorithm

15. Write a program to implement Depth First Search graph traversals algorithm
16. Write a program to implement Breadth First Search graph traversals algorithm.

Reference books:

1. Robert Lafore, Data Structures&Algorithms in Java, 2nd Edition, Pearson Education.
2. Sahani S, Data Structures, Algorithms and Applications in JAVA, McGraw-Hill, 2001.

Virtual Lab Links:

1. https://qrgo.page.link/eeoHv

2. https://qrgo.page.link/zKAR1

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT 134	**TITLE OF THE COURSE** COMPUTER GRAPHICS				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Provides knowledge on elements of computer graphics.
2. Fundamental techniques of computer graphics.
3. The course introduces the basic concepts of computer graphics

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles
CO2	Describe the technical issues related to the local Area Networks
CO3	Identify the common technologies available in establishing LAN infrastructure
CO4	Extract scene with different clipping methods and its transformation to graphics display device
CO5	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Basic elements of Computer graphics: Applications of Computer Graphics. Architecture of Raster

and Random scan display devices, input/output devices.

UNIT –II **[13 Hrs.]**

Fundamental Techniques in Graphics: Raster scan line, circle and ellipse drawing, thick primitives, Polygon filling, line and polygon clipping algorithms.

UNIT –III **[12 Hrs.]**

2D and 3D Geometric Transformations: 2D and 3D Viewing Transformations

(Projections- Parallel and Perspective), Vanishing points.

Geometric Modeling: Representing curves & Surfaces.

UNIT –IV **[12 Hrs.]**

Visible Surface determination: Hidden surface elimination. Surface rendering Illumination and shading models.

UNIT –V **[10 Hrs.]**

Basic colour models and Computer Animation

Text books:

1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd edition Publication Addison Wesley 1990.
2. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008

Reference books:

1. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997.
2. D.F.Rogers, Adams Mathematical Elements for Computer Graphics, McGraw Hill 2nd edition 1989.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106090/
2. https://nptel.ac.in/courses/106/102/106102063/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
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		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

Computer Graphics

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain applications of computer graphics?
2. What is Random scan display
3. Explain polygon filling?
4. Write polygon clipping algorithms
5. Explain curves?
6. What is Transformations
7. Explain RGB colour model?
8. What are shading models

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain input output devices?

(Or)

10. Explain random scan, raster scan?

11. Explain DDA line drawing algorithm with example?

(Or)

12. Explain circle algorithm?

13. Explain parallel and perspective projection?

(Or)

14. Explain 2D and 3D geometric transformation?

15. Explain shading model?

(Or)

16. Explain hidden surface elimination method?

17. Explain about colour model

(Or)

18. Explain Computer Animation.

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Hons) (II Sem)			
Course Code IT134P	**TITLE OF THE COURSE** COMPUTER GRAPHICS				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Provide programming skills on usage of networking tools.
2. Provide programming skills on usage of cryptographic algorithms.
3. Identify the different components in a Communication System and their respective roles

List Of Experiments

1. Write a program to implement Bradenham's line drawing algorithm.
2. Write a program to implement mid-point circle drawing algorithm.
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.
4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).
6. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.
7. Write a program to draw Hermite/Bezier curve

Reference books:

1. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008
2. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997

Virtual Lab Links:

1. https://qrgo.page.link/37KiC

   https://cse18-iiith.vlabs.ac.in/

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT135	**TITLE OF THE COURSE** EMBEDDED SYSTEMS				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To understand the basics of microprocessors and microcontrollers architecture and its functionalities
2. Understand the core of an embedded system
3. To learn the embedded firmware design and development
4. To understands the embedded programming concepts

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers
CO2	Understand the core of the Embedded systems
CO3	Understand Embedded Firmware design approaches
CO4	Understand Embedded programming concepts
CO5	

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

INTRODUCTION TO MICROPROCESSORS AND MICROCONTROLLERS: 8086 Microprocessor: Architecture of 8086, Register Organization, Programming Model, Memory segmentation, Signal descriptions of 8086, Addressing modes, Instruction Set. 8051 Microcontroller: 8051 Architecture, I/O Ports, Memory Organization, Instruction set of 8051.

UNIT –II **[13 Hrs.]**

INTRODUCTION TO EMBEDDED SYSTEMS: History of embedded systems, Classification of embedded systems based on generation and complexity, Purpose of embedded systems, Applications of embedded systems, and characteristics of embedded systems, Operational and Non-operational attributes of embedded systems

UNIT –III **[12 Hrs.]**

TYPICAL EMBEDDED SYSTEM : Core of the embedded system, Sensors and actuators, Onboard communication interfaces- I2C, SPI, parallel interface; External communication interfaces RS232, USB, infrared, Bluetooth, Wi-Fi, ZigBee, GPRS.

UNIT –IV **[12 Hrs.]**

EMBEDDED FIRMWARE DESIGN AND DEVELOPMENT: Embedded firmware design approaches - super loop based approach, operating system based approach; embedded firmware development languages-assembly language based development, high level language based development.

UNIT –V **[10 Hrs.]**

EMBEDDED PROGRAMMING CONCEPTS: Data types, Structures, Modifiers, Loops and Pointers, Macros and Functions, object oriented Programming, Embedded Programming in C++&JAVA

Text books:

1. Embedded Systems, Raj Kamal, Second Edition TMH.
2. Kenneth. J. Ayala, The 8051 Microcontroller , 3rd Ed.,Cengage Learning
3. Introduction to Embedded Systems - shibu k v, Mc GrawHill Education

Reference books:

1. Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandi, TMH, 2nd Edition2006
2. Embedded Systems- An integrated approach - Lyla B Das, Pearsoneducation2012.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106090/
2. https://nptel.ac.in/courses/106/102/106102063/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
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		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

EMBEDDED SYSTEMS

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What are the challenges faced in designing an Embedded System?
2. Differentiate I2C and SPI
3. Explain the Embedded Software in a system?
4. Differentiate Simulator and Emulator
5. List out the features of embedded C++ and embedded java?
6. Explain the memory devices in embedded system
7. What should be the goals of OS?
8. Define process, thread and tasks?

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain the Hardware components of an embedded system in details?

(Or)

10. Explain the serial communication using I2C, CAN, and USB in detail?

11. Explain the steps involved in the Hardware design process of an embedded system.

(Or)

12. Explain the parallel communication using PCI?

13. With neat diagram explain the working of direct memory access?

(Or)

14. What is an interrupt? Explain the Device drivers for handling ISR in details?

15. What are the different types of Software Debugging Techniques? Explain in detail?

(Or)

16. What are the concepts used in embedded programming?

17. Explain in details about the Inter Process Communication and Context Switching

(Or)

18. Explain the terminologies semaphore, mailboxes, and pipes and shared data in RTOS.

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (IV Sem)			
Course Code IT125	**TITLE OF THE COURSE** PROGRAMMING IN VISUAL BASIC				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. A This course represents concepts of .NET framework and VB.NET programming

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the basic structure of vb.net programming
CO2	Different data types
CO3	Build forms using drag and drop toolbar
CO4	Able to create and design Menus.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

NET Framework-The Visual Basic.NET IDE-Properties-Solution Explorer-Menu bar- Tool Bar.

Data types-Numbers, Strings, Dates, Boolean, Storing variables-Representing values, converting values, Methods

Arrays, Initializing Arrays with values, enumerations-Using Enumerations-Constants- Using Constants, Structure -Building Structures adding Properties to structure

UNIT –II **[13 Hrs.]**

Decision making –If statement, Else statement multiple alternatives with else if, nested IF, comparison operators, string comparison, select case

Loops-The For... Next Loop, For Each Loop, Do.. Loop, Loops, Nested Loops.

UNIT –III **[12 Hrs.]**

Message Box Dialog Box, Creating Menus-Designing Menus, Adding toolbars and controls, Coding Menus, Multiple Forms

UNIT –IV **[12 Hrs.]**

Dialog Controls: Open Dialog controlSave Dialog Control, Font Dialog Control, Color Dialog Control, Print Dialog Control

UNIT –V **[10 Hrs.]**

Accessing Databases: - Data Access component- OLE DB connection, Data Set, OLE DB Data Adapter, OLE Db command, Data View, Data Building-Data Grid control, The Data Source Property, The Data member Property

Text books:

1. Introduction to Visual basic.NET-NIIT Prentice Hall of India 2005

Reference books:

1. BeginningVB.NET2003-2004Edition-Thearonwillis, Jonathan Crosland, Richard Blair.

Web Links:

1. https://www.nptelvideos.com/visualbasic_net/?pn=0

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
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2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

IT125:: PROGRAMMING IN VISUAL BASIC

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Write about any 5 toolbox controls?
2. How Storing variables in VB
3. Write Select. .Case with syntax and example?
4. Explain comparison operators,
5. Write about Nested loops?
6. Write a short note on Creating Menus in VB
7. Explain working with multiple forms?
8. Explain Data Grid control

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What is IDE? Write about Visual Basic.NET Framework.

(Or)

10. What are the Data types supported by VB.NET? Explain variable declaration with syntax?

11. Write the decision makingstatementsinVB.NET with syntax and example?

(Or)

12. Explain working of looping statements in VB.NET with syntax and example?

13. Explain about Message Dialog Box in detail.

(Or)

14. Explain Creation of menus, adding tool bars and other controls with a suitable example.

15. Explain the following Dialog boxes

a) Font Dialog Control b) Open Dialog Control

(Or)

16. Explain the following Dialog boxes

a) Save Dialog Box b) Color Dialog Control.

17. Explain about OLE DB connection

(Or)

18. Explain Data Grid control.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (IV Sem)			
Course Code IT125P	**TITLE OF THE COURSE** PROGRAMMING IN VISUAL BASIC				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. A This course represents concepts of .NET framework and VB.NET programming

List Of Experiments

1. To Develop VB application to calculate given two numbers and display the result using arithmetic operations
2. To Develop VB application for copying the elements from one list to another list and Vice-Versa
3. To Develop VB application to search an item from list of items using Binary Search
4. To Develop VB application to display the profile of a valid user conditions
   a). Check the User with Password
   b). Display his profile
5. To Develop VB application to calculate Fahrenheit Temperature to Celsius Temperature using Scroll Bars
6. To Develop VB application to calculate Roots of a Quadratic Equation using Select Statement
7. To Develop VB application to change the form back ground colors using Sliders
8. To Develop VB application to display the publisher details using Data and DBGrid
9. To Develop VB application to make survey on different age groups
   (age groups may be 25-34, 35-44, 45-54, and >=55) and Display the Number of people on a particular age group
10. To Develop a simple calculator by using VB application and Display

Reference books:

1. Introduction to Visual basic.NET-NIIT Prentice Hall of India 2005

Virtual Lab Links:

1. https://qrgo.page.link/eeoHv
2. https://qrgo.page.link/zKAR1

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT 136	**TITLE OF THE COURSE** JQuery and Ajax				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	HTML, CSS & Java Script	3	1	-	3

Course Objectives:

1. Objective of this Course is to impart knowledge in designing a webpage in a structured
2. way by using advanced java script ie., using different scripting languages

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand fundumentals of JQuery and CSS methods
CO2	Efficiently use JQuery User Interface
CO3	Use Ajax and manage data using JQueryAjax
CO4	Use built in directives, bootstrapping data bindings
CO5	Understand custom factories and use custom services,

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

JQuery – String, Numbers, Boolean, Objects, Arrays, Functions, Arguments, Scope, Built-in Functions. jQuery Selectors: CSS Element Selector, CSS Element ID Selector, CSS Element Class Selector, CSS Universal Selector, Multiple Elements E, F, G Selector, Callback Functions. jQuery – DOM Attributes: Get Attribute Value, Set Attribute Value.

jQuery – DOM Traversing : Find Elements by index, Filtering out Elements, Locating Descendent Elements, JQuery DOM Traversing Methods.

UNIT –II **[13 Hrs.]**

jQuery – CSS Methods, Apply CSS Properties, Apply Multiple CSS Properties, Setting Element Width & Height, JQuery CSS Methods.

jQuery – DOM Manipulation Methods: Content Manipulation, DOM Element Replacement, Removing DOM Elements, Inserting DOM elements, DOM Manipulation Methods. jQuery – Events Handling: Binding event handlers, Removing event handlers, Event Types, The Event Object, The Event Attributes.

UNIT –III **[12 Hrs.]**

Intro to **jQuery UI,** Need of jQuery UI in real web sites, Downloading jQuery UI, Importing jQuery UI, Draggable, Droppable, Resizable, Selectable, Sortable, Accordion, Auto Complete, Button Set, Date Picker, Dialog, Menu, Progress Bar, Slider, Spinner, Tabs, Tooltip, Color Animation, Easing Effects, addClass, remove Class, Effects, jQuery UI themes, Customizing jQuery UI widgets / plug-ins, jQuery UI with CDN, Consuming jQuery Plug-ins from 3rd party web sites jQuery Validations,

UNIT –IV **[12 Hrs.]**

Intro to **jQuery validation** plug-in, Using jQuery validation plug-in, Regular expressions

UNIT –V **[10 Hrs.**

Intro to **AJAX** Need of AJAX in real web sites, Getting database data using jQueryAJAX, Inserting, Updating, Deleting database data using jQuery-AJAX Grid Development using jQueryAJAX Intro to JSON JSON syntax, Need of JSON in real web sites, JSON object, JSON array, Complex JSON objects, Reading JSON objects using jQuery.

Text books:

1. JQuery UI 1.8: The User Interface Library for jQuery by Dan Wellman
2. jQuery Fundamentals by Rebecca Murphey

Reference books:

1. Ajax: The Complete Reference by Thomas A. Powell

Web Links:

1. https://www.w3schools.com/angular
2. https://www.w3schools.com/js/js_ajax_intro.asp
3. https://www.w3schools.com/jquery/jquery_ref_ajax.asp

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
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GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

IT136 :: jQuery and Ajax

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is jquery? Write a simple program to display welcome message.
2. Write CSS Universal Selector
3. Discuss in detail about jquery UI categorization.
4. How to Removing DOM Elements
5. Write a need of AJAX in real websites.
6. What is Color Animation
7. What is JSON? Write a syntax &need of JSON in real websites
8. What is JSON array

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain in detail about DOM traversing methods.

(Or)

10. Explain detail about jquery-dom manipulation methods?

11. Explain detail about jquery even handling methods?

(Or)

12. Write a program for droppable , resizable using jquery UI?

13. How can we manipulate the data in a database using jquery-AJAX.

(Or)

14. What is JSON object? Discuss in detail about complex JSON objects.

15. Explain 3 party web sites jQuery Validations

(Or)

16. Explain the jQuery validation plug-in.

17. Explain about Inserting, Updating, Deleting database data using jQuery

(Or)

18. Write JSON syntax? Explain need of JSON in real web sites.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Hons) (IV Sem)			
Course Code IT 136P	**TITLE OF THE COURSE** jQuery and Ajax				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Objective of this Course is to impart knowledge in designing a webpage in a structured way by using advanced java script ie., using different scripting languages

List Of Experiments

1. Using jQuery find all textareas, and makes a border.Then adds all paragraphs to the jQuery object to set their borders red.
2. Using jQuery add the class "w3r_font_color" and w3r_background to the last paragraph element.
3. Using jQuery add a new class to an element that already has a class.
4. Using jQuery insert some HTML after all paragraphs.
5. Using jQuery insert a DOM element after all paragraphs.
6. Convert three headers and content panels into an accordion. Initialize the accordion And specify the animate option
7. Convert three headers and content panels into an accordion. Initialize the accordion and specify the height.
8. Create a pre-populated list of values and delay in milliseconds between a keystroke occurs and a search is performed.
9. Initialize the button and specify the disable option.
10. Initialize the button and specify an icon on the button.
11. Initialize the button and do not show the label.
12. Create a simple jQuery UI Datepicker. Now pick a date and store it in a textbox.
13. Initialize the date picker and specify a text to display for the week of the year column

heading.

Reference books:

1. jQuery UI 1.8: The User Interface Library for jQuery by Dan Wellman
2. jQuery Fundamentals by Rebecca Murphey
3. Ajax: The Complete Reference by Thomas A. Powell

Virtual Lab Links:

http://vlabs.iitb.ac.in/vlabs-dev/labs/html-basics-iitd/experiments/creating-web-page-layout-in-html-iitd/references.html

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT 126	**TITLE OF THE COURSE** FUNDAMENTALS OF IOT				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To study fundamental concepts of IoT.
2. To understand roles of sensors in IoT
3. To Learn different protocols used for IoT design

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Understand the various concepts, terminologies and architecture of IoT systems
CO2	Use sensors and actuators for design of IoT
CO3	Understand and apply various protocols for design of IoT systems
CO4	Use various techniques of data storage and analytics in IoT
CO5	Understand APIs to connect IoT related technologies

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

UNIT –II **[13 Hrs.]**

Sensors Networks: Definition, Types of Sensors, Types of Actuators, Examples and Working. IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components. Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

UNIT –III **[12 Hrs.]**

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet, Modbus. IP Based Protocols for IoT: IPv6, 6LowPAN, RPL, REST, AMPQ, CoAP, MQTT.

Edge connectivity and protocols.

UNIT –IV **[12 Hrs.]**

Data Handling& Analytics: Introduction, Bigdata, Types of data, Characteristics of Big data, Data handling Technologies, Flow of data, Data acquisition, Data Storage,

UNIT –V **[10 Hrs.]**

Introduction to Hadoop. Introduction to data Analytics: Types of Data analytics, Local Analytics, Cloud analytics and applications.

Text books:

1. Hakima Chaouchi, — "The Internet of Things Connecting Objects to the Web" ISBN 978-1-84821-140-7, Wiley Publications.
2. Olivier Hersent, David Boswarthick, and Omar Elloumi, — "The Internet of Things: Key Applications and Protocols", WileyPublications.

Reference books:

1. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving

World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications.
2. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.
3. Keysight Technologies, "The Internet of Things: Enabling Technologies and Solutions for Design and Test", Application Note, 2016.

Web Links:

1. https://onlinecourses.nptel.ac.in/noc17_cs22/course
2. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

II B.Sc. IT (Hons) Semester-IV

IT 126:: Fundamentals of IoT

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Discuss the Characteristics of IoT
2. Explain Internet in IoT
3. Write the Types of Sensors
4. What is Networking Nodes
5. Explain about IEEE 802.15.4
6. What is Data acquisition
7. Write a short note Characteristics of Big data
8. Explain Cloud analytics

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain in detail Physical & Logical Design of IoT.

(Or)

10. Discuss how Enabling Technologies in IoT

11. Explain the Arduino IDE and Board Types

(Or)

12. Describe the RFID Principles and components

13. Explain about WPAN Technologies for IoT

(Or)

14. Write a note on IP Based Protocols for IoT IPv6

15. What is Bigdata? Explain Data handling Technologies

(Or)

16. What is data Analytics? Explain Types of Data analytics

17. Explain about data Analytics

(Or)

18. Explain Cloud analytics.

	Government College (Autonomous) Rajahmundry	Program & Semester II B.Sc. IT (Honors) (IV Sem)			
Course Code IT 137	**TITLE OF THE COURSE** SOFTWARE TESTING & QUALITY ASSURANCE				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Software Engineering	3	1	-	3

Course Objectives:

1. To understand the software testing methodologies.
2. Flow graphs and path testing, transaction flows testing.
3. Data flow testing, domain testing and logic base testing.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Ability to write test cases for given software to test it before delivery to the customer.
CO2	Ability to apply the process of testing and various methodologies in testing for developed software.
CO3	To find errors, gaps, or missing requirements in comparison to the actual requirements.
CO4	you need to know that errors may appear in any phase of the life cycle.
CO5	Each testing technique helps to find a specific type of defect.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction: - Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy

of bugs.

Flow graphs and Path testing: - Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT –II **[13 Hrs.]**

Transaction Flow Testing:- Transaction flows, transaction flow testing techniques. Dataflow testing: - Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT –III **[12 Hrs.]**

Domain Testing:- Domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and test ability.

UNIT –IV **[12 Hrs.]**

Paths, Path products and Regular expressions:-Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

UNIT –V **[10 Hrs.]**

Logic Based Testing:- overview, decision tables, path expressions, kv charts, specifications.

Text books:

1. Software Testing techniques – Boris Beizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

Reference books:

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing,3rd edition,P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.

Web Links:

1. https://nptel.ac.in/courses/106/105/106105150/
2. https://nptel.ac.in/courses/106/101/106101163/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
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2	II	2	2	20.8%
3	III	2	2	20.8%
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5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT137: Software Testing & Quality Assurance

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain basic concepts of path testing
2. Write path instrumentation
3. Explain application of dataflow testing
4. What Dataflow testing
5. Explain about interfaces testing
6. Explain about log based testing
7. Describe the procedure for specification validation using KV charts.
8. Write decision tables

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What are the consequences of bugs? To what extent can testing be used to validate that the program is fit for its purpose? Explain

(Or)

10. What is the purpose of testing? Discuss about various testing dichotomies with examples

11. Describe application, tools and effectiveness of data-flow testing.

(Or)

12. Discuss about transaction-flow structure.

13. Explain about testing one-dimensional domains.

(Or)

14. Write about restrictions of domain testing.

15. Define domain testing. Explain about nice domains in detail.

(Or)

16. Explain about regular expressions and flow-anomaly detection.

17. Explain about Regular expressions

(Or)

18. Explain flow anomaly detection.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT138	**TITLE OF THE COURSE** PYTHON PROGRAMMING				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Introduction to Scripting Language.
2. Exposure to various problems solving approaches of computer science.
3. Use Python to read and write files.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	The course is designed to provide Basic knowledge of Python
CO2	To learn and understand Python programming basics and paradigm
CO3	To learn and understand python looping, control statements and string manipulations
CO4	Design and implement GUI application and how to handle exceptions and files
CO5	Make database connectivity in python programming language.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL (Shell), Running Python Scripts, Variables, Assignment, Keywords,

Input-Output, Indentation.

UNIT –II **[13 Hrs.]**

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators.

UNIT –III **[12 Hrs.]**

Membership Operators: Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass.

UNIT –IV **[12 Hrs.]**

Data Structures: Lists, Operations, Slicing, Methods, Tuples, Sets and Dictionaries.

UNIT –V **[10 Hrs.]**

Data Structures: Sequences and comprehensions

Text books:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.
3. Olivier Hersent, David Boswarthick, and Omar Elloumi, — “The Internet of Things: Key Applications and Protocols”, WileyPublications.

Reference books:

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage

Web Links:

1. https://nptel.ac.in/courses/106/106/106106182/
2. https://nptel.ac.in/courses/106/106/106106212/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

Paper : IT138 :: PYTHON PROGRAMMING

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain the basics for executing a python program using REPL(Shell) with an example.
2. Write Need of Python Programming
3. Explain input and output function in python
4. Explain Bitwise Operators
5. Explain about different Relational operators in python with appropriate examples.
6. What is break, continue
7. Explain about built-in functions of tuple
8. What is comprehensions

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. i) Discuss bout variables and assignments.
   ii) Write the history of Python

(Or)

10. Write in brief about any 8 keywords in Python.

11. Explain about following operators
    a. Arithmetic
    b. Logical
    c. Assignment
    d. Bitwise

(Or)

12. What are the data types in python with appropriate examples?

13. Explain various decision making statements in python.

(Or)

14. What are the different Loops available in python? Explain with examples.

15. Explain about slicing in python

(Or)

16. Explain about the importance of lists in Python.

17. Explain about Sequences in Python

(Or)

18. Explain comprehensions in Python.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT138P	**TITLE OF THE COURSE** PYTHON PROGRAMMING				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. To write, test, and debug simple Python programs.
2. To implement Python programs with conditionals and loops.
3. Use functions for structuring Python programs.

List Of Experiments

1. Swap two numbers.
2. Find the square root of a number
3. Exponentiation (power of a number)
4. Find the maximum of a list of numbers
5. Programs that take command line arguments (word count)
6. Write a program to check whether the given number is Armstrong or not
7. Write a program to generate the Fibonacci sequence
8. Write a program to generate all the prime numbers between 1 and n, where n is a value supplied by the user
9. Write a program to perform various string operations
10. Various operations on lists, tuples and sets.

Reference books:

1. Python Programming: A Modern Approach, VamsiKurama, Pearson
2. Learning Python, Mark Lutz, Orielly.

Virtual Lab Links:

1. https://python-iitk.vlabs.ac.in/List%20of%20experiments.html

2. https://qrgo.page.link/hVwr3

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT139	**TITLE OF THE COURSE** FOUNDATIONS OF MACHINE LEARNING				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Statistics, Linear Algebra, Calculus, Probability, Programming Languages.	3	1	-	3

Course Objectives:

1. Provides knowledge on machine learning techniques.
2. To discover patterns in the user data.
3. Make predictions based on intricate patterns for answering business questions and solving business problems.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction: Concept of Machine Learning, Applications of Machine Learning, Key elements of

Machine Learning, Supervised vs. Unsupervised Learning, Statistical Learning: Bayesian Method, The Naive Bayes Classifier.

Software's for Machine Learning and Linear Algebra Overview: Plotting of Data, Vectorization, Matrices and Vectors: Addition, Multiplication, Transpose and Inverse using available tool such as

UNIT –II **[13 Hrs.]**

Linear Regression: Prediction using Linear Regression, Gradient Descent, Linear 43Regression with one variable, Linear Regression with multiple variables, Polynomial Regression, Feature Scaling/Selection.

UNIT –III **[12 Hrs.]**

Logistic Regression: Classification using Logistic Regression, Logistic Regression vs. Linear Regression, Logistic Regression with one variable and with multiple variables.

UNIT –IV **[12 Hrs.]**

Regularization: Regularization and its utility: The problem of Overfitting, Application of Regularization in Linear and Logistic Regression, Regularization and Bias/Variance.

UNIT –V **[10 Hrs.]**

Neural Networks: Introduction, Model Representation, Gradient Descent vs. Perceptron Training, Stochastic Gradient Descent, Multilayer Perceptrons, Multiclass Representation, Back-propagation Algorithm.

Text books:

1. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009.
2. Tom M. Mitchell, "Machine Learning", First Edition by Tata McGraw-Hill Education, 2013.

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.
2. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012

Web Links:

1. https://nptel.ac.in/courses/106/105/106105152/
2. https://nptel.ac.in/courses/106/106/106106198/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT139: FOUNDATIONS OF MACHINE LEARNING

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What are the Applications of Machine Learning.
2. Explain Bayesian Method
3. Explain the Polynomial Regression
4. Write the Feature Scaling
5. Logistic Regression vs. Linear Regression
6. What is Application of Regularization
7. What is Multiclass Representation
8. Write Back-propagation Algorithm

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain about Bayesian Method

(Or)

10. What are the Matrices and Vectors in Machine Learning?

11. Explain the Linear Regression with multiple variables

(Or)

12. What is machine learning algorithm? Discuss the Prediction using Linear Regression.

13. Explain the Classification using Logistic Regression

(Or)

14. What are the Application of Regularization in Linear and Logistic Regression

15. How Neural Networks Works.

(Or)

16. Define Back propagation Algorithm

17. Explain about Stochastic Gradient Descent

(Or)

18. Explain Back-propagation Algorithm.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT139P	**TITLE OF THE COURSE** MACHINE LEARNING				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should be familiar with any programming Language	-	-	3	2

Objectives:

1. Provides programming knowledge in MABLAB/Octave or Python.
2. Students can create/use their own datasets.
3. Utilize datasets from online repositories like UCI Machine Learning Repository.

List Of Experiments

1. Perform elementary mathematical operations in Octave/MATLAB like addition, multiplication, division and exponentiation.
2. Perform elementary logical operations in Octave/MATLAB (like OR, AND, Checking for Equality, NOT, XOR).
3. Create, initialize and display simple variables and simple strings and use simple formatting for variable.
4. Create/Define single dimension / multi-dimension arrays, and arrays with specific values like array of all ones, all zeros, array with random values within a range, or a diagonal matrix.
5. Use command to compute the size of a matrix, size/length of a particular row/column, load data from a text file, store matrix data to a text file, finding out variables and their features in the current scope.
6. Perform basic operations on matrices (like addition, subtraction, multiplication) and 44 display specific rows or columns of the matrix.
7. Perform other matrix operations like converting matrix data to absolute values, taking the negative of matrix values, additing/removing rows/columns from a matrix, finding the maximum or minimum values in a matrix or in a row/column, and finding the sum of some/all elements in a matrix.
8. Create various type of plots/charts like histograms, plot based on sine/cosine function based

on data from a matrix. Further label different axes in a plot and data in a plot.

9. Generate different subplots from a given plot and color plot data.
10. Use conditional statements and different type of loops based on simple example/s.
11. Perform vectorized implementation of simple matrix operation like finding the transpose of a matrix, adding, subtracting or multiplying two matrices.
12. Implement Linear Regression problem. For example, based on a dataset comprising of existing set of prices and area/size of the houses, predict the estimated price of a given house.
13. Based on multiple features/variables perform Linear Regression. For example, based on a number of additional features like number of bedrooms, servant room, number of balconies, number of houses of years a house has been built – predict the price of a house.

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007
2. Ethem Alpaydin, "Introduction to Machine Learning" 2nd Edition, The MIT Press, 2009

Virtual Lab Links:

1. http://archive.ics.uci.edu/ml/
2. https://qrgo.page.link/uzqkb

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT 140	**TITLE OF THE COURSE** INFORMATION SECURITY				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. To provide knowledge on information security and cryptographic algorithms.
2. Problem-Solving Skills, An Understanding of Hacking
3. Knowledge of Security across various Platforms.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Identify the different components in a Communication System and their respective roles
CO2	Understands Conventional cryptographic techniques
CO3	Apply symmetric and Asymmetric cryptographic techniques
CO4	Understands program security
CO5	Create Security in Networks through authentication techniques and firewalls.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction to Information Security: Attacks, Active and Passive attacks, Vulnerability, Security Threats, Security Goals, Security Services and mechanisms

UNIT –II **[13 Hrs.]**

Conventional Cryptographic Techniques: Conventional substitution and transposition ciphers, One-time Pad, Block cipher and Stream Cipher, Steganography

UNIT –III **[12 Hrs.]**

Symmetric and Asymmetric Cryptographic Techniques: DES, AES, RSA algorithms Authentication and Digital Signatures: Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos

UNIT –IV **[12 Hrs.]**

Program Security : Malicious Program errors, No malicious Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of- use Errors, Viruses, Trapdoors, Salami attack, Man-in-the- middle attacks, Covert channels

UNIT –V **[10 Hrs.]**

Security in Networks: Threats in networks, Network Security Controls – Architecture, Encryption, Content Integrity, Strong Authentication, Access Controls, Wireless Security, Firewalls – Design and Types of Firewalls, Personal Firewalls, IDS, Email Security – PGP,S/MIME

Text books:

1. Security in Computing, Fourth Edition, by Charles P. Pfleeger, Pearson Education
2. Cryptography And Network Security Principles And Practice, Fourth or Fifth Edition, William Stallings, Pearson
3. Modern Cryptography: Theory and Practice, by Wenbo Mao, Prentice Hall.
4. Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall.

Reference books:

1. The Basics of Information Security,2nd edition, Jason Andress,Syngress.
2. Information Security: Principles and Practices,Mark Stamp.
3. Computer and Information Security, John R. Vacca.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106168/
2. https://nptel.ac.in/courses/106/106/106106107/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
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2	II	2	2	20.8%
3	III	2	2	20.8%
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5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT 140: INFORMATION SECURITY

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain various attacks?
2. What are the Uses of Encryption
3. Explain trap doors, covert channels?
4. What is Malicious codes virus
5. Explain data base security requirements?
6. What is firewalls
7. Explain physical security?
8. Write about Physical Security

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain substitution ciphers, Transposition ciphers?

(Or)

10. Explain DES algorithm?

11. Explain control against program?

(Or)

12. Explain Protection in OS?

13. Explain Multi level security?

(Or)

14. Explain Firewall?

15. Explain ethical issues in security?

(Or)

16. Explain organizational security policy?

17. Explain how Protecting Programs

(Or)

18. Explain Information and law.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code 140P	**TITLE OF THE COURSE** INFORMATION SECURITY				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Provide programming skills on usage of networking tools.
2. Provide programming skills on usage of cryptographic algorithms.
3. Knowledge of Security across various Platforms

List Of Experiments

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools : John the Ripper, Ophcrack. Verify the strength of passwords using these tools.
3. Perform encryption and decryption of Caesar cipher. Write a script for performing these operations.
4. Perform encryption and decryption of a Rail fence cipher. Write a script for performing these operations.
5. Use nmap/zenmap to analyse a remote machine.
6. Use Burp proxy to capture and modify the message.
7. Demonstrate sending of a protected word document.
8. Demonstrate sending of a digitally signed document.
9. Demonstrate sending of a protected worksheet.
10. Demonstrate use of steganography tools.

11. Demonstrate use of gpg utility for signing and encrypting purposes

Reference books:

1. C. P. Pfleeger, S. L. Pfleeger; Security in Computing, Prentice Hall of India, 2006
2. W. Stallings; Network Security Essentials: Applications and Standards, 4/E, 2010

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/Byte_Karma/labs/exp1/index.html

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Honors) (II Sem)			
Course Code IT 141	**TITLE OF THE COURSE** Big Data and Analytics				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Big data analytics helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to smarter business moves, more efficient operations, higher profits and happier customers.
2. Businesses that use big data with advanced analytics gain value in many ways, such as: Reducing cost.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Learn tips and tricks for Big Data use cases and solutions.
CO2	Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.
CO3	Apply Hadoop ecosystem components.
CO4	Apply Big Data in IoT
CO5	Analyze the huge volume of data collected from IoT devices

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction to big data: Classification of Digital Data-Structured, Semi-Structured Data, Un-structured, Characteristics of data, Evolution of Big Data, Definition of Big Data, Challenges with Big Data, What is Big Data-Volume, Velocity, Variety, Why Big Data, Business Intelligence verses Big Data.

UNIT –II **[13 Hrs.]**

Big data analytics: What is Big Data Analytics, Classification of big data analytics, Data science, Data Scientist, **Terminology Used in Big Data Environment**-InMemory Analytics, In-Database Processing, Symmetric Multiprocessor System, Massively Parallel Processing, Distributed Systems, Cap theorem, Introduction to Open-Source analytical tools.

UNIT –III **[12 Hrs.]**

Big Data Technology: NoSQL Database-Definition,Types of NoSQL Database,Why NoSQL? Advantages of NoSQL, NewSQL, comparision of SQL, NoSQL, NewSQL.

Introduction to MongoDB-Definition, Using Java Script Object Notation(JSON),Creating Unique Key, Support for dynamic Queries, Storing Binary Data, Replication, Sharding, Terms used in RDBMS and MonogoDB- Create Database,Drop Database,Datatypes in Monogodb, MonogoDB Query Language (Create,Read,Update,and Delete).

UNIT –IV **[12 Hrs.]**

Introduction to Hadoop: Introducing Hadoop, need of Hadoop, RDBMS versus Hadoop. Hadoop Overview-Key Aspects of Hadoop, Hadoop Components,High level Architecture of Hadoop, Use Case of Hadoop, **HDFS** (Hadoop Distributed FileSystem),Processing Data with Hadoop.

Introduction to MAPREDUCE Programming: Introduction , Mapper, Reducer, Combiner, Partitioner , Searching, Sorting , Compression, Real time applications using MapReduce,

UNIT –V **[10 Hrs.]**

Case studies: Applications of Big Data using Hive Architecture, Hive Data types, Hive Query Language(HQL), Pig on Hadoop. **Machine Learning Algorithms**-Implementation of Regression, Implementation of k- Means.

Text books:

1. Chris Eaton, Dirk deroos et al. "Understanding Big data ", McGraw Hill, 2012.
2. SeemaAcharya, SubhashiniChellappan, Big Data Analytics, Wiley,2019
3. Runkler, Thomas. A, Data Analytics: Models and Algorithms for Intelligent Data Analysis, Springer, 2012.

Reference books:

1. Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012.
2. Michael Minelli, Michelle Chambers, and AmbigaDhiraj, "Big Data ,Big Analytics: Emerging Business Intelligence and Analytics Trends for Todays Businesses", Wiley

Web Links:

1. https://www.mygreatlearning.com/academy/learn-for-free/courses/ai-and-big-data-in-iot
2. https://www.tutorialspoint.com/hadoop/hadoop_big_data_overview.htm
3. https://www.w3schools.in/hadoop/tutorials/
4. https://www.simplilearn.com/tutorials/big-data-tutorial/big-data-applications

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

PAPER- IT141-: Big Data and Analytics

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. List the types of accidents
2. Write the elements of data architecture
3. List the stages of OODA Loop
4. What are the standard reporting templates?
5. What is Map Reduce?
6. What is Key-value data store?
7. How do you prepare the input data for an algorithm?
8. What are the types of machine learning?

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain in detail about Export Job Process

(Or)

10. List the guide lines for identifying and reporting an accident or emergency in detail.

11. What is knowledge management? Explain about model based techniques.

(Or)

12. Explain about the Kepner-Tregoe Matrix Decision Model.

13. List the Classification of No SQL Databases and explain about columns based database

(Or)

14. Explain about Graph Databases and Descriptive Statistics?

15. Describe Train Model using Machine Learning Algorithm, Test model

(Or)

16. Explain Knowledge Discovery in Databases task in detail.

17. Explain Data Visualization in Tableau

(Or)

18. Draw insights out of any one Visualization Tool.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT 141P	**TITLE OF THE COURSE** Big Data and Analytics				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Apply Hadoop ecosystem components

List Of Experiments

1. Installation of Hadoop
    a. Ubuntu Operating System in stand-alone mode
    b. Psuedo Distributed Mode(Locally)
    c. Psuedo Distributed Mode(YARN)
2. File Management tasks in Hadoop
    a. Create a directory in HDFS at given path(s).
    b. List the contents of a directory.
    c. Upload and download a file in HDFS.
    d. See contents of a file
    e. Copy a file from source to destination
    f. Copy a file from/To Local file system to HDFS
    g. Move file from source to destination.
    h. Remove a file or directory in HDFS.
    i. Display last few lines of a file.
    j. Display the aggregate length of a file.
3. Word Count Map Reduce program to understand Map Reduce Paradigm

4. Weather Report POC-Map Reduce Program to analyse time-temperature statistics and generate report with max/min temperature.
5. Implementing Matrix Multiplication with Hadoop Map Reduce
6. Pig Latin scripts to sort, group, join, project, and filter your data.
7. Hive Databases, Tables, Views, Functions and Indexes

Reference books:

1. Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012.

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT142	**TITLE OF THE COURSE** FOUNDATION OF DATA SCIENCES				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Apply fundamental algorithmic ideas to process data.
2. Apply hypotheses and data into action able predictions.
3. Document and transfer the results and effectively communicate
4. Use visualization techniques.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction to R: What is R? – Why R? – Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, comments – Handling Packages in R: Installing a R Package, Few commands to get started: installed. packages(), package Description(), help(), find.package(), library() - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions : NA, Inf and– inf.

UNIT –II **[13 Hrs.]**

R Data Types: Vectors, Lists, Matrices, Arrays, Factors, Data Frame – R - Variables: Variable assignment, Data types of Variable, Finding Variable ls(), Deleting Variables - R Operators: Arithmetic Operators, Relational Operators, Logical Operator, Assignment Operators, Miscellaneous Operators - R Decision Making: if statement, if – else statement, if– else if statement, switch statement – R Loops: repeat loop, while loop, for loop - Loop control statement: break statement, next statement.

UNIT –III **[12 Hrs.]**

R-Function : function definition, Built in functions: mean(), paste(), sum(), min(), max(), seq(), user-defined function, calling a function, calling a function without an argument, calling a function with argument values - R-Strings – Manipulating Text in Data: substr(), strsplit(), paste(), grep(), toupper(), tolower() - R Vectors – Sequence vector, rep function, vector access, vector names, vector math, vector recycling, vector element sorting - R List Creating a List, List Tags and Values, Add/Delete Element to or from a List, Size of List, Merging Lists, Converting List to Vector - R Matrices – Accessing Elements of a Matrix, Matrix Computations: Addition, subtraction, Multiplication and Division- R Arrays: Naming Columns and Rows, Accessing Array Elements, Manipulating Array Elements, Calculation Across Array Elements - R Factors –creating factors, generating factor levels gl().

UNIT –IV **[12 Hrs.]**

Data Frames –Create Data Frame, Data Frame Access, Understanding Data in Data Frames: dim(), nrow(), ncol(), str(), Summary(), names(), head(), tail(), edit() functions - Extract Data from Data Frame, Expand Data Frame: Add Column, Add Row - Joining columns and rows in a Data frame rbind() and cbind() – Merging Data frames merge() – Melting and Casting data melt(), cast().

UNIT –V **[10 Hrs.]**

Loading and handling Data in R: Getting and Setting the Working Directory – getwd(), setwd(), dir() - R-CSV Files - Input as a CSV file, Reading a CSV File, Analyzing the CSV File: summary(), min(), max(), range(), mean(), median(), apply() - Writing into a CSV File

–R -Excel File – Reading the Excel file.

Additional Modules:

Descriptive Statistics: Data Range, Frequencies, Mode, Mean and Median: Mean ApplyingTrim Option, Applying NA Option, Median - Mode - Standard Deviation – Correlation - Spotting Problems in Data with Visualization: visually Checking Distributions for a single Variable - R –Pie Charts: Pie Chart title and Colors – Slice Percentages and Chart Legend, 3D Pie Chart – R Histograms – Density Plot - R – Bar Charts: Bar Chart Labels, Title and Colors.

Text books:

1. Sandip Rakshit, R Programming for Beginners, McGraw Hill Education (India), 2017, ISBN : 978-93-5260-455-5.
2. Seema Acharya, Data Analytics using R, McGrawHill Education (India), 2018, ISBN:978-93-5260-524-8.
3. Tutorials Point (I) simply easy learning, Online Tutorial Library (2018), R Programming, Retrieved from https://www.tutorialspoint.com/r/r_tutorial.pdf.
4. Andrie de Vries, Joris Meys, R for Dummies A Wiley Brand, 2nd Edition, John Wileyand Sons, Inc, 2015, ISBN: 978-1-119-05580-8

Reference books:

1. https://nptel.ac.in/courses/106/106/106106179/
2. https://onlinecourses.nptel.ac.in/noc21_cs69/preview

Web Links:

1. https://nptel.ac.in/courses/106/106/106106179/

2. https://onlinecourses.nptel.ac.in/noc21_cs69/preview

CO-PO Mapping:

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CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
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5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT142: FOUNDATION OF DATA SCIENCE SEMESTER

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain the properties of No-SQL
2. How Handling Packages in R
3. Explain the Memorization Methods
4. Write switch statement
5. Why is R important for data science
6. What is Extract Data from Data Frame
7. What is a block and block scanner in HDFS Explain various attacks?
8. How Analyzing the CSV File

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What are the different properties and characteristics of relational databases

(Or)

10. What is data science and explain the data science

11. Explain the Logistic Regression? Discuss the unsupervised methods

(Or)

12. What is meant by machine learning algorithm? Discuss the evaluating clustering Models

13. Explain the data frames with an example? Explain the Reading the data from files

(Or)

14. What is meant by R-Studio and explain the features of characteristics of R

15. How to Loading data into HDFS

(Or)

16. Define Hadoop and explain the characteristics of Hadoop

17. Explain how applying NA Option

(Or)

18. Explain Density Plot.

	Government College (Autonomous) Rajahmundry	Program & Semester I B.Sc. IT (Hons) (II Sem)			
Course Code IT142P	**TITLE OF THE COURSE** Foundations of Data Science				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge			3	2

Objectives:

1. R is a well-developed, simple and effective programming language which includes conditionals, loops, user defined recursive functions and input and output facilities.
2. R has an effective data handling and storage facility, R provides a suite of operators for calculations on arrays, lists, vectors and matrices.

List Of Experiments

1. Installing R and R studio
2. Basic Operations in r
3. Arithmetic Operations
4. Comments and spacing
1. Logical Operators - <, <=, >, >=, = , !=, &&, 1
2. Getting data into R, Basic data manipulation
3. Vectors, Materials, operation on vectors and matrices.
4. Basic Plotting
5. Quantitative data
6. Frequency plots
7. Box plots
8. Scatter plot 6.Categorial data
9. Bar charts

10. Pie charts
11. Loops and functions
12. if, if else, while, for break, next, repeat.
13. Basic functions- Print(), exp( ), Log( ), sqrt( ), abs( ), sin( ), Cos( ), tan( ), factorial( ), rand ().

Reference books:

1. Christopher M. Bishop, "Pattern Recognition and Machine Learning" by Springer, 2007.
2. Mevin P. Murphy, "Machine Learning: A Probabilistic Perspective" by The MIT Press, 2012

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT143	**TITLE OF THE COURSE** COMPUTER VISION				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Computer Graphics	3	1	-	3

Course Objectives:

1. To introduce students the fundamentals of image formation;
2. To introduce students the major ideas, methods, and techniques of computer vision and pattern recognition;
3. To develop an appreciation for various issues in the design of computer vision and object recognition systems; and
4. To provide the student with programming experience from implementing computer vision and object recognition applications

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	To implement fundamental image processing techniques required for computer vision
CO2	Understand Image formation process
CO3	To perform various analysis on image to extract features form Images
CO4	To develop applications using computer vision techniques

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction to Computer Vision Image Processing, Computer Vision and Computer Graphics, Computer Vision Applications: Document Image Analysis, Biometrics, Object Recognition, Tracking, Medical Image Analysis, Content-Based Image Retrieval, Video Data Processing, Multimedia, Virtual Reality and Augmented Reality

UNIT –II **[13 Hrs.]**

Image Representation And Analysis Image representation, Image processing techniques like color and geometric transforms, Edge-detection Techniques, Filtering, Mathematical operations on image and its applications like convolution, filtering

UNIT –III **[12 Hrs.]**

Motion Estimation Introduction to motion, Regularization theory, Optical computation, Stereo Vision, Motion estimation, Structure from motion and models

UNIT –IV **[12 Hrs.]**

Object Recognition Hough transforms and other simple object recognition methods, Shape correspondence and shape matching, Principal component analysis, Shape priors for recognition

UNIT –V **[10 Hrs.]**

Applications Photo album, Face detection, Face recognition, Eigen faces, Active appearance and 3D shape models of faces Application: Surveillance, foreground background separation, particle filters, Chamfer matching, tracking, and occlusion, combining views from multiple cameras, human gait analysis

Application: Invehicle vision system: locating roadway, road markings, identifying road signs, locating pedestrians

Text books:

1. Computer Vision - A modern approach, by D. Forsyth and J. Ponce, Prentice Hall Robot Vision, by B. K. P. Horn, McGraw-Hill.
2. Introductory Techniques for 3D Computer Vision, by E. Trucco and A. Verri, Publisher: Prentice Hall.
3. R. C. Gonzalez, R. E. Woods. Digital Image Processing. Addison Wesley Longman, Inc., 1992.
4. D. H. Ballard, C. M. Brown. Computer Vision. Prentice-Hall, Englewood Cliffs, 1982.
5. Richard Szeliski, Computer Vision: Algorithms and Applications (CVAA). Springer, 2010 6. Image Processing, Analysis, and Machine Vision. Sonka, Hlavac, and Boyle. Thomson.
6. E. R. Davies, Computer & Machine Vision, Fourth Edition, Academic Press, 2012

Reference books:

1. Simon J. D. Prince, Computer Vision: Models, Learning, and Inference, Cambridge University Press, 2012
2. Mark Nixon and Alberto S. Aquado, Feature Extraction & Image Processing for Computer Vision, Third Edition, Academic Press, 2012.

Web Links:

1. https://opencv.org/opencv-free-course/
2. https://www.kaggle.com/learn/computer-vision

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
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GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

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DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

PAPER- IT 143- COMPUTER VISION

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is Image Processing
2. Write Object Recognition
3. Explain geometric transforms
4. What is filtering
5. What is Motion
6. Define Optional computation
7. Explain shape matching
8. What is Eigen faces

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Differentiate between Computer Vision and Computer Graphics.

(Or)

10. Briefly describe Document Image Analysis.

11. Discuss the Image processing Techniques.

(Or)

12. Write a note on Edge-detection Techniques.

13. Explain about Regularization Theory

(Or)

14. What are Mathematical operations on image?

15. Discuss simple object recognition methods

(Or)

16. Write a note on Principal component analysis.

17. Discuss Face detection and recognition

(Or)

18. How separates foreground and background in faces

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT143P	**TITLE OF THE COURSE** COMPUTER VISION				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Should have computer knowledge	-	-	3	2

Objectives:

1. Implement fundamental image processing techniques with OpenCV
2. Perform various analysis on image to extract features form Images with OpenCV
3. Develop image recognization system for IOT

List Of Experiments

1. Import libraries
2. Rgb image and resizing
3. Grayscale image
4. Image denoising, Image thresholding, Image gradients
5. Edge detection fourier transform on image
6. Line transform
7. Corner detection
8. Morphological transformation of image, Geometric transformation of image
9. Contours
10. Image pyramids
11. Colorspace conversion and object tracking
12. Interactive foreground extraction

13.Image segmentation, Image inpainting

14.Template matching

15.Face and eye detection

Reference books:

1. Computer Vision - A modern approach, by D. Forsyth and J. Ponce, Prentice Hall Robot Vision, by B. K. P. Horn, McGraw-Hill.

Virtual Lab Links:

1. https://ocw.cs.pub.ro/courses/iot/labs/01

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT144	**TITLE OF THE COURSE** PHP and MYSQL				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Should have computer knowledge	3	1	-	3

Course Objectives:

1. Provides knowledge on machine learning techniques.
2. Analyze the basic structure of a PHP web application.
3. Able to install and maintain the web server, compile, and run a simple web application.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Able to apply fundamental algorithmic ideas to process data.
CO2	Learn to apply hypotheses and data into action able predictions.
CO3	Document and transfer the results and effectively communicate
CO4	To find using visualization techniques.
CO5	Implementation- processing, storing, and extracting knowledge from Big Data.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow

Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

Working with Functions: Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments

UNIT –II **[13 Hrs.]**

Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance.

Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT –III **[12 Hrs.]**

Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and **User Sessions:** Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

UNIT –IV **[12 Hrs.]**

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data.

UNIT –V **[10 Hrs.]**

Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

Additional Input:

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or pass-through ( ).

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Text books:

1. Learning PHP & MYSQL, Michele E. Davis, Jon A. Phillips,2007.
2. PHP & MYSQL, Brett McLaughlin.
3. Beginning PHP & MYSQL, W Jason Gilmore

Reference books:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson.

Web Links:

1. https://nptel.ac.in/courses/106/106/106106093/
2. https://www.siteground.com/tutorials/php-mysql/

CO-PO Mapping:

(1: Slight [Low]; 2: Moderate[Medium]; 3: Substantial[High], '-' : No Correlation)

e	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1													
CO2													
CO3													
CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
S.No.	UNIT	Short 2 M	Essay 8 M	Weightage
1	I	2	2	20.8%
2	II	2	2	20.8%
3	III	2	2	20.8%
4	IV	1	2	18.75%
5	V	1	2	18.75%
		16	80	

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT144: PHP and MYSQL

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Explain the properties of No-SQL
2. How Handling Packages in R
3. Explain the Memorization Methods
4. Write switch statement
5. Why is R important for data science
6. What is Extract Data from Data Frame
7. What is a block and block scanner in HDFS Explain various attacks?
8. How Analyzing the CSV File

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. What is variable? Explain scope of variable

(Or)

10. Write about different data types available in PHP.

11. Write about different operators in PHP.

(Or)

12. Explain about arrays in PHP.

13. Explain string functions in PHP.

(Or)

14. What is a form, how to create a form using PHP.

15. How to Creating, open and delete files in PHP.

(Or)

16. Explain Mysql and MySqli functions?

17. Explain how Drawing a New Image

(Or)

18. Explain process of Image Creation.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT 144P	**TITLE OF THE COURSE** PHP& MYSQL LAB				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Programming Knowledge in Python	-	-	3	2

Objectives:

1. Provides programming knowledge in MABLAB/Octave or Python.
2. Students can create/use their own datasets.
3. Utilize datasets from online repositories like UCI Machine Learning Repository.

List Of Experiments

Cycle -1

1. An Enterprise wishes to maintain the details about his suppliers and other corresponding details.
2. For that he uses the following details.
3. Suppliers (sid: Integer, sname: string, address: string) Parts (pid: Integer, pname: string, color: string) Catalog (sid: integer, pid: integer, cost: real)
4. The catalog relation lists the prices charged for parts by suppliers.
5. Write the following queries in SQL:
6. Find the pnames of parts for which there is some supplier.
7. Find the snames of suppliers who supply every part.
8. Find the snames of supplier who supply every red part.
9. Find the pnames of parts supplied by London Supplier abd by no one else.
10. Find the sid‟s of suppliers who charge more for some part than the average cost of that part.
11. For each part, find the sname of the supplier who charges the most for that part.
12. Find the sid‟s of suppliers who supply only red parts.

13. Find the sid‟s of suppliers who supply a red and a green part.
14. Find the sid‟s of suppliers who supply a red or green part.
15. Find the total amount has to pay for that suppler by part located from London.

Cycle – 2

1. An organisation wishes to maintain the status about the working hours made by his employees.
2. For that he uses the following tables.
3. Emp (eid: integer, ename: string, age: integer, salary: real) Works (eid: integer, did: integer, pct_time: integer)
4. Dept (did: integer, budget: real, managerid: integer)
5. An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department.
6. Resolve the following queries.
7. Print the names and ages of each employee who works in both Hardware and Software departments.
8. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did‟s together with the number of employees that work in that department.
9. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
10. Find the managerid‟s of managers who manage only departments with budgets greater than 1,000,000.
11. Find the enames of managers who manage the departments with largest budget.
12. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid‟s of managers who control more than
13. 5,000,000.
14. Find the managerid‟s of managers who control the highest amount.
15. Find the average manager salary.

PHP Lab Cycle

16. Write a PHP program to Display “Hello”
17. Write a PHP Program to display the today‟s date.
18. Write a PHP Program to read the employee details.
19. Write a PHP Program to display the
20. Write a PHP program to prepare the student marks list.

21. Write a PHP program to generate the multiplication of two matrices.
22. Write a PHP Application to perform demonstrate the college website.
23. Write a PHP application to add new Rows in a Table.
24. Write a PHP application to modify the Rows in a Table.
25. Write a PHP application to delete the Rows from a Table.
26. Write a PHP application to fetch the Rows in a Table.
27. Develop an PHP application to make following Operations

    Registration of Users.

    Insert the details of the Users.

    Modify the Details.

    Transaction Maintenance.

    No of times Logged in

    Time Spent on each login.
28. Restrict the user for three trials only. Delete the user if he spent more than 100 Hrs of transaction

Reference books:

1. XueBai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson.

   Beginning PHP & MYSQL, W Jason Gilmore

Virtual Lab Links:

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/phplab/labs/mysql-database-pvg/pretest.html

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT145	**TITLE OF THE COURSE** RFID and Sensor Networks				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Data Communications and Computer Networks	3	1	-	3

Course Objectives:

1. Introducing RFID and related Architectures and to discuss the uses of RFID Principles, RFID Components and security issues.
2. Introducing Wireless Sensor Networks, Various Small Components, embedded systems, introducing various technologies

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Familiar with RFID technology, various components involved.
CO2	Familiar with various RFID standards, Students learn various Security issues involved in RFID.
CO3	Learn about Wireless Sensor Networks
CO4	Familiar with WSN protocols routing algorithms.
CO5	Demonstrate Various Security issues involved in Wireless Sensor Networks.

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction of RFID, Automatic Identification Systems, A Comparison of Different ID Systems, Components of an RFID System, Differentiation Features of RFID Systems, Transponder Construction Formats, Frequency, Range and Coupling , Active and Passive Transponders, Information Processing in the Transponder , Selection Criteria for RFID Systems, Fundamental Operating Principles.

UNIT –II **[13 Hrs.]**

Frequency Ranges and Radio Licensing Regulations, Coding and Modulation, Data Integrity, Multi-Access Procedures – Anticollision, Security of RFID Systems, Attacks on RFID Systems

UNIT –III **[12 Hrs.]**

Wireless Sensor Networks- Introduction, Challenges and Constraints, Applications, Node Architecture, Operating Systems, Physical Layer.

UNIT –IV **[12 Hrs.]**

Medium Access Control: Characteristics of MAC Protocols in Sensor Networks, Contention- Free MAC Protocols, Contention-Based MAC Protocols, Network Layer: Various Routing Protocols.

UNIT –V **[10 Hrs.]**

Security in WSN: Challenges of Security in Wireless Sensor Networks, Security Attacks in Sensor Networks, Protocols and Mechanisms for Security, IEEE 802.15.4 and ZigBee Security

Text books:

1. RFID Handbook,KlausFinkenzeller,WILEY& SONS
2. Fundamentals of Wireless Sensor Networks: theory and practice byWaltenegusDargie, Christian Poellabauer

Reference books:

1. RFID and Sensor Networks Architecture, Protocols, Security and integration by Yan Zhang, Laurence T. Yang, Jining.
2. Wireless Sensor Networks Technology, protocols and applications by KAZEM SOHRABY, DANIEL MINOLI TAIEB ZNATI, JOHN WILEY & SONS, INC Publication.
3. REILLY, RFID Essentials By Bill Glover, Himanshu Bhatt.

Web Links:

1. https://nptel.ac.in/courses/108/108/108108179/

2. https://nptel.ac.in/courses/106/105/106105160/

CO-PO Mapping:

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GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT145: RFID and Sensor Networks

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. What is the difference between Active and Passive Transponders
2. Explain Criteria for RFID Systems
3. Discuss about Open issues in RFID Security?
4. Write a short on Data Integrity
5. Explain the application areas of WSN
6. What is Physical Layer
7. Write about Zigbee security Explain various types of addressing
8. Explain IEEE 802.15.4

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain about Fundamental Operating Principles of RFID

(Or)

10. Briefly discuss about Anti-collision procedures in RFID

11. Discuss about Security attacks in RFID

(Or)

12. Write about various challenges and constraints of Wireless Sensor Networks

13. What are the various functional and non-functional aspects required for Operating System in

WSN

(Or)

14. Mention the Characteristics of MAC Protocols in WSN

15. Explain about Pro-active and reactive routing Protocols in WSN

(Or)

16. Explain the defence mechanisms against DoS Attacks and Routing Attacks Compare various categories of Network topologies

17. What are Security Attacks in Sensor Networks, Protocols

(Or)

18. Explain the detail Mechanisms for Security

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT145P	**TITLE OF THE COURSE** Network Simulator Lab using NS2/NS3				
Teaching	Hours Allocated: 40 (Theory)	L	T	P	C
Pre-requisites:	Data Communications	-	-	3	2

Objectives:

1. To understand the functioning of Wireless Technologies

List Of Experiments

1. Introduction to network simulators used for wireless Ad Hoc and Sensor Networks.
2. Introduction to TCL scripting: demonstration of one small network simulation script.
3. To study various trace file formats of network simulators.
4. To implement and compare various MAC layer protocols.
5. To implement and compare AODV and DSR routing algorithms in MANET.
6. To implement DSDV routing algorithms in MANET.
7. To implement signal strength based link management routing protocols.
8. To calculate and compare average throughput for various TCP variants.
9. To implement and compare various routing protocols for wireless sensor networks.
10. Using Virtual labs to simulate the Protocols: http://vlabs.iitkgp.ernet.in/

Reference books:

1. https://www.nsnam.org/docs/release/3.9/manual.pdf

Virtual Lab Links:

1. http://vlabs.iitkgp.ac.in/ant/5/procedure/

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT146	**TITLE OF THE COURSE** ANDROID Programming				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Java Programming	3	1	-	3

Course Objectives:

1. Introduces android programming
2. Provides knowledge on development tools.
3. Familiarize yourself with the Android Development Environment

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Install and configure Android application development tools
CO2	Design and develop user Interfaces for the Android platform
CO3	Save state information across important operating system events
CO4	Apply Java programming concepts to Android application development
CO5	Recognizes the concept of application development for mobile devices

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

UNIT –I **[13 Hrs.]**

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

UNIT –II **[13 Hrs.]**

Overview of object-oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

UNIT –III **[12 Hrs.]**

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

UNIT –IV **[12 Hrs.]**

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes. User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu,Dialog.

UNIT –V **[10 Hrs.]**

Database: Understanding of SQLite database, connecting with the database.

Text books:

1. Android Programming for beginners, John Horton
2. Richard Cornez, Android Programming Concepts, Trish Cornez
3. Android Application and Development, A Wiley Brand,2nd edition

Reference books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013).
2. Erik Hellman Android Programming,Wiley.

Web Links:

1. http://www.developer.android.com
   http://developer.android.com/about/versions/index.html
2. http://developer.android.com/training/basics/firstapp/index.html
3. http://docs.oracle.com/javase/tutorial/index.htm

CO-PO Mapping:

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CO1													
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CO4													
CO5													

Model Blue print for the question paper setter

Blue Print				
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GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY

(Accredited by NAAC "A+" Grade)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

III B.Sc. IT (Hons) Semester-V

IT146:: ANDROID Programming

MODEL QUESTION PAPER (W.E.F 2022-2023)

Time: 2 ½ Hrs. **Max Marks: 50 M**

SECTION - I

Answer Any Five Questions of the following **5 X 2M=10 M**

1. Discuss Android Operating Systems.
2. Write advantages of Android
3. Discuss Java Virtual Machine.
4. What is Jelly Bean
5. Explain about configuring the installed tools.
6. How-to run-on emulator
7. Explain Activity life cycle?
8. What is SQLite

SECTION –II

Answer ALL Questions **5 X 8M=40 M**

9. Explain about Android Development Tools

(Or)

10. Draw and Explain Android Architecture.

11. Explain about OOPs Concepts

(Or)

12. Write about Overloading and Overriding, with example.

13. How creating a android project – Hello Word, run on emulator.

(Or)

14. Explain how Installing and using Eclipse with ADT plug-in.

15. Explain about Draw and Explain User Interface Architecture.

(Or)

16. Explain about SQLite database.

17. How connecting with the database

(Or)

18. Explain Activity life cycle of interface.

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Hons) (V Sem)			
Course Code IT 146P	**TITLE OF THE COURSE** ANDROID Lab				
Teaching	Hours Allocated: 40 (Lab)	L	T	P	C
Pre-requisites:	Java Programming	-	-	3	2

Objectives:

1. Set up Android Studio.
2. Create a new Android application.
3. Create an Android Virtual Device and start the Android Emulator.

List Of Experiments

1. Create ―Hello World‖ application. That will display ―Hello World‖ in the middle of the screen in the emulator. Also display ―Hello World‖ in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher- 53 in-charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database

Reference books:

1. Android Programming for beginners, John Horton
2. Richard Cornez, Android Programming Concepts, Trish Cornez

Virtual Lab Links:

	Government College (Autonomous) Rajahmundry	Program & Semester III B.Sc. IT (Honors) (V Sem)			
Course Code IT147	**TITLE OF THE COURSE** PROJECT WORK				
Teaching	Hours Allocated: 60	L	T	P	C
Pre-requisites:	Any Programming Language	5	-	-	5

Follow SDLC process for real time applications and develop real time application project:
The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:
Title Objectives
Input and output
Details of modules and process logic Limitations of the project Tools/platforms, Languages to be used Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.