Sir M.Visvesvaraya Institute of Technology

Bengaluru - 562157

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Course File

Name of the Faculty: Dr. Poongothai C Name of the Subject with code: Introduction to IoT

Academic Year: 2023-24 (Even) Semester and year : II, I : BETCK205H

SL No	Contents in Course File	Page Number
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7.	Syllabus copy for the course	17-20
8.	Lesson Plan	21-22
9.	Evaluation Pattern for the course	23
10.	CO-PO-PSOs Mapping and justification	
11.	CO-PO Attainment sheet of the previous year for the same course Actions taken to improve the attainment and report MoM from DAAC (DEPT Academic Advisory Committee)	
12.	Lab Course Plan with CO/PO/PSO Mapping for Lab (IPCC) CO PO mapping print out sheet for Lab CO-PO Justification for the correlation given 1,2,3 for Lab CO-PO Attainment sheet for Lab CO-PO Attainment sheet of the previous year for the same lab course Continuous Improvement Evaluation (CIE) in Lab sheet.	
13.	Gaps in the curriculum as identified during the introduction of new scheme	
14.	Topics Beyond Syllabus to bridge the Gaps in the Curriculum	
15.	Internal Test Question papers with CO –PO mapping and Blooms Taxonomy with scheme of evaluation.	24-29 30-33

16.	Internal Marks	34-36
17.	List of slow learners and attendance sheet of the remedial classes conducted and impact analysis.	
18.	List of fast learners and their achievements	
19.	Tutorial sheets (If applicable)	
20.	Course Material	
21	Pedagogical/Innovative Teaching	
22.	Impact Analysis sheet of Assignment/Seminar/Workshop along with PO attainment	
23.	Course end survey by the students.	
24.	Student Feedback	
25.	Result Analysis	
26.	CO-PO Attainment sheet	
27.	Additional Responsibilities if any	

Signature of Staff

Signature of HOD

Head of the Department
Electronics & Communications Engineering
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SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bengaluru - 562 157

Department of Electronics and Communication Engineering

DEPARTMENT VISION

To yield qualified and well trained students in the field of electronics and communication engineering to light needs of the society and shape them into competent engineers thorough with core knowledge to provide innovative services.

DEPARTMENT MISSION

1) To provide the need based technical education and encouraging research and development through industry interaction.
2) To impart quality and value based education to raise satisfaction of all stake holders and society.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

1 Graduates will be employed within engineering fields and demonstrate technical competence, such as identifying, formulating, analyzing, and creating engineering solutions using appropriate current engineering techniques, skills, and tools.

2 Graduates will be able to utilize their skills and knowledge to invent, design and realize novel technology, to find creative and innovative solutions to engineering problems and to identify, research and solve new technical challenges and will be receptive to new technological and cultural challenges through life-long learning such as advanced degrees, publications, presentations, awards, etc.

3 Graduates will exhibit good citizenship and cultured mannerism and use their engineering ability and technical communication skill to embrace cultural, societal, environmental, and ethical issues in their work to help fulfill their professional responsibilities to themselves, employers, employees, co-workers, and the local, global communities and improve the quality of life in society.

4 Graduates will excel in multi-disciplinary and multi-cultural teams, demonstrate leadership, and effectively employ their oral and written communication skills to resolve problems and inform, educate and persuade diverse audiences.

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Programme Outcomes (POs)

1 Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2 Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3 Design/ Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

4 Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

5 Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an under- standing of the limitations.

6 The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7 Environment and Sustainability: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9 Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

11 Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to owners own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12 Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

HUNASAMARANAHALLI, BENGALURU-562157

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

SUBJECT ALLOTMENT

Date: 6/3/24

To,
Dr. Poongothai C
Associate Professor

The following subjects are allotted to you for the academic year 2023-24 Even semester.

Sl. No.	UG/PG	Subject	Subject Code	Semester
1.	UG	Introduction to Internet of Things	BETC205H	II
2.	UG	Communication Lab	BECL404	IV
3.	UG	Principles of communication systems(IPCC lab)	BECL402	IV
4.	UG	Project Work	18ECP83	VIII

You are requested to prepare notes for the above subjects within 15 days of this allotment.

06/03/24

HOD

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COURSE INFORMATION SHEET

Course Name / Code	Introduction to Internet of Things / BETCK205H		
Degree / Branch	B.E / Electronics and Communication Engineering		
Course Credit	3		
Course Category	***Core Subject***/Professional Elective/ Open Elective / Laboratory Course/ **Emerging Technology Course**		
Course Teacher Contact Details	**Course Teacher Name**	**Contact Details**	
		Mobile	**E-mail**
	Dr.Poongothai C	9731524799	Pungathai_ec@sirmvit.edu
Head of the Department	Dr.V.G. Supriya		

[Dr. Poongothai. C]

HOD-ECE

Head of the Department
Electronics & Communications Engineer
Sir M VIT Bangalore 562 1

SRI KRISHNADEVARAYA EDUCATIONAL TRUST
SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
(Affiliated to VTU-Belagavi, Recognized by AICTE and Accredited by NBA & NAAC)
Krishnadevarayanagar, Off International Airport Road, Hunasamaranahalli, Bengaluru – 562 157
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course Information Sheet

COURSE TITLE: Introduction to Internet of Things **COURSE CODE:BETC205H**

SCHEME	CREDIT	BRANCH	SEMESTER	SECTION	CIE	SEE
CBCS (2021)	3	Elective	II	H2	50 Marks	50 Marks

Teaching Hours/Week (L: T: P: S) 3:0:0:0 Total Hours of Pedagogy 40

Total Marks 100 Credits 3 Exam Hours 3

Course objectives:

1. Understand about the fundamentals of Internet of Things and its building blocks along with their characteristics.
2. Understand the recent application domains of IoT in everyday life.
3. Gain insights about the current trends of Associated IOT technologies and IOT Analytics.

Course outcomes (Course Skill Set)

At the end of the course the student will be able to:

1. Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
2. Classify various sensing devices and actuator types.
3. Demonstrate the processing in IoT.
4. Explain Associated IOT Technologies.
5. Illustrate architecture of IOT Applications

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) need not to be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.

2. Use of Video/Animation to explain functioning of various concepts.

3. Encourage collaborative (Group Learning) Learning in the class.

4. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking.

5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.

6. Introduce Topics in manifold representations.

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7. Show the different ways to solve the same problem with different circuits/logic and encourage the students to come up with their own creative ways to solve them.

8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding

9. Use any of these methods: Chalk and board, Active Learning, Case Studies

Dr. Poargothai C

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SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

ACADEMIC CALENDAR FOR EVEN SEMESTER 2023-24 - UG & ODD SEMESTER 2023-24 -PG

Particulars	8th Sem BE 2018 Scheme	6th Sem BE 2021 Scheme	4th Sem BE 2022 Scheme	2nd Sem BE 2022 Scheme	3rd Sem MBA 2022 Scheme	4th Sem MCA 2022 Scheme	4th MBA 2022 Scheme	4th Sem MTech	1st Sem MBA	1st Sem MCA	1st Sem MTech
Commencement of Even Semester	12-02-2024	29-04-2024	22-04-2024	06-03-2024	01-12-2024	22-04-2024	10-06-2024	22-04-2024	12-02-2024	12-02-2024	12-02-2024
Students Induction Programme /Internship/*Societal Project	NA	NA	NA	NA	23/04/24 to 06/06/24	NA	NA	NA	*08-07-24 to 13-07-24	NA	NA
Commencement of Classes	12-02-2024	29-04-2024	22-04-2024	06-03-2024	01-12-2024	22-04-2024	10-06-2024	22-04-2024	12-02-2024	12-02-2024	12-02-2024
Last Working Day	11-05-2024	31-07-2024	07-08-2024	29-06-2024	13-03-2024	27-07-2024	28-09-2024	27-07-2024	08-06-2024	08-06-2024	08-06-2024
Internship Viva/Practical / Viva Examination	NA	01-08-24 to 10-08-24	08-08-24 to 17-08-24	01-07-24 to 11-07-24	18-04-24 to 22-04-24	28-07-24 to 29-07-24	NA	NA	NA	10-06-24 to 15-06-24	10-06-24 to 15-06-24
Theory Examination	16-05-24 to 30-05-24	12-08-24 to 14-09-24	19-08-24 to 12-09-24	15-07-24 to 10-08-24	18-03-24 to 17-04-24	01-08-24 to 23-08-24	30-09-24 to 06-11-24	01-08-24 to 23-08-24	03-06-24 to 20-06-24	18-06-24 to 05-07-24	18-06-24 to 05-07-24
First Test Dates	March 22-23,2024	June 10-12, 2024	June 10-12, 2024	May 13-17,2024	Jan 22-27, 2024	May 31,2024	July 22-6,2024	NA	April 01-03, 2024	March 25-28, 2024	April 01-03, 2024
Second Test Dates	April 22,2024	July 03-04, 2024	July29-31, August 02,05, 2024	June 24-27,2024	March 04-09, 2024	June 28, 2024	September 17-23, 2024	NA	June 03-08, 2024	April 24-29, 2024	May 02-06, 2024
Third Test Dates	May 08-09,2024	July 25-27, 2024	NA	NA	NA	July 23, 2024	NA	NA	NA	May 25 -29, 2024	June 04-06, 2024
Submission of Report to University	NA	NA	NA	NA	NA	13-07-24 to 27-07-24	13-09-24 to 28-09-24	01-08-24 to 20-08-24	NA	NA	NA
Commencement of ODD Semester	NA	23-09-2024	16-09-2024	19-08-2024	10-06-2024	NA	NA	NA	15-07-2024	15-07-2024	15-07-2024

LIST OF HOLIDAYS (upto December, 2024)	
Mahashivarathri	08.03.2024
Good Friday	29.03.2024
Ugadi	09.04.2024
Ramzan	11.04.2024
May Day	01.05.2024
Basava Jayanthi	10.05.2024
Bakrid	18.06.2024
Muharram	17.07.2024
Independence Day	15.08.2024
Ganesh Chaturthi	07.09.2024
Id Meelad	16.09.2024
Gandhi Jayanthi	02.10.2024
Ayudha Pooja	11.10.2024
Vijayadashmi	12.10.2024
Valmiki Jayanthi	17.10.2024
Naraka Chaturdashi	31.10.2024
Rajyothsava Day	01.11.2024
Balipadyami	02.11.2024
Kanakadasa Jayanthi	18.11.2024
Christmas	25.12.2024

IMPORTANT DATES (Tentative)	
Photo Shoot	23-03-2024
Graduation Day	19-04-2024
College Day	TAL

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY SL. No. 644 Date 26/7/24 BANGALORE-562 157

DEPT OF ELECTRONICS ENGG SIR M V I T BANGALORE-57 102 27/7/24

27.7.24

PRINCIPAL
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli,
International Airport Road, BANGALORE-562 157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BENGALURU	RECORD FORMATS (ISO 9001:2008)
R / PP / 04 / 02	PERSONAL TIME TABLE (Even SEM) – W. E. F. 22- 04 - 2024

Name :Dr.Poongothai C **Designation : Associate Professor** **Department: Electronics & Communication**

DAY	9.00 AM TO 9.55 AM	9.55 AM TO 10.50 AM	10.50 AM TO 11 AM	11 AM TO 11.55 AM	11.55 AM TO 12.50 P.M	12.50 P.M TO 1.35 P.M	1.35 P.M TO 2.30 P.M	2.30 P.M TO 3.25 P.M	3.25 P.M TO 4.20 P.M
MON			TEA BREAK		22LEL15	LUNCH BREAK			
TUE		22LEL15					---------BECL404(B3 BATCH) ------		
WED	BETCK205H			-----BEC402(IPCC)-----					
THU	------BECL404 (B1 BATCH)-----			BECL404 (B1 BATCH)	BETCK205H (12.40 p.m-1.35 p.m)				
FRI	BETCK205H				22LEL15				

Subjects	Code	Lab	Code
Introduction to Internet of Things	BETCK205H	Communication Lab	BECL404
Wireless Sensor Networks	22LEL15	Principles of Communication Systems (IPCC)	BEC402

Prepared By: Dr.Poongothai C Designation: Associate Professor Signature:	Checked by: Dr. V G Supriya Designation: Professor & HOD Signature: Head of the Department Electronics & Communications Engineering Sir M VIT Bangalore 562 157	Approved by: Prof: Rakesh S G Designation: Principal Signature:

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Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157

Academic Year: 2023-24 **Time Table - Second Semester: With Effect From 06/03/2024**

Sem / Sec : II /A	BRANCH: ECE	ROOM NO: B205	Block Name: Basic Science

TIME → DAY ↓	09.00 AM to 09.55 AM	09.55 AM to 10.50 AM	10.50 AM to 11.00 AM	11.00 AM To 11.55 AM	11.55 AM to 12.40 PM	12.40 PM to 01.35 PM	01.35 PM to 02.30 PM	02.30 PM to 03.25 PM	03.25 PM to 04.20 PM
Monday	BBEE203	BIDTK258	TEA BREAK	ESC-II	LUNCH BREAK	BMATE201	LIB	C PROG LAB BESCK204E	
Tuesday	BMATE201	BKSKK207/ BKBKK207		BPWSK206		BPHYE202	LIB	LIB	LG
Wednesday	ETC-II	BBEE203		BPHYE202		ESC-II	FORUM/CLUB ACTIVITIES		
Thursday	BBEE203	BPHYE202		BMATE201		ETC-II	PHY LAB-A1 MATH LAB-A2 (PSS Lab-EEE Block)		LG
Friday	ETC-II	BMATE201		ESC-II		BPHYE202	PHY LAB-A2 MATH LAB-A1 (NB107A)		LIB

Sl. N0.	Course	Course code	Course Title	Faculty Names	Department
1.	ASC(IC)	BMATE201	Mathematics for EEE stream -II	Ms. Chethana MB	Mathematics
2.	ASC(IC)	BPHYE202	Applied Physics for EEE stream	Ms. Jayashree L	Physics
3.	ESC	BBEE203	Basic Electronics	Dr. Supriya V G	ECE
4.	ESC-II	BESCK204X	Engineering Science Course- II	Refer to the attached table for details of faculty names and room numbers	
5.	ETC-II	BETCK205X	Emerging Technology Course -II		
6.	AEC	BPWSK206	Professional Writing Skills in English	Mr. Vishwas	Humanities
7.	HSMS	BKSKK207/BKBKK207	Samskrutika Kannada / Balake Kannada	Mr. Prashantha BB & Mr. Ramkumar S	Humanities
8.	AEC/SDC	BIDTK258	Innovation and Design Thinking	Dr. Sundaraguru	ECE

Class Advisors: Mr. H.M. Sathyananda & Ms. Krishnapriya Sharma

Time Table officer - TTO		Chief Time Table Officer - CTO	Principal
Name	Dr. G.K. Prashanth	Mr. S.B. Halesh	Prof. S.G. Rakesh
Signature			

	SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BENGALURU	RECORD FORMATS (ISO 9001:2008)
	R / PP / 04 / 02	EVEN SEMESTER TIME TABLE – W. E. F. 22 – 04 - 2024

SEM / SEC: IV / B section **Branch: ECE** **Strength:67** **Room No. : NB–218**

DAY	9.00 AM TO 9.55 AM	9.55 AM TO 10.50 AM	10.50 AM TO 11 AM	11 AM TO 11.55 AM	11.55 AM TO 12.50 P.M	12.50 P.M TO 1.35 P.M	1.35 P.M TO 2.30 P.M	2.30 P.M TO 3.25 P.M	3.25 P.M TO 4.20 P.M
MON	BEC401	BEC405x	TEA BREAK	BEC403	BBOK407	LUNCH BREAK	BEC402	LG	LIBRARY
TUE	BEC402/ BEC403 (PRP, GV) / (RKN, RN)			BBOK407	BEC405x		BECL404- B3 BATCH (Dr. PC, RN) BEC456A –B1 BATCH (KPS, PS)		
WED	BEC405x	BEC401		BEC402/ BEC403 (PRP, Dr. PC) / (RKN, RN)			NSS/SPORTS/YOGA		
THU	BECL404- B1 BATCH BEC456A –B2 BATCH			(Dr. PC, RN) (PN, SSM)	BEC401		BEC403	BEC402	
FRI	BEC402	BEC403		BBOK407	BUHK408		BECL404- B2 BATCH (SS, SAS) BEC456A –B3 BATCH (PN, SC)		

Course	Course Code	Course Title	Faculty Name
PCC	BEC401	Electromagnetics Theory	Dr. Sasmita Mohapatra
IPCC	BEC402	Principles of Communication Systems	Phaninder Ravi P
IPCC	BEC403	Control Systems	Rajeshwari K N
ESC	BEC405x	Engineering Science Course	
	BEC405A	Microcontrollers	Praveena N
	BEC405C	Operating Systems	R Nataraja
BSC	BBOK407	Biology for Engineers	Dr. Sudevi Basu
UHV	BUHK408	Universal human values course	Krishnapriya Sharma
PCCL	BECL404	Communication Lab	B1: Dr. Poongothai C, R Nataraja B2: Seema S, Santhoshini S B3: Dr. Poongothai C, R Nataraja
AEC/ SEC	BEC456A	Ability Enhancement Course IV (Microcontroller Lab)	B1: Krishnapriya Sharma, P Shalini B2: Praveena N, Seema Sreekumar B3: Praveena N, Shilpa Chippalakatti

Class Advisor: P Shalini

Local Guardian(s)(LG): L1- P Shalini /L2 - S Vijayalakshmi / L3 – Seema S

Time Table Officer (TTO)	Head of the Department	Principal
Name: Mr. Nataraja R / Mrs. Vijayalakshmi S Signature:	Name: Dr. Supriya V.G Signature:	Name: Prof. Rakesh S G Signature:

Department of Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

	SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BENGALURU	RECORD FORMATS (ISO 9001:2008)
	R / PP / 04 / 02	EVEN SEMESTER TIME TABLE – W. E. F. 29 - 04 - 2024

SEM / SEC: VI / A section **Branch: ECE** **Strength:68** **Room No. : NB–316**

DAY	9.00 AM TO 9.55 AM	9.55 AM TO 10.50 AM	10.50 AM TO 11 AM	11 AM TO 11.55 AM	11.55 AM TO 12.50 P.M	12.50 P.M TO 1.35 P.M	1.35 P.M TO 2.30 P.M	2.30 P.M TO 3.25 P.M	3.25 P.M TO 4.20 P.M
MON	21ECL66-A2 BATCH		TEA BREAK	(PS, SC)	OE	LUNCH BREAK	21EC643(SS, SV) / 21EC62 (Dr.SM, RN)		
TUE	21EC63	21EC62		LG	OE		21ECL66-A1 BATCH (PN, SSM)		
WED	21EC61	21EC63		21EC643	OE		NSS/SPORTS/YOGA		
THU	21EC643	21EC62		21EC63	21EC61		21ECL66-A3 BATCH (PS, PN)		
FRI	21EC62	21EC61		LG	LIBRARY		21EC643 (SS, PRP) / 21EC62 (Dr.SM, PS)		

Course	Course Code	Course Title	Faculty Name
HSMC	21EC61	Technological Innovation Management and Entrepreneurship	Seema Sreekumar S
IPCC	21EC62	Microwave Theory & Antennas	Dr. Sasmita Mohapatra
PCC	21EC63	VLSI Design & Testing	P Shalini
PEC	**Professional Elective Course-I**		
	21EC643	Python Programming	Seema S
OEC	**Open Elective Course-I**		
	21CS651	Introduction to Data Structures	Dr. Vani Priya
	21BT652	Food, Nutrition and Health	Dr. Priya Narayan
	21EE652	Renewable Energy Resources	V Rajesh Kumar / Priyanka Nayak
	21ME653	MEChatronics	Shiv Kumar
	21CS654	Programming in JAVA	Vitesh Babu
	21CV654	Conservation of Natural Resources	
PCC	21ECL66	VLSI Laboratory	**A1:** Praveena N, Seema Sreekumar **A2:** P Shalini, Shilpa Chippalakatti **A3:** P Shalini, Praveena N
MP	21ECMP67	Mini Project	Seema S
INT	21INT68	Innovation/Entrepreneurship /Societal Internship	

Class Advisor: Rajeshwari K N

Local Guardian(s) (LG): A1- Dr. R. Sundaraguru /A2 - Dr. Sasmita Mohapatra /A3 - Krishnapriya Sharma

Time Table Officer (TTO)	Head of the Department	Principal
Name: Mr. Nataraja R/Mrs. Vijayalakshmi S	Name: Dr. Supriya V G	Name: Prof. Rakesh S G
Signature:	Signature	Signature:

Head of the Department
Electronics & Communications Engineering
VTU Bangalore 562 157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BENGALURU	RECORD FORMATS (ISO 9001:2008)
R / PP / 04 / 02	EVEN SEMESTER TIME TABLE – W. E. F. 29 - 04 - 2024

SEM / SEC: VI / B section Branch: ECE Strength: 68 Room No. : NB–320

DAY	9.00 AM TO 9.55 AM	9.55 AM TO 10.50 AM	10.50 AM TO 11 AM	11 AM TO 11.55 AM	11.55 AM TO 12.50 P.M	12.50 P.M TO 1.35 P.M	1.35 P.M TO 2.30 P.M	2.30 P.M TO 3.25 P.M	3.25 P.M TO 4.20 P.M
MON	21EC61	21EC62	TEA BREAK	21EC63	OE	LUNCH BREAK	21ECL66-B3 BATCH (PN, SSM)		
TUE	21EC62	21EC61		21EC643	OE		21EC643 (VB, GS) / 21EC62 (SV, BN)		
WED	21ECL66-B1 BATCH			(VB, SC)	OE		NSS/SPORTS/YOGA		
THU	21EC63	21EC62		LG	LG		21EC643(VB, SAS) / 21EC62 (SV, BN)		
FRI	21EC643	21EC63		21EC61	LIBRARY		21ECL66-B2 BATCH (Dr. SB, VB)		

Course	Course Code	Course Title	Faculty Name
HSMC	21EC61	Technological Innovation Management and Entrepreneurship	Dr G Shashibhushan
IPCC	21EC62	Microwave Theory & Antennas	Vijayalakshmi S
PCC	21EC63	VLSI Design & Testing	Dr. Sheetal Bagali
PEC	Professional Elective Course-I		
	21EC643	Python Programming	Vijayashri B
OEC	Open Elective Course-I		
	21CS651	Introduction to Data Structures	Dr. Vani Priya
	21BT652	Food, Nutrition and Health	Dr. Priya Narayan
	21EE652	Renewable Energy Resources	V Rajesh Kumar / Priyanka Nayak
	21ME653	MEChatronics	Shiv Kumar
	21CS654	Programming in JAVA	Vitesh Babu
	21CV654	Conservation of Natural Resources	
PCC	21ECL66	VLSI Laboratory	B1: Vijayashri B, Shilpa Chippalakatti B2: Dr. Sheetal Bagali, Vijayashri B B3: Praveena N, Seema Sreekumar
MP	21ECMP67	Mini Project	Seema S
INT	21INT68	Innovation/Entrepreneurship /Societal Internship	

Class Advisor: Dr. G Shashibhushan

Local Guardian(s) (LG): B1- R Nataraja /B2 - Phanindar Ravi P /B3 - Santhoshini S

Time Table Officer (TTO)	Head of the Department	Principal
Name: Mr. Nataraja R/Mrs. Vijayalakshmi S	Name: Dr. Supriya V.G	Name: Prof. Rakesh S G
Signature:	Signature:	Signature:

Head of the Department
Electronics & Communications Engineering
Sir M. VIT Bangalore 562 157

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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BENGALURU	RECORD FORMATS (ISO 9001:2008)
R / PP / 04 / 02	EVEN SEMESTER TIME TABLE – W. E. F. 22 – 04 - 2024

SEM / SEC: IV / A section **Branch: ECE** **Strength: 69** **Room No. : NB–304**

DAY	9.00 AM TO 9.55 AM	9.55 AM TO 10.50 AM	10.50 AM TO 11 AM	11 AM TO 11.55 AM	11.55 AM TO 12.50 P.M	12.50 P.M TO 1.35 P.M	1.35 P.M TO 2.30 P.M	2.30 P.M TO 3.25 P.M	3.25 P.M TO 4.20 P.M
MON	BEC403	BEC405x	TEA BREAK	BEC401	BBOK407	LUNCH BREAK	BECL404-A1 BATCH (Dr. RS, Dr. GS, GV) BEC456A –A2 BATCH (KPS, PS)		
TUE	BECL404-A2 BATCH BEC456A –A3 BATCH			(SS, SAS) (PN, SC)	BEC405x		BEC403	LG	LIBRARY
WED	BEC405x	BBOK407		BEC402	BEC403		NSS/SPORTS/YOGA		
THU	BEC402	BEC401		BEC402/ BEC403 (BN, SV) / (SAS, RKN)			BECL404-A3 BATCH (Dr. RS, SS, GV) BEC456A –A1 BATCH (SSM, SC)		
FRI	BUHK408	BBOK407		BEC402/ BEC403 (BN, SV) / (SAS, RKN)			BEC401	BEC402	

Course	Course Code	Course Title	Faculty Name
PCC	BEC401	Electromagnetics Theory	Dr. R. Sundaraguru
IPCC	BEC402	Principles of Communication Systems	Bhuvaneswari N
IPCC	BEC403	Control Systems	Santhoshini S
ESC	BEC405x	Engineering Science Course	
	BEC405A	Microcontrollers	Praveena N
	BEC405C	Operating Systems	R Nataraja
BSC	BBOK407	Biology for Engineers	Dr. H.G. Nagendra
UHV	BUHK408	Universal human values course	Krishnapriya Sharma
PCCL	BECL404	Communication Lab	A1: Dr. R. Sundaraguru, Dr. G Shashibhushan, Geetha V A2: Seema S, Santhoshini S A3: Dr. R. Sundaraguru, Seema S , Geetha V
AEC/ SEC	BEC456A	Ability Enhancement Course IV (Microcontroller Lab)	A1: Seema Sreekumar, Shilpa Chippalakatti A2: Krishnapriya Sharma, P Shalini A3: Praveena N, Shilpa Chippalakatti

Class Advisor: Praveena N

Local Guardian(s)(LG): L1- Dr. Sheetal Bagali /L2 - Seema Sreekumar M /L3 - P Shalini

Time Table Officer (TTO)	Head of the Department	Principal
Name: Mr. Nataraja R / Mrs. Vijayalakshmi S Signature:	Name: Dr. Supriya V G Signature:	Name: Prof. Rakesh S G Signature:

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Electronics & Communications Engineering
Sir M. VIT Bangalore 562 157

ETC-II: Section 205H2 /R.No.B104

Faculty Name : Dr.Poongothai

Introduction to Internet of Things(IoT) : BETCK205H

Sl . No.	Roll No.	Name of the student
1	1MV23EC001	A Meghana
2	1MV23EC002	Aayush Palasseri
3	1MV23EC006	Abhinav Naman
4	1MV23EC007	Abhinav Shankar
5	1MV23EC011	Aditya Aman
6	1MV23EC014	Aishwarya Shankar Naykodi
7	1MV23EC016	Aman Kumar
8	1MV23EC017	Ambika. S
9	1MV23EC019	Anant Jamuar
10	1MV23EC020	Anant Srivastava
11	1MV23EC026	Ayush
12	1MV23EC027	Ayush bhushan
13	1MV23EC028	AYUSH RAJ
14	1MV23EC029	Ayush Raj
15	1MV23EC032	Bhagyashree B Patil
16	1MV23EC034	CHINNI PRAVARSHA
17	1MV23EC035	Chirag N
18	1MV23EC036	Chitranshu Raj
19	1MV23EC037	Chiranthan C
20	1MV23EC046	H M PREMA
21	1MV23EC052	Honey krishna
22	1MV23EC054	KAVANA L
23	1MV23EC055	Kaza Sai Gokul
24	1MV23EC056	Keerthana.N
25	1MV23EC059	Kunal bhardwaj
26	1MV23EC063	Luckshita M
27	1MV23EC076	Prithvik N
28	1MV23EC077	PRIYANKA K
29	1MV23EC084	Rishav Raj
30	1MV23EC085	Rishi raj
31	1MV23EC086	Riya Kumari
32	1MV23EC089	S V Vikas
33	1MV23EC093	Sangamesh Somaling Nugganatti
34	1MV23EC102	Shilpa V S
35	1MV23EC115	Swetangi Ray
36	1MV23EC118	Theerthana P Reddy
37	1MV23EE084	Shivansh kumar Ray

Sl.No	Topic
1	Introduction to IoT, Protocol stack
2	Basics of Communication protocols and OSI model
3	Basic sensor physics, Processor, Basic of Digital circuits
4	Arduino, Analog Designing, Introduction to Arduino
5	IDE, Sensor Interface, Data Collection,
6	Calibration and Sensing, Arduino Interface, Actuators,
7	Stepper, Servo, Relay Operation, Communication, I2C
8	SPI, Rx , Tx Communication Protocol, System Interface
9	Smart Project With Arduino And Using Sensor Interface, PC Communication- Smart city
10	Introduction To Rpi, OS Booting/Installation
11	GPIO Interface and Programming, Python and C
12	Programming With Python , Interfacing Sensors, Actuators
13	Communication, Node Red Programming, , Image Processing, etc
14	Do's And Don'ts, How To Guide Student In Projects, How To Interface
15	How To Solve Technical Glitches, 3D Printing, Kicad, GUI Design Etc

38	1MV23EE108	Varun B R
39	1MV23ET004	Adithya Kumar Agarwal
40	1MV23ET017	D Yoga Venkata Prasad
41	1MV23ET018	Dhruv Singh Sengar
42	1MV23ET023	Harsh Yadav
43	1MV23ET031	Kushagra Priyadarshi
44	1MV23ET032	Manas Yadu
45	1MV23ET057	Sindhu N
46	1MV23ET059	Sujal Gupta
47	1MV23IS011	Aditya Raj
48	1MV23IS012	Aditya Utkarsh
49	1MV23IS015	Alfiya Fatima
50	1MV23IS050	Hriday R Nioge
51	1MV23ME019	Harish
52	1MV23ME023	Manish Kumar
53	1MV23ME038	Shriniketh P V
54	1MV23ME052	Vishal S
55	1MV22EC096	Sandipan Singh

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(17)

16-2-2023

Course Title:	Introduction to Internet of Things (IOT)		
Course Code:	BETCK105H/205H	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	3-0-0-0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03

Course objectives

- Understand about the fundamentals of Internet of Things and its building blocks along with their characteristics.
- Understand the recent application domains of IoT in everyday life.
- Gain insights about the current trends of Associated IOT technologoes and IOT Anlaytics.

Teaching-Learning Process

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) need not to be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.
2. Use of Video/Animation to explain functioning of various concepts.
3. Encourage collaborative (Group Learning) Learning in the class.
4. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.
6. Introduce Topics in manifold representations.
7. Show the different ways to solve the same problem with different circuits/logic and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding
9. Use any of these methods: Chalk and board, Active Learning, Case Studies

Module-1 (8 hours of pedagogy)

Basics of Networking: Introduction, Network Types, Layered network models

Emergence of IoT: Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components

Textbook 1: Chapter 1- 1.1 to 1.3 Chapter 4 – 4.1 to 4.4

Module-2 (8 hours of pedagogy)

IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, Sensing Types, Sensing Considerations, Actuators, Actuator Types, Actuator Characteristics.

Textbook 1: Chapter 5 – 5.1 to 5.9

Module-3 (8 hours of pedagogy)

IoT Processing Topologies and Types: Data Format, Importance of Processing in IoT, Processing Topologies, IoT Device Design and Selection Considerations, Processing Offloading. Textbook 1: Chapter 6 – 6.1 to 6.5
Module-4 (8 ours of pedagogy)
ASSOCIATED IOT TECHNOLOGIES Cloud Computing: Introduction, Virtualization, Cloud Models, Service-Level Agreement in Cloud Computing, Cloud Implementation, Sensor-Cloud: Sensors-as-a-Service. IOT CASE STUDIES Agricultural IoT – Introduction and Case Studies Textbook 1: Chapter 10– 10.1 to 10.6; Chapter 12- 12.1-12.2
Module-5 (8 hours of pedagogy)
IOT CASE STUDIES AND FUTURE TRENDS Vehicular IoT – Introduction Healthcare IoT – Introduction, Case Studies IoT Analytics – Introduction Textbook 1: Chapter 13– 13.1; Chapter 14- 14.1-14.2; Chapter 17- 17.1

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
CO2	Classify various sensing devices and actuator types.
CO3	Demonstrate the processing in IoT.
CO4	Explain Associated IOT Technologoes
CO5	Illustrate architecture of IOT Applications

16-2-2023

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation(CIE):

Three Tests each of 20 Marks;

- 1st, 2nd, and 3rd tests shall be conducted after completion of the syllabus of 30-35%, 70-75%, and 90-100% of the course/s respectively.
- Assignments/Seminar/quiz/group discussion /field survey & report presentation/ course project/Skill development activities, suitably planned to attain the COs and POs for a total of 40 Marks.

  If the nature of the courses requires assignments/Seminars/Quizzes/group discussion two evaluation components shall be conducted. If course project/field survey/skill development activities etc then the evaluation method shall be one.

Total CIE marks (out of 100 marks) shall be scaled down to 50 marks

Semester End Examination(SEE):

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject **(duration 03 hours)**

- The question paper shall be set for 100 marks. The medium of the question paper shall be English). The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and **marks scored out of 100 shall be proportionally reduced to 50 marks.**
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.

Suggested Learning Resources:

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1. Sudip Misra, Anandarup Mukherjee, Arijit Roy, "Introduction to IoT", Cambridge University Press 2021.

Reference:

2. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press.
3. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)",1st Edition, VPT, 2014.
4. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

Web links and Video Lectures (e-Resources):

16-2-2023

- 1. https://nptel.ac.in/noc/courses/noc19/SEM1/noc19-cs31/

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Demonstare a sensor based application
-

COs and POs Mapping (Individual teacher has to fill up)

COs	POs						
	1	2	3	4	5	6	7
CO1							
CO2							
CO3							
CO4							
CO5							

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- Not Mapped

	SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BANGALORE -562157	RECORD FORMATS (ISO 9001:2008)
	R/PP04/04 (Academic year 2023-2024) – Even Sem.	LESSON PLAN

COURSE TITLE: Introduction to Internet of Things (IOT) COURSE CODE: 22ETCK205H

SCHEME	CREDIT	BRANCH	SEMESTER	CIE	SEE
CBCS (2022-2023)	3	ECE, ETE,ISE,ME,EEE	II	50 Marks	50 Marks

WEEK	DATES		TOPICS PLANNED	COs
	FROM	TO		
1	06/03/24	08/03/24	Introduction (1)	-
2	11/03/24	15/03/24	**Module-1** Basics of Networking: Introduction, Network Types, (2)	CO1
3	18/03/24	22/03/24	Layered network models Emergence of IoT: Introduction, Evolution of IoT, (3)	CO1
4	25/03/24	29/03/24	Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components (2)	CO1
5	01/04/24	05/04/24	**Module-2** IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, (3)	CO2
6	08/04/24	12/04/24	Sensing Types, Sensing Considerations, Actuators, (2)	CO2
7	15/04/24	19/04/24	Actuator Types, Actuator Characteristics (3)	CO2
8	22/04/24	26/04/24	**Module-3** IoT Processing Topologies and Types: Data Format, Importance of Processing in IoT, (3)	CO3
9	29/04/24	03/05/24	Processing Topologies, IoT Device Design and Selection Considerations, (2)	CO3
10	06/05/24	10/05/24	Processing Offloading (2)	CO3
11	13/05/24	17/05/24	**Module-4** ASSOCIATED IOT TECHNOLOGIES Cloud Computing: Introduction, Virtualization, Cloud Models, (3)	CO4
12	20/05/24	24/05/24	Service-Level Agreement in Cloud Computing, Cloud Implementation, Sensor-Cloud: Sensors-as-a-Service. IOT (3)	CO4
13	27/05/24	31/05/24	CASE STUDIES Agricultural IoT – Introduction and Case Studies (3)	CO4, CO5
14	03/06/24	07/06/24	**Module-5** IOT CASE STUDIES AND FUTURE TRENDS Vehicular IoT – Introduction Healthcare IoT – (3)	CO5

Prepared by: Dr. Poongothai C **Signature:** **Designation: Assoc. Prof.**	**Approved by: Dr. V. G. Supriya** **Signature:** **Designation: Professor & Head**

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	R/PP04/04 (Academic year 2023-2024) – Even Sem.	LESSON PLAN

WEEK	DATES		TOPICS PLANNED	COs
	FROM	TO		
15	10/06/24	14/06/24	Introduction, Case Studies IoT Analytics Introduction (3)	CO5
16	17/06/24	21/06/24	Introduction, Case Studies IoT Analytics Introduction (3)	CO5
17	24/06/24	28/06/24	Revision and previous year question paper discussion (3) Total classes (45)	-

COURSE OUTCOMES

STUDENTS ARE ABLE TO

CO1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
CO2	Classify various sensing devices and actuator types.
CO3	Demonstrate the processing in IoT.
CO4	Explain Associated IOT Technologies
CO5	Illustrate architecture of IOT Applications

TEXT BOOKS:

1. Sudip Misra, Anandarup Mukherjee, Arijit Roy, "Introduction to IoT", Cambridge University Press 2021.

References:

1. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press.
2. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)",1st Edition, VPT, 2014.
3. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

Prepared by: Dr. Poongothai C Signature: Designation: Assoc. Prof.	Approved by: Dr. V. G. Supriya Signature: Designation: Professor & Head

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Evaluation Pattern

COURSE TITLE: Introduction to Internet of Things **COURSE CODE: BETC205H**

SCHEME	CREDIT	BRANCH	SEMESTER	SECTION	CIE	SEE
CBCS (2021)	3	Elective	II	H2	50 Marks	50 Marks

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

Average of two internal assessment tests each of 25 marks

Assignments/Seminar/quiz/group discussion /field survey & report presentation/ course project/Skill development activities, suitably planned to attain the COs and POs for a total of 25 Marks. If the nature of the courses requires assignments/Seminars/Quizzes/group discussion two evaluation components shall be conducted. If course project/field survey/skill development activities etc then the evaluation method shall be one.

Total CIE marks (out of 100 marks) shall be scaled down to 50 marks

Semester End Examination (SEE):

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (duration 03 hours)

The question paper shall be set for 100 marks. The medium of the question paper shall be English). The duration of SEE is 03 hours.

The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.

There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Subject: Introduction to Internet of Things

Subject code: BETCK205H **Course code:C105**

COURSE OUTCOMES

	Course Outcomes (CO)
CO1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
CO2	Classify various sensing devices and actuator types.
CO3	Demonstrate the processing in IoT.
CO4	Explain Associated IOT Technologies
CO5	Illustrate architecture of IOT Applications

CO-PO MAPPING

	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1										
CO2	2	2										
CO3	2	2	2									1
CO4	2	2	2									1
CO5	2	2	2									1

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

JUSTIFICATION FOR CO-PO MAPPING

MAPPING	LEVEL	JUSTIFICATION
CO1-PO1	1	Lightly mapped as students have to understand the concepts of Networking
CO1-PO2	1	Lightly mapped as students have to Identifying various networks.
CO2-PO1	2	Moderately mapped as it is important to understand the various sensors and actuators
CO2-PO2	2	Moderately mapped as students are required to Analyze different existing sensing and actuation methods
CO2-PO3	2	Moderately mapped as thorough knowledge of different types of sensors and actuators is a must in order to apply them in the field of IoT.
CO2-PO12	1	Lightly mapped as learning the advances in the different types of sensors and actuators depends on self-interest.
CO3-PO1	2	Moderately mapped as learning basic the processing in IoT field.
CO3-PO2	2	Moderately mapped as students will be able to Identify the processing topologies in IoT.
CO3-PO3	2	Moderately mapped students can implement of different configurations.
CO3-PO12	1	Lightly mapped as gaining knowledge of advanced the processing technologies in the changing times depends on self-interest.
CO4-PO1	2	Moderately mapped as students will be able to understand the various associated IoT Technologies.
CO4-PO2	2	Moderately mapped as students will be able to interpret the practical applications of various technologies in IoT.
CO4-PO3	2	Moderately mapped as students will be able to Identify various technologies that can be implemented on IoT.
CO4-PO12	1	Lightly mapped as gaining information on various technologies that can be implemented on IoT.
CO5-PO1	2	Moderately mapped as students will be able to understand the various architecture for IoT applications.
CO5-PO2	2	Moderately mapped as students will be able to interpret the practical applications of in different domains.
CO5-PO3	2	Moderately mapped as students will be able to Identify various applications that can be implemented on IoT.
CO5-PO12	1	Lightly mapped as gaining information on various applications that can be implemented on IoT.

Prepared by

Dr.Poongothai C
Associate Professor

Approved by

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Subject: Introduction to Internet of Things

Subject code: BETCK205H Course code:C105

GAPS IN THE SYLLABUS

TO MEET INDUSTRY/PROFESSION REQUIREMENTS

Sl. No.	DESCRIPTION	PROPOSED ACTIONS	PO MAPPING
1	Understand the concepts of Security in Networking and Predecessors of IoT	Conducted a class explaining the technologies used to prior to IoT.	PO1
2	Understand the IoT Connectivity Technologies	Expert talk and Hands-on session on real time tools in communication technology for IoT.	PO5

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Associate Professor

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Subject/Code: Introduction to Internet of Things (IoT) /BETCK205H

Assignment Questions

Module 1		
Q.No	**Question**	**COs**
1.	Explain broad categories of computer networks based on network reachability.	CO1
2.	Explain various networking components of IoT	CO1
3.	Differentiate between IoT and M2M	CO1
4.	Explain communication between two hosts following TCP/IP suite with neat block diagram.(OR) Explain communication protocol for TCP/IP suite by considering host A and host B with the help of diagrams	CO1
5	Discuss different IoT planes along with various enabling technologies of IoT.	CO1
6	Classify network types based on physical topology with example	CO1
7	Differentiate between point to point and point to multipoint connection type.	CO1
8	Discuss the advantages and disadvantages of the following network topologies. i) star ii) ring iii) Bus iv) mesh with neat diagram	CO1
Module 2		
1	Define a sensor node. Outline simple sensing operation in IoT node with its functional blocks.	CO2
2	Define sensor and explain characteristics of sensor.	CO2
3	Define actuators. Explain briefly the actuators type.	CO2
4	Compare mechanical, soft and shape memory-based actuators	CO2
5	Explain different categories of sensors based on sensing environment and physical sensors.	CO2
6	Outline basic difference between transducer, sensor and an actuator.	CO2
7	With a neat diagram, explain the working mechanism of the actuator	CO2
8	Explain sensorial deviation with respect to analog and digital sensors.	CO2
9	Explain the different characteristics of actuators.	CO2

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	Module 3	
1	Differentiate between structured and unstructured data with examples.	CO3
2	Explain different data offloading strategies with locations and decision making	CO3
3	Discuss with a neat diagram, event detection using offsite Remote processing topology	CO3
4	With a neat diagram, explain onsite processing topology.	CO3
5	Discuss various processing topologies	CO3
6	Discuss the importance of data processing in IoT and offload decision making approaches	CO3
7	What are the different data formats found in IoT networks? explain briefly.	CO3
8	Explain IoT device design and selection considerations.	CO3
9	What is processing off-loading? Infer the different data off-loading method.	CO3
	Module 4	
1	What is virtualization and explain its different types?	CO4
2	Differentiate between network-based computing and cloud computing.	
3	Explain the architecture of sensor cloud platform	CO4
4	Explain the components of Agricultural IoT.	CO4
5	What is Service Level Agreement (SLA), explain its importance and metrics used while defining SLA.	CO4
6	Explain how agricultural IoT helps in efficient distribution of water in agricultural fields.	CO4,CO5
7	Define cloud computing. describe the advantages of cloud computing	CO4,CO5
8	Define virtualization. contrast the advantages of virtualization in detail.	CO4,CO5
9	Illustrate the types of cloud simulation and explain briefly.	CO4,CO5
	Module 5	
1	Discuss the advantages and risks associated with healthcare IoT.	
2	With a neat diagram, explain types of machine learning.	CO5
3	Explain the hardware components and front-end design features of Ambusense systems.	CO5
4	Explain the challenges in using machine learning.	CO5
5	Why are privacy and security important in healthcare IoT? Explain.	CO5

6	Explain the architecture of vehicular IoT with a neat diagram Describe the components of vehicular IoT with help o feat diagram.	CO5
7	List the applications of IoT in transportation.	CO5
8	With a neat diagram, explain the architecture of healthcare IoT.	CO5
9	Define machine learning? list the advantages of machine learning along with the diagram and explain with description	CO5

Dr. Poongothai C

HOD-ECE

Head of the Department
Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

ETC-II: Section 205H2 /R.No.B104
Faculty Name : Dr.Poongothai
Introduction to Internet of Things(IoT) : BETCK205H

Module 3

1. Differentiate between structured and unstructured data with examples. (OR) What are the different data formats found in IoT networks? explain briefly.
2. Discuss the importance of data processing in IoT and offload decision making approaches.
3. Discuss various processing topologies. (OR)With a neat diagram, explain onsite processing topology. Discuss with a neat diagram, event detection using offsite Remote processing topology.
4. Explain IoT device design and selection considerations.
5. Explain different data offloading strategies with locations and decision making
6. What is processing off-loading? Infer the different data off-loading method.

Module 4

1. Differentiate between network-based computing and cloud computing.
2. define cloud computing. describe the advantages of cloud computing
3. What is virtualization? Explain the advantages of virtualization and its different types?
4. Explain the various cloud models in detail.
5. What is Service Level Agreement (SLA), explain its importance and metrics used while defining SLA.
6. Illustrate the types of cloud simulation and explain briefly.
7. Explain the importance and architecture of sensor cloud platform
8. Explain the components of Agricultural IoT. Also explain the Use of IoT components in the agricultural chain with neat diagrams.
9. Explain how agricultural IoT helps in efficient distribution of water in agricultural fields.
10. Explain the architecture for smart irrigation management system
11. What are the advantages of IoT in agriculture

ETC-II: Section 205H2 /R.No.B104
Faculty Name : Dr.Poongothai
Introduction to Internet of Things(IoT) : BETCK205H

Module 1

1. Explain broad categories of computer networks based on network reachability.
2. Explain various networking components of IoT
3. Differentiate between IoT and M2M
4. Explain communication between two hosts following TCP/IP suite with neat block diagram.(OR) Explain communication protocol for TCP/IP suite by considering host A and host B with the help of diagrams.
5. Discuss different IoT planes along with various enabling technologies of IoT.
6. Classify network types based on physical topology with example
7. Differentiate between point to point and point to multipoint connection type.
8. Discuss the advantages and disadvantages of the following network topologies. i) star ii) ring iii) Bus iv) mesh with neat diagram.

Module 2

1. Define a sensor node. Outline simple sensing operation in IoT node with its functional blocks.
2. Define sensor and explain characteristics of sensor.
3. Define actuators. Explain briefly the actuators type.
4. Compare mechanical, soft and shape memory-based actuators.
5. Explain different categories of sensors based on sensing environment and physical sensors.
6. Outline basic difference between transducer, sensor and an actuator.
7. With a neat diagram, explain the working mechanism of the actuator.
8. explain sensorial deviation with respect to analog and digital sensors.
9. explain the different characteristics of actuators.

Module 3

1. Differentiate between structured and unstructured data with examples.
2. Explain different data offloading strategies with locations and decision making
3. Discuss with a neat diagram, event detection using offsite Remote processing topology.
4. With a neat diagram, explain onsite processing topology.
5. Discuss various processing topologies.
6. Discuss the importance of data processing in IoT and offload decision making approaches.
7. What are the different data formats found in IoT networks? explain briefly.
8. Explain IoT device design and selection considerations.
9. What is processing off-loading? Infer the different data off-loading method.

Module 4

1. What is virtualization and explain its different types?
2. Differentiate between network-based computing and cloud computing.
3. Explain the architecture of sensor cloud platform
4. Explain the components of Agricultural IoT.
5. What is Service Level Agreement (SLA), explain its importance and metrics used while defining SLA.
6. Explain how agricultural IoT helps in efficient distribution of water in agricultural fields.
7. define cloud computing. describe the advantages of cloud computing.
8. define virtualization. contrast the advantages of virtualization in detail.
9. illustrate the types of cloud simulation and explain briefly.

Module 5

1. Explain fog framework for intelligent public safety in vehicular environment FISVER with block diagram.
2. Discuss the advantages and risks associated with healthcare IoT.
3. With a neat diagram, explain types of machine learning.
4. Explain the hardware components and front-end design features of Ambusense systems.
5. Explain the challenges in using machine learning.
6. Why are privacy and security important in healthcare IoT? Explain.
7. Explain the architecture of vehicular IoT with a neat diagram Describe the components of vehicular IoT with help o feat diagram.
8. List the applications of IoT in transportation.
9. With a neat diagram, explain the architecture of healthcare IoT.
10. Define machine learning? list the advantages of machine learning along with the diagram and explain with description

Date 17 05 2024

Subject Code BETCK205H

USN 1 M V

Sir M. Visvesvaraya Institute of Technology
Bangalore 562 157
INTERNAL TEST PAPER

TEST NO : 1 SEM: II COURSE / BRANCH : BE / ECE, EEE, ETE, Mech, ISE MAX. MARKS : 25 DURATION : 60 Mins

SUBJECT : **Introduction to Internet of Things** Faculty Names : Dr. H S Yeshvantha / Dr. Poongothai C

Instructions: Answer all the Question from each PART

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
	PART A					
1	a) Explain various networking components of IoT.	7	CO1	2	1	1.3.1
	b) Describe the advantages and disadvantages of the following network topologies: i) Ring, ii) Bus, & iii) Mesh with neat diagrams.	6	CO1	2	1	1.3.1
	OR					
2	a) Discuss different IoT planes along with various enabling technologies of IoT.	7	CO1	2	1	1.3.1
	b) Explain communication between two hosts following TCP/IP suite with neat block diagram.	6	CO1	2	1	1.3.1
	PART B					
3	a) Define a sensor node. Outline simple sensing operation in IoT node with its functional blocks.	6	CO2	2	3	3.3.1
	b) Explain the important characteristics of sensors.	6	CO2	2	3	3.3.1
	OR					
4	a) Define actuators. Classify the types of actuators, discuss briefly.	6	CO2	2	3	3.3.1
	b) Explain the different characteristics of actuators.	6	CO2	2	3	3.3.1

CO1: Outline the evolution of IoT, requirements of IoT networking components, and addressing strategies in IoT
CO2: Classify various sensing devices, its characteristics, types of sensors, actuator and its selection parameters

Verified by
QPSC Member

Approved By
HOD

Head of the Department
Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

25

Date 17 05 2024 Subject Code BETCK205H

USN 1 M V

Sir M. Visvesvaraya Institute of Technology
Bangalore 562 157
INTERNAL TEST PAPER

TEST NO : I SEM: II COURSE / BRANCH : BE / ECE, EEE, ETE, Mech, ISE MAX. MARKS : 25 DURATION : 60 Mins

SUBJECT : **Introduction to Internet of Things** Faculty Names : **Dr. H S Yeshvantha / Dr. Poongothai C**

Instructions: Answer all the Question from each PART

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
	PART A					
1	a) Explain various networking components of IoT.	7	CO1	2	1	1.3.1
	b) Describe the advantages and disadvantages of the following network topologies: i) Ring, ii) Bus, & iii) Mesh with neat diagrams.	6	CO1	2	1	1.3.1
	OR					
2	a) Discuss different IoT planes along with various enabling technologies of IoT.	7	CO1	2	1	1.3.1
	b) Explain communication between two hosts following TCP/IP suite with neat block diagram.	6	CO1	2	1	1.3.1
	PART B					
3	a) Define a sensor node. Outline simple sensing operation in IoT node with its functional blocks.	6	CO2	2	3	3.3.1
	b) Explain the important characteristics of sensors.	6	CO2	2	3	3.3.1
	OR					
4	a) Define actuators. Classify the types of actuators, discuss briefly.	6	CO2	2	3	3.3.1
	b) Explain the different characteristics of actuators.	6	CO2	2	3	3.3.1

CO1: Outline the evolution of IoT, requirements of IoT networking components, and addressing strategies in IoT
CO2: Classify various sensing devices, its characteristics, types of sensors, actuator and its selection parameters

Verified by
QPSC Member

Approved By
HOD
Dept. of Electronics & Communications Engineering
Sir M.V.I.T. Bangalore 562 157

24 + 08 + 5
ET → 8
MF = 4
IS - 4
EG - 2

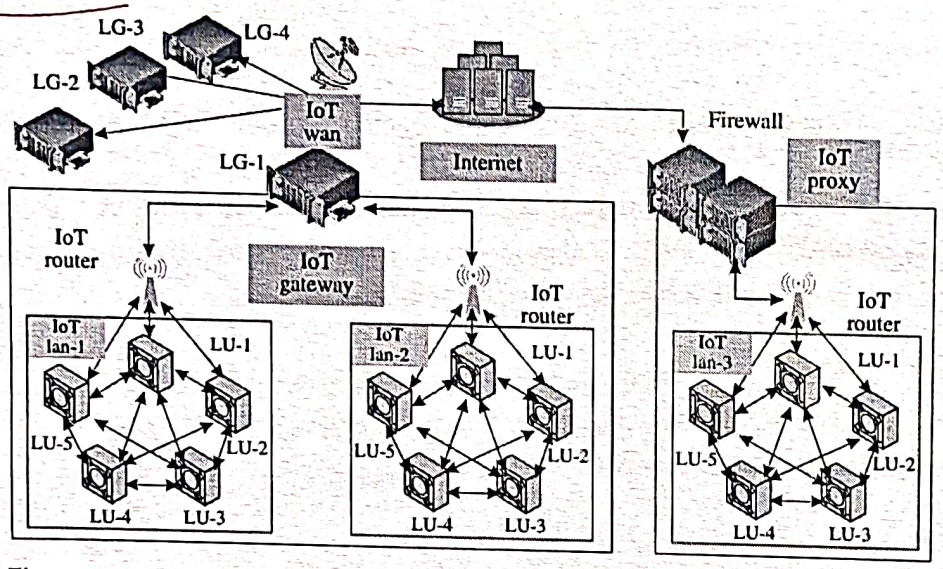
26

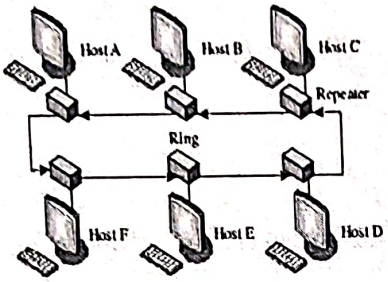
Sir M Visvesvaraya Institute of Technology
Bengaluru-562157

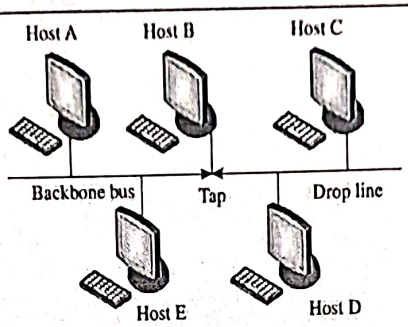
Test No: 1
Course/Branch: BE / ECE, EEE, ETE, Mech, ISE
Subject/Code: Introduction to Internet of Things/ BETCK205H

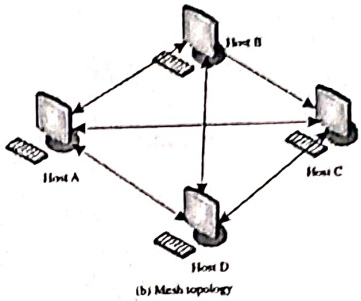
Semester: II
Max. Marks: 25
Duration: 60 Minutes

Scheme of Evaluation

Question Number	Solution	Marks allocated
1. a)	Networking components of IoT are - IoT node, IoT router, IoT LAN, IoT WAN, IoT gateway, IoT proxy.  **Figure 4.9** A typical IoT network ecosystem highlighting the various networking components—from IoT nodes to the Internet	
1. b)	Diagram Explanation **i) Ring topology** **Advantages:** Fault identification and set up of the ring topology is quite simple and straightforward. **Disadvantage:** The high probability of a single point of failure. If even one repeater fails, the whole network goes down. **ii) Bus Topology** **Advantages:** 1. The ease of installation. However, there is a restriction on the length of the bus and the number of hosts that can be simultaneously connected to the bus due to signal loss over the extended bus. 2. Simple cabling procedure in which a single bus (backbone cable) can be used for an organization. 3. Multiple drop lines and taps can be used to connect various hosts to the bus, making installation very easy and cheap. **Disadvantage:** The difficulty in fault localization within the network.	3 4







iii) Mesh Topology:

Advantages:

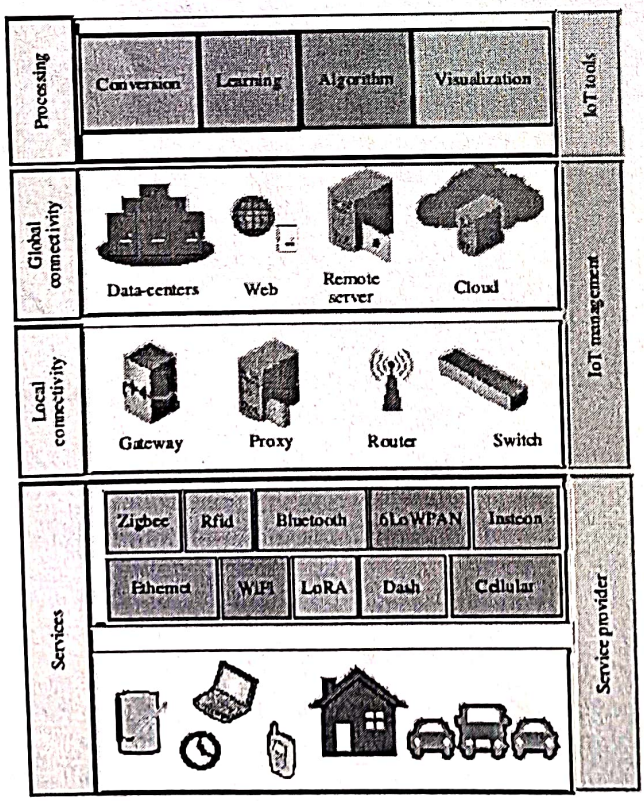
1. The robustness and resilience of the system. Even if a link is down or broken, the network is still fully functional as there remain other pathways for the traffic to flow through.
2. The security and privacy of the traffic as the data is only seen by the intended recipients and not by all members of the network.
3. The reduced data load on a single host, as every host in this network takes care of its traffic load.

Disadvantage: However, owing to the complexities in forming physical connections between devices and the cost of establishing these links, mesh networks are used very selectively, such as in backbone networks

Explanation 3
Diagrams 3

OR

2. a) Different IoT planes — Diagram + Explanation 4 + 3



2. b) TCP/IP suite -

Diagram 3
Explanation 3

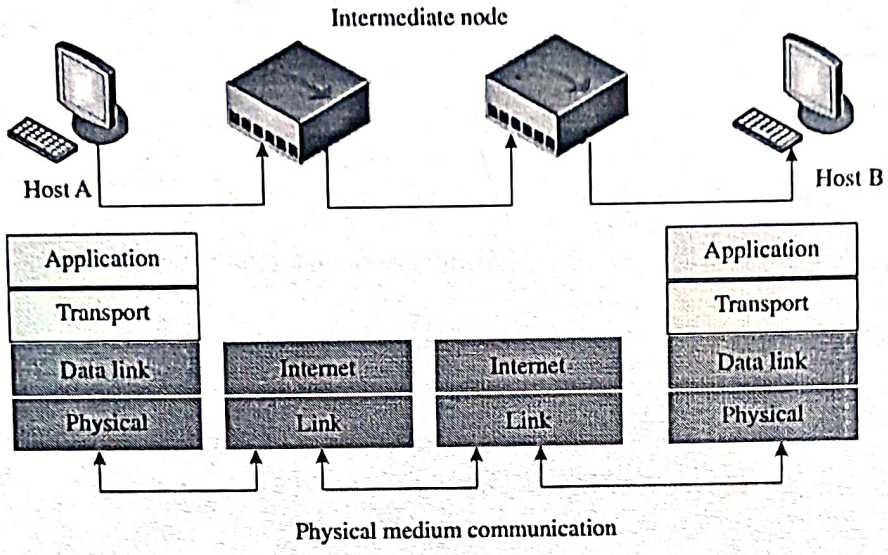


Figure 1.4 Networked communication between two hosts following the TCP/IP suite

Part B

3. a) Sensor node:

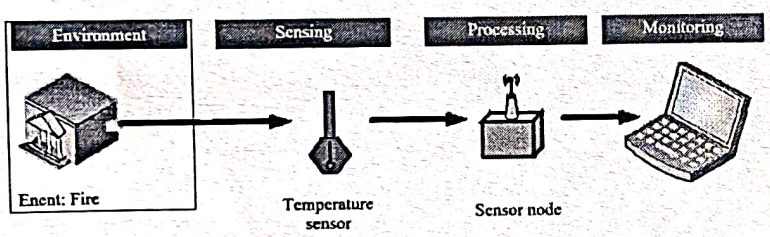


Figure 5.1 The outline of a simple sensing operation

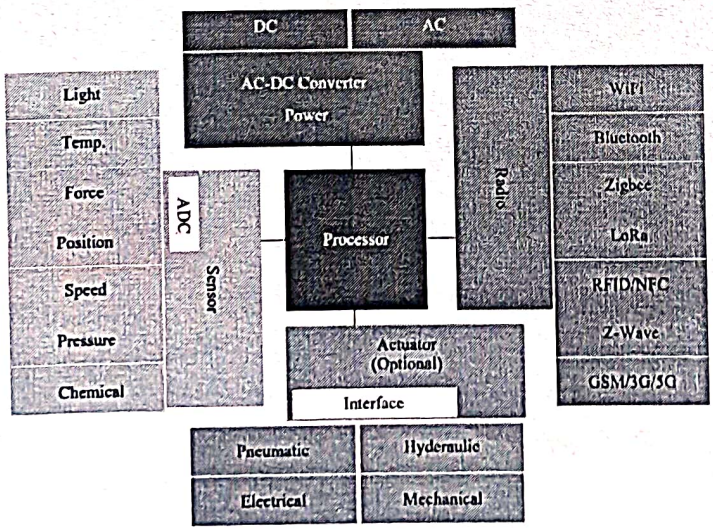


Diagram + Explanation 3 + 3

3. b)	Characteristics of sensors - Sensor Resolution, Sensor Accuracy, Sensor Precision	02
	Explanations on these -	04
	OR	
4. a)	Actuators: • An actuator can be considered as a machine or system's component that can affect the movement or control the said mechanism or the system. Actuator Types - Hydraulic, Pneumatic, Electrical, Thermal/Magnetic, Mechanical, Soft, Shape Memory Polymers	
	Definition, Types, and Explanation	1+1+4
4. b)	Different characteristics of actuators 1)Weight, 2) Power Rating, 3) Torque to Weight Ratio, 4) Stiffness and Compliance	
	List + Explanation	1 + 5

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157				Academic Year 2023 - 2024
Test: 01	Date: 17.05.24	Time: 10:15-11:15	Room No: NB319	
Course / Branch: B.E / EC	Section: H2	Semester: II	Sub Code:	20SH2
Invigilator's Name: Sandra M				

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC001	A MEGHANA	22461	A meg	22
2	1MV23EC002	AAYUSH PALASSERI	22456	Ayush	16
3	1MV23EC006	ABHINAV NAMAN	22452	Abhinav	22
4	1MV23EC007	ABHINAV SHANKAR	22451	Abhi	15
5	1MV23EC011	ADITYA AMAN	22409	Ad	11 (09)
6	1MV23EC014	AISHWARYA SHANKAR NAYKODI	22455	A.S.N	23
7	1MV23EC016	AMAN KUMAR TRIPATHI	22470	Aman	10
8	1MV23EC017	AMBIKA. S	22460	AmbikaS	21
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Valuation completed 24/5/24

H2

Moderated 28/5/24

No. of Booklets Issued: 08		No. of Unused Booklets Returned: Nil
No. of Students Present: 08		No. of Students Absent: Nil
Receiver's Name: Vijaya	Receiver's Signature	Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157

Academic Year 2023 - 2024

Test: 1 | Date: 17/05/24 | Time: 10:15 AM | Room No: NB416

Course / Branch: B.E / EC | Section: H2 | Semester: II | Sub Code: BETCK205H2

Invigilator's Name: Prashanth L

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC019	ANANT JAMUAR	20019	Ajamuar	14
2	1MV23EC020	ANANT SRIVASTAVA	20095	Srivastava	19
3	1MV23EC026	AYUSH	20010	Ayush	12
4	1MV23EC027	AYUSH BHUSHAN	ABSENT		
5	1MV23EC028	AYUSH RAJ	20014	Ayush	09
6	1MV23EC029	AYUSH RAJ	20017	Ayush	23
7	1MV23EC032	BHAGYASHREE B PATIL	20008	Bhatp.	23
8	1MV23EC034	CHINNI PRAVARSHA	20007	Pravarsha	13
9	1MV23EC035	CHIRAG N	20097	Chirag	04 (04)
10	1MV23EC036	CHITRANSHU RAJ	20006	Chitrabp	11
11	1MV23EC037	CHIRANTAN CHAMARAJ	20003	Chirantan	11
12	1MV23EC046	H M PREMA	20009	H.M.Prema	20
13	1MV23EC052	HONEY KRISHNA	20016	honey	24
14	1MV23EC054	KAVANA L	20004	Kavana	15
15	1MV23EC055	KAZA SAI GOKUL	20155	Sai	24
16	1MV23EC056	KEERTHANA.N	20001	Keerthana	23
17	1MV23EC059	KUNAL BHARDWAJ	20096	Kunal	06
18	1MV23EC063	LUCKSHITA M	20002	Lucksita M	22
19	1MV23EC076	PRITHVIK N	20011	Prithvik	18 (17)
20	1MV23EC077	PRIYANKA K	20100	Priyanka	14
21	1MV23EC084	RISHAV RAJ	20018	Rishav Raj	20
22	1MV23EC085	RISHI RAJ	20094	Rishiraj	14
23	1MV23EC086	RIYA KUMARI	20012	Riya	13
24	1MV23EC089	S V VIKAS	20015	VIK	14
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H2

No. of Booklets Issued: 24 | No. of Unused Booklets Returned: 01

No. of Students Present: 23 | No. of Students Absent: 01

Receiver's Name: Vijaya | Receiver's Signature | Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: I	Date: 17/05/24	Time: 10:15–11:15AM	Room No: NB419
Course / Branch: B.E / EC	Section: H2	Semester: II	Sub Code: 205H2
Invigilator's Name: Tamilselvi.N			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC093	SANGAMESH SOMALING NUGGANATTI	00114	Sangu	10
2	1MV23EC102	SHILPA V S	20106	Shilpa	20
3	1MV23EC115	SWETANGI RAY	20118	Swetangi	16 (16)
4	1MV23EC118	THEERTHANA P REDDY	20104	Theerthana	19
5	1MV22EC095	SANDIPAN SINGH	20084	Sandipan	05
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205/H2

5/5

EC

No. of Booklets Issued: 5	No. of Unused Booklets Returned: 0
No. of Students Present: 5	No. of Students Absent: 0
Receiver's Name: Dr G Balakumar	Receiver's Signature / Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157				Academic Year 2023 - 2024
Test: I	Date: 17/05/24	Time: 10:15 – 11:15		Room No: NB419
Course / Branch: B.E / EE	Section: H2	Semester: II		Sub Code: 20SH2
Invigilator's Name: Tamil Selvi. N				

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EE084	SHIVANSH KUMAR RAY	20109	Shivansh	18
2	1MV23EE108	VARUN B R	20107	Varun.BR	07
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205 H2

EE | H2

No. of Booklets Issued: 2	No. of Unused Booklets Returned: 0
No. of Students Present: 2	No. of Students Absent: 0
Receiver's Name: Dr GBalakumar	Receiver's Signature / Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157				Academic Year 2023 - 2024
Test: I	Date: 17/05/24	Time: 10:15 - 11:15AM		Room No: NB419
Course / Branch: B.E / ET	Section: H2	Semester: II		Sub Code: 205H2
Invigilator's Name: Tamil Selvi. N				

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23ET004	ADITHYA KUMAR AGARWAL	AB	SENT	—
2	1MV23ET017	D YOGA VENKATA PRASAD	20116	Yoga	15
3	1MV23ET018	DHRUV SINGH SENGAR	AB	SENT	—
4	1MV23ET023	HARSH YADAV	AB	SENT	—
5	1MV23ET031	KUSHAGRA PRIYADARSHI	20113	Kushagra	09
6	1MV23ET032	MANAS YADU	20110	Manas	19
7	1MV23ET057	SINDHU N	2015H	Sindhu	24 (20)
8	1MV23ET059	SUJAL GUPTA	20112	Sujal	20
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H2

ET / 205H2

8/8

No. of Booklets Issued: 5		No. of Unused Booklets Returned: 3
No. of Students Present: 5		No. of Students Absent: 3
Receiver's Name: Dr GBelekar	Receiver's Signature	Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: I	Date: 17/05/24	Time: 10:15 - 11:15	Room No: NB419
Course / Branch: B.E / IS	Section: H2	Semester: II	Sub Code: 20IH2
Invigilator's Name: Tamilselvi. N			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23IS011	ADITYA RAJ	20032	A Raj	05
2	1MV23IS012	ADITYA UTKARSH	20081	Aditya	05
3	1MV23IS015	ALFIYA FATIMA	20119	Alfiya	24
4	1MV23IS050	HRIDAY R NIOGE	20083	Hriday	13
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25/H2

20 5/H2

No. of Booklets Issued: 4		No. of Unused Booklets Returned: 0
No. of Students Present: 4		No. of Students Absent: 0
Receiver's Name: Dr G Balakrishna	Receiver's Signature	Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: I	Date: 14/05/24	Time: 10:15–11:15AM	Room No: NB419
Course / Branch: B.E / ME	Section: H2	Semester: II	Sub Code: 20SH2
Invigilator's Name: Tamilselvi.N.			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23ME019	HARISH	20111	Harish	06
2	1MV23ME023	MANISH KUMAR	20120	Manish Kumar	10
3	1MV23ME038	SHRINIKETH P V	20108	SPV	06
4	1MV23ME052	VISHAL S	← ABSENT		→
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20SH2
ME/H2

3/4

No. of Booklets Issued: 4	No. of Unused Booklets Returned: 01
No. of Students Present: 03.	No. of Students Absent: 01
Receiver's Name:	Receiver's Signature / Invigilator's Signature

30-

Date 24 06 2024 Subject Code BETCK205H

USN 1 M V

Sir M. Visvesvaraya Institute of Technology
Bangalore 562 157
INTERNAL TEST PAPER

TEST NO : II SEM: II COURSE / BRANCH : BE / ECE, EEE, ETE, Mech, ISE MAX. MARKS : 25 DURATION : 60 Mins

SUBJECT : **Introduction to Internet of Things** Faculty Names : **Dr. H S Yeshvantha / Dr. Poongothai C**

Instructions: Answer all the Question from each PART

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
	PART A					
1	a) Discuss various Processing Topologies.	7	CO3	2	3	3.3.1
	b) Differentiate between Structured and Unstructured data, with examples.	6	CO3	2	6	6.2.1
	OR					
2	a) Explain different Data Offloading strategies with respect to its location and decision making.	7	CO3	2	3	3.3.1
	b) Explain IoT device Design and Selection considerations.	6	CO3	2	6	6.2.1
	PART B					
3	a) What is Virtualization? Explain the advantages of virtualization, with its different types?	6	CO4	2	3	3.3.1
	b) Explain the importance and architecture of sensor cloud platform.	6	CO4	2	3	3.3.2
	OR					
4	a) With the help of neat diagrams, Explain the various Cloud Models, briefly.	6	CO4	2	3	3.3.1
	b) Illustrate the types of cloud simulation and explain any one of them, briefly.	6	CO4	2	3	3.3.2

CO3: Understand & Explain the importance of choosing the right processing technologies, processing offloading & its types in IoT

CO4: Understand & Explain Associated Cloud computing IOT Technology, its salient features of various cloud computing models

Verified by
QPSC Member

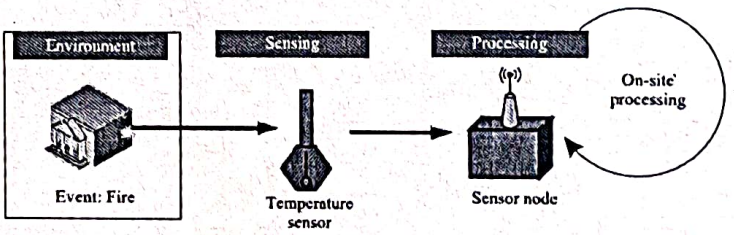
Faculty Sign.

Approved By
HOD
Head of the Department
Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

Sir M Visvesvaraya Institute of Technology
Bengaluru-562157

Test No: 2 Semester: II
Course/Branch: BE / ECE, EEE, ETE, Mech, ISE Max. Marks: 25
Subject/Code: Introduction to Internet of Things/ BETCK205H Duration: 60 Mins

Scheme of Evaluation

Question Number	Solution	Marks allocated
1. a)	Processing topologies • On-site • Off-site. Off-site - a) Remote processing, b) Collaborative processing **On-site processing** • data is processed at the source itself • This is crucial in applications that have a very low tolerance for latencies • healthcare and flight control systems (real time systems) have a breakneck data generation rate. • processing infrastructure is fast and robust enough to handle such data  **Figure 6.2** Event detection using an on-site processing topology **Off-site processing** • allows for latencies • cheaper than on-site processing topologies. • sensor nodes are not required to process data on an urgent basis, • sensor node is responsible for the collection and framing of data that is eventually to be transmitted to another location for processing • topology has a few dedicated high-processing enabled devices, which can be borrowed by multiple simpler sensor nodes to accomplish their tasks. • costs of large-scale deployments extremely manageable • data from these sensor nodes (data generating sources) is transmitted either to a remote location (which can either be a server or a cloud) or to multiple processing nodes **Remote processing** • remote server or a cloud-based infrastructure for further processing and analytics. • single, powerful computing platform; • massive scalability • use up a lot of network bandwidth and relies heavily on the presence of network connectivity between the sensor nodes and the remote processing infrastructure	03M 04M

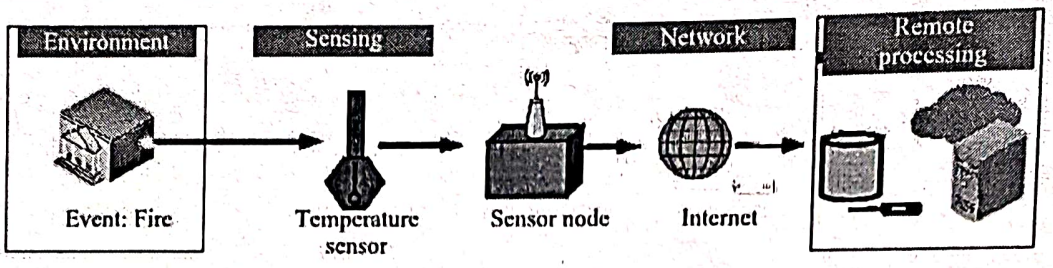


Figure 6.3 Event detection using an off-site remote processing topology

Collaborative processing

- use in scenarios with limited or no network connectivity, especially systems lacking a backbone network.
- quite economical
- club together the processing power of nearby processing nodes and collaboratively process the data in the vicinity of the data source itself
- also reduces latencies due to the transfer of data over the network.
- conserves bandwidth of the network
- quite beneficial for applications such as agriculture

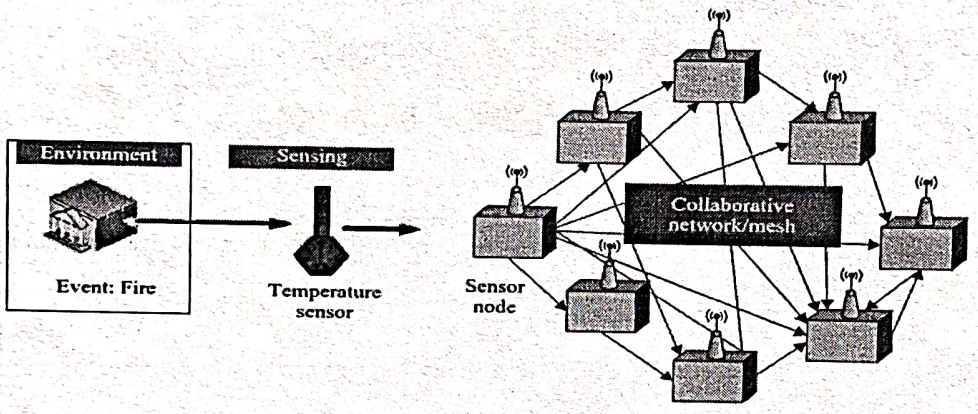


Figure 6.4 Event detection using a collaborative processing topology

1. b)

Structured data

- pre-defined structure
- relational database management systems (RDBMS).
- These are primarily created by using length-limited data fields such as phone numbers, social security numbers
- easily searchable by querying algorithms as well as human generated queries
- flight or train reservation systems,
- banking systems,
- inventory controls, and other similar systems.
- Structured Query Language (SQL) are used for accessing these data in RDBMS.

03M

Unstructured data

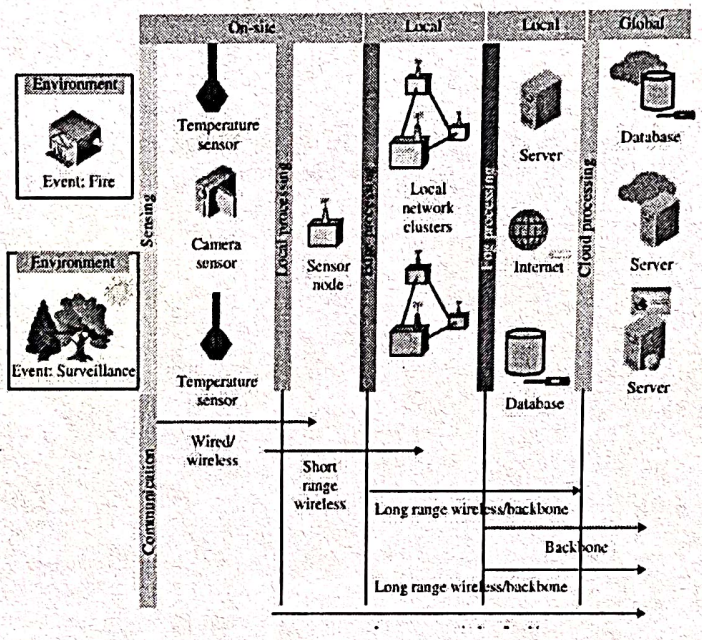
- no pre-defined structure and can vary according to applications and data-generating sources
- human-generated unstructured data include text, e-mails, videos, images, phone recordings, chats,
- machine-generated unstructured data include sensor data from traffic, buildings, industries, satellite imagery, surveillance videos,
- does not have fixed formats associated with it, which makes it very difficult for querying algorithms to perform a look-up.

03M

- Querying languages such as NoSQL are generally used for this data type.

-OR-

2. a) The processing offloading paradigm is important for the development of densely deployable, energy-conserving, miniaturized, and cheap IoT-based solutions for sensing tasks. Figure shows the typical outline of an IoT deployment with the various layers of processing that are encountered spanning vastly different application domains—from as near as sensing the environment to as far as cloud-based infrastructure. 02M



Offload location - 03M

- Offload location into four types:
  1. Edge
  2. Fog
  3. Remote server
  4. Cloud

Offload decision making 02M

- decision making is generally addressed considering
- data generation rate,
- network bandwidth,
- the criticality of applications,
- processing resource available at the offload site
  1. Naive Approach
  2. Bargaining based approach
  3. Learning based approach

2. b) The main factor governing the IoT device design and selection for various applications is the Processor are – Size, Energy, Cost, Memory, Processing Power, I/O Rating, Add-ons. 02 + 04

Brief explanation on each point –

3. a)

Virtualization -

- The technique of sharing a single resource among multiple end user organizations or end users is known as virtualization.
- a physical resource is logically distributed among multiple users

Advantages of virtualization -

i) **Advantages for End Users** — 02M

(a) Variety:
(b) Availability:
(c) Portability:
(d) Elasticity:

ii) **Advantages for CSP** — 02M

a) Resource Utilization:
b) Effective Revenue Generation:

Types of Virtualizations – — 02M

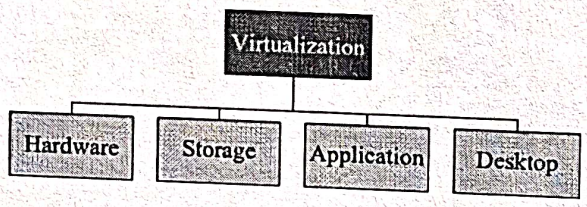


Figure 10.3 Types of virtualization

i) Sharing of hardware resources among multiple users.
ii) the storage space from different entities is accumulated virtually, and seem like a single storage location
iii) A single application is stored at the cloud end. However, as per requirement, a user can use the application in his/her local computer without ever actually installing the application
iv) This type of virtualization allows a user to access and utilize the services of a desktop that resides at the cloud.
v) The users can use the desktop from their local desktop.

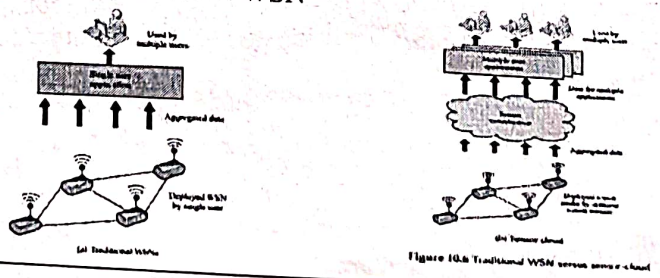
3. b)

Importance and architecture of sensor cloud platform

Importance: — 02M

- sensor-cloud infrastructure is based on the concept of cloud computing, in which a user application is served by a set of homogeneous or heterogeneous sensor nodes
- a user receives data for an application from multiple sensor nodes without owning them

Advantages of sensor-cloud over traditional WSN – — 02M



Architecture of a sensor-cloud platform - End User, Sensor Owner, Sensor-Cloud Service Provider (SCSP)

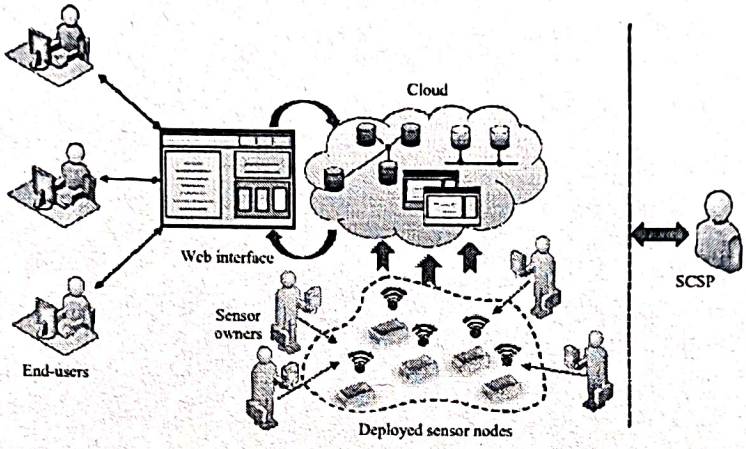


Figure 10.7 Architecture of a sensor-cloud platform

02M

-OR-

4. a) Cloud models:

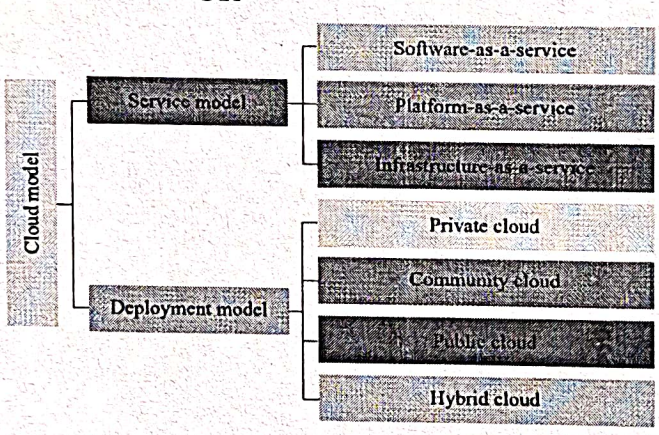
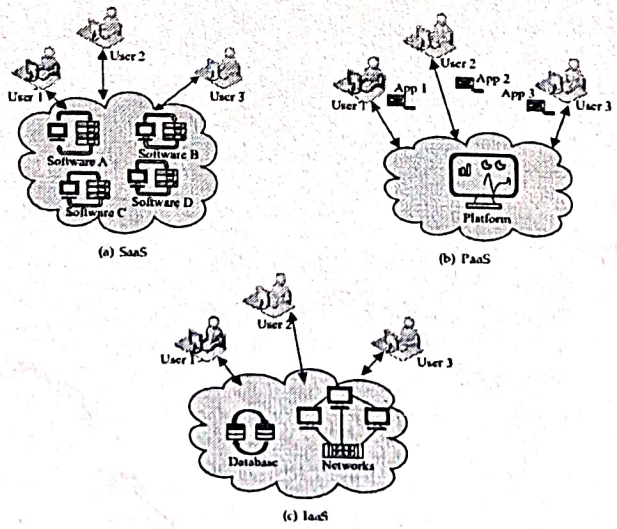


Figure 10.4 Cloud model

02M

(i) Service Models – (a) SaaS, (b) PaaS, & (c) IaaS



02M

(ii) Deployment Models – (a) Private Cloud, (b) Public Cloud, (c) Hybrid Cloud, & (d) Community Cloud.

02M

4. b)	It is challenging to estimate the performance of an IoT system with the cloud before real implementation. On the other hand, real deployment of the cloud is a complex and costly procedure. Thus, there is a requirement for simulating the system through a cloud simulator before real implementation. There are many cloud simulators that provide pre-deployment test services for repeatable performance evaluation of a system. Currently, different types of cloud simulators are available. A few cloud simulators are listed here: (i) CloudSim, (ii) CloudAnalyst, (iii) Green Cloud (i) CloudSim - (a) Description: CloudSim is a popular cloud simulator that was developed at the University of Melbourne. This simulator is written in a Java-based environment. In CloudSim, a user is allowed to add or remove resources dynamically during the simulation and evaluate the performance of the scenario. (b) Features: CloudSim has different features, which are listed as follows: (1) The CloudSim simulator provides various cloud computing data centers along with different data center network topologies in a simulation environment. (2) Using CloudSim, virtualization of server hosts can be done in a simulation. (3) A user is able to allocate virtual machines (VMs) dynamically. (4) It allows users to define their own policies for the allocation of host resources to VMs. (5) It provides flexibility to add or remove simulation components dynamically. (6) A user can stop and resume the simulation at any instant of time.	03M 03M

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: 02	Date: 27/6/24	Time: 10 to 11 am	Room No: NB319
Course / Branch: B.E / EC	Section: A	Semester: II	Sub Code: BETCK205H
Invigilator's Name: Ramya N.			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC001	A MEGHANA	44757	A Megh	22
2	1MV23EC002	AAYUSH PALASSERI	44768	Ayush Palas	14
3	1MV23EC006	ABHINAV NAMAN	44771	Abhinav	12
4	1MV23EC007	ABHINAV SHANKAR	~~44774~~	~~Abhi~~	06
5	1MV23EC011	ADITYA AMAN	44772	Hd	18
6	1MV23EC014	AISHWARYA SHANKAR NAYKODI	44759	A.S.N	22 (22)
7	1MV23EC016	AMAN KUMAR	Absent		
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H2.

Valuation completed

1/7/24.

No. of Booklets Issued: 8		No. of Unused Booklets Returned: 01	
No. of Students Present: 07		No. of Students Absent: 01	
Receiver's Name: Sheela	Receiver's Signature		Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: II	Date: 27/6/24	Time: 10:00 – 11:00am	Room No: NB416
Course / Branch: B.E / EC	Section: H2	Semester: II	Sub Code: BETCKH2
Invigilator's Name: Swetha B.M.			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC019	ANANT JAMUAR	44971	Anant	14
2	1MV23EC020	ANANT SRIVASTAVA	44976	Anant.	17
3	1MV23EC026	AYUSH	44807	AYUSh	11
4	1MV23EC027	AYUSH BHUSHAN	ABSENT		
5	1MV23EC028	AYUSH RAJ	44802	Ayush	04
6	1MV23EC029	AYUSH RAJ	44803	Ayush	15
7	1MV23EC032	BHAGYASHREE B PATIL	44804	BPatil	14
8	1MV23EC034	CHINNI PRAVARSHA	44805	Pravarsha	15
9	1MV23EC035	CHIRAG N	ABSENT		
10	1MV23EC036	CHITRANSHU RAJ	44808	Chitranshu Raj	10 (10)
11	1MV23EC037	CHIRANTAN CHAMARAJ	44809	Chiranthan	12
12	1MV23EC046	H M PREMA	44810	Prema	12
13	1MV23EC052	HONEY KRISHNA	44812	honey	22
14	1MV23EC054	KAVANA L	44811	Kavana	13
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17	1MV23EC059	KUNAL BHARDWAJ	44624	Kunal	07
18	1MV23EC063	LUCKSHITA M	44815	LuckshitaM	17 (17)
19	1MV23EC076	PRITHVIK N	44818	Prithvik	09
20	1MV23EC077	PRIYANKA K	44819	Priyanka	14
21	1MV23EC084	RISHAV RAJ	44808	Rishav Raj	18
22	1MV23EC085	RISHI RAJ	44321	Rishi Raj	21
23	1MV23EC086	RIYA KUMARI	44820	Riya	15
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H2

22/24

No. of Booklets Issued: 22		No. of Unused Booklets Returned: 02
No. of Students Present: 22		No. of Students Absent: 02
Receiver's Name: Dr. MC	Receiver's Signature	Invigilator's Signature

H2

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: II	Date: 27-06-24	Time: 10:00 to 11:00	Room No: NB419
Course / Branch: B.E / EC	Section: H2	Semester: II	Sub Code: BETCK205H
Invigilator's Name: RAGHAV.S			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23EC093	SANGAMESH SOMALING NUGGANATTI	50790		~~11~~
2	1MV23EC102	SHILPA V S	50731		24
3	1MV23EC115	SWETANGI RAY	50779		20
4	1MV23EC118	THEERTHANA P REDDY	50780		22
5	1MV22EC095	SANDIPAN SINGH	← ABSENT →		
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04/05

24

04/05

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No. of Students Present: 04		No. of Students Absent: 01
Receiver's Name: bv cvm	Receiver's Signature	Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: II	Date: 27-06-24	Time: 10:00 to 11:00	Room No: NB419
Course / Branch: B.E / ET	Section: A2	Semester: II	Sub Code: BETCK205H / 205A
Invigilator's Name: RAGHAV S			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23ET004	ADITHYA KUMAR AGARWAL	ABSENT		
2	1MV23ET017	D YOGA VENKATA PRASAD	50351		17
3	1MV23ET018	DHRUV SINGH SENGAR	ABSENT		
4	1MV23ET023	HARSH YADAV	ABSENT		
5	1MV23ET031	KUSHAGRA PRIYADARSHI	50989		13
6	1MV23ET032	MANAS YADU	50787		13
7	1MV23ET057	SINDHU N	50778	Sindhu.N.	21
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05/08

15

No. of Booklets Issued: 08	No. of Unused Booklets Returned: 03
No. of Students Present: 05	No. of Students Absent: 03
Receiver's Name:	Receiver's Signature / Invigilator's Signature

Sir M. Visvesvaraya Institute of Technology, Bangalore 562 157			Academic Year 2023 - 2024
Test: II	Date: 27-06-24	Time: 10:00 to 11:00	Room No: NB419
Course / Branch: B.E / EE	Section: H2	Semester: II	Sub Code: BETCK205H
Invigilator's Name: RAGHAV.S			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
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No. of Booklets Issued: 02	No. of Unused Booklets Returned: -NIL-
No. of Students Present: 02	No. of Students Absent: -NIL-
Receiver's Name:	Receiver's Signature / Invigilator's Signature

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Test: II	Date: 27-06-24	Time: 10:00 to 11:00	Room No: NB419
Course / Branch: B.E / ISE	Section: H2	Semester: II	Sub Code: BETCK 205H
Invigilator's Name: RAGHAV.S			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23IS011	ADITYA RAJ	50786	A Raj	11
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03 / 04

04

No. of Booklets Issued: 04	No. of Unused Booklets Returned: 01	
No. of Students Present: 03	No. of Students Absent: 01	
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Test: II	Date: 27-06-24	Time: 10:00 to 11:00	Room No: NB419
Course / Branch: B.E / ME	Section: H2	Semester: II	Sub Code: BETCK205H 205H
Invigilator's Name: RAGHAV.S			

Sl. No.	USN	Student's Name	Booklet's Number	Student's Signature	Marks Obtained
1	1MV23ME019	HARISH	50789	Harish	04
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03/04

04

No. of Booklets Issued: 04	No. of Unused Booklets Returned: 01
No. of Students Present: 03	No. of Students Absent: 01
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SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY, BANGALORE

Branch : EC Semester : 4

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106	1MV22EC116	45
107	1MV22EC117	20
108	1MV22EC119	46
109	1MV22EC120	21
110	1MV22EC121	48
111	1MV22EC122	43
112	1MV22EC123	42
113	1MV22EC124	37
114	1MV22EC125	50

Sl NO.	USN	BECL404
115	1MV22EC126	43
116	1MV22EC127	49
117	1MV22EC128	50
118	1MV22EC129	45
119	1MV22EC130	48
120	1MV22EC131	50
121	1MV22EC132	47
122	1MV22EC133	45
123	1MV22EC134	48
124	1MV22EC135	42
125	1MV23EC400	50
126	1MV23EC401	38
127	1MV23EC402	44
128	1MV23EC403	43
129	1MV23EC404	50
130	1MV23EC405	48
131	1MV23EC406	44
132	1MV23EC407	48
133	1MV23EC408	45
134	1MV23EC409	44
135	1MV23EC410	50
136	1MV23EC411	47

Sl NO.	USN	BETCK205H
76	1MV23EC076	35
77	1MV23EC077	37
78	1MV23EC078	-
79	1MV23EC079	-
80	1MV23EC080	-
81	1MV23EC081	-
82	1MV23EC082	-
83	1MV23EC083	-
84	1MV23EC084	45
85	1MV23EC085	41
86	1MV23EC086	38
87	1MV23EC087	-
88	1MV23EC088	-
89	1MV23EC089	34
90	1MV23EC090	-
91	1MV23EC091	-
92	1MV23EC092	-
93	1MV23EC093	31
94	1MV23EC094	-
95	1MV23EC095	-
96	1MV23EC096	-
97	1MV23EC097	-
98	1MV23EC098	-
99	1MV23EC099	-
100	1MV23EC100	-
101	1MV23EC101	-
102	1MV23EC102	46
103	1MV23EC103	-
104	1MV23EC104	-
105	1MV23EC105	-
106	1MV23EC106	-
107	1MV23EC107	-
108	1MV23EC108	-
109	1MV23EC109	-
110	1MV23EC110	-
111	1MV23EC111	-
112	1MV23EC112	-
113	1MV23EC113	-
114	1MV23EC114	-

Sl NO.	USN	BETCK205H
37	1MV23EC037	36
38	1MV23EC038	-
39	1MV23EC039	-
40	1MV23EC040	-
41	1MV23EC041	-
42	1MV23EC042	-
43	1MV23EC043	-
44	1MV23EC044	-
45	1MV23EC045	-
46	1MV23EC046	38
47	1MV23EC047	-
48	1MV23EC048	-
49	1MV23EC049	-
50	1MV23EC050	-
51	1MV23EC051	-
52	1MV23EC052	44
53	1MV23EC053	-
54	1MV23EC054	36
55	1MV23EC055	47
56	1MV23EC056	46
57	1MV23EC057	-
58	1MV23EC058	-
59	1MV23EC059	26
60	1MV23EC060	-
61	1MV23EC061	-
62	1MV23EC062	-
63	1MV23EC063	44
64	1MV23EC064	-
65	1MV23EC065	-
66	1MV23EC066	-
67	1MV23EC067	-
68	1MV23EC068	-
69	1MV23EC069	-
70	1MV23EC070	-
71	1MV23EC071	-
72	1MV23EC072	-
73	1MV23EC073	-
74	1MV23EC074	-
75	1MV23EC075	-

Sl NO.	USN	BETCK205H
115	1MV23EC115	40
116	1MV23EC116	-
117	1MV23EC117	-
118	1MV23EC118	43
119	1MV23EC119	-
120	1MV23EC120	-
121	1MV23EC121	-
122	1MV23EC122	-
123	1MV23EC123	-
124	1MV23EC124	-
125	1MV23EC125	-
126	1MV23EC126	-

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY, BANGALORE

Branch : EC Semester : 2

Sl NO.	USN	BETCK205H
1	1MV22EC096	20
2	1MV23EC001	46
3	1MV23EC002	20
4	1MV23EC003	-
5	1MV23EC004	-
6	1MV23EC005	-
7	1MV23EC006	37
8	1MV23EC007	30
9	1MV23EC008	-
10	1MV23EC009	-
11	1MV23EC010	-
12	1MV23EC011	35
13	1MV23EC012	-
14	1MV23EC013	-
15	1MV23EC014	47
16	1MV23EC015	-
17	1MV23EC016	5
18	1MV23EC017	40
19	1MV23EC018	-
20	1MV23EC019	37
21	1MV23EC020	38
22	1MV23EC021	
23	1MV23EC022	-
24	1MV23EC023	-
25	1MV23EC024	-
26	1MV23EC025	-
27	1MV23EC026	34
28	1MV23EC028	23
29	1MV23EC029	42
30	1MV23EC030	-
31	1MV23EC031	-
32	1MV23EC032	42
33	1MV23EC033	-
34	1MV23EC034	31
35	1MV23EC035	20
36	1MV23EC036	31

Branch : ET Semester : 2

Sl NO.	USN	BETCK205H
1	1MV23ET001	-
2	1MV23ET002	-
3	1MV23ET003	-
4	1MV23ET004	0
5	1MV23ET005	-
6	1MV23ET006	-
7	1MV23ET007	-
8	1MV23ET008	-
9	1MV23ET009	-
10	1MV23ET010	-
11	1MV23ET011	-
12	1MV23ET012	-
13	1MV23ET013	-
14	1MV23ET014	-
15	1MV23ET015	-
16	1MV23ET016	-
17	1MV23ET017	39
18	1MV23ET018	0
19	1MV23ET019	-
20	1MV23ET020	-
21	1MV23ET021	-
22	1MV23ET022	-
23	1MV23ET023	0
24	1MV23ET024	-
25	1MV23ET025	-
26	1MV23ET026	-
27	1MV23ET027	-
28	1MV23ET028	-
29	1MV23ET029	-
30	1MV23ET030	-
31	1MV23ET031	26
32	1MV23ET032	37
33	1MV23ET033	-
34	1MV23ET034	-
35	1MV23ET035	-
36	1MV23ET036	-

SRI KRISHNADEVARAYA EDUCATIONAL TRUST

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

(Affiliated to VTU-Belagavi, Recognized by AICTE and Accredited by NBA & NAAC)
Krishnadevarayanagar, Off International Airport Road, Hunasamaranahalli, Bengaluru – 562 157

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course Materials

COURSE TITLE: Computer Communication Networks **COURSE CODE: 21EC53**

SCHEME	CREDIT	BRANCH	SEMESTER	SECTION	CIE	SEE
CBCS (2021)	3	ECE	V	A	50 Marks	50 Marks

Link for the course materials:

https://drive.google.com/drive/folders/1IO_jVpaQ2zfXazZcgsUj-zvr2NUprpRU?usp=drive_link

Name and Signature of the Faculty: [Dr. Poongothai. C]

HOD

Head of the Department
Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

SRI KRISHNADEVARAYA EDUCATIONAL TRUST
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(Affiliated to VTU-Belagavi, Recognized by AICTE and Accredited by NBA & NAAC)
Krishnadevarayanagar, Off International Airport Road, Hunasamaranahalli, Bengaluru – 562 157
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Pedagogical/Innovative Teaching

COURSE TITLE: Introduction to Internet of Things **COURSE CODE: BETCK205H**

SCHEME	CREDIT	BRANCH	SEMESTER	SECTION	CIE	SEE
CBCS (2022)	3	ECE,ETE,ISE, EEE,ME	II	205H2	50 Marks	50 Marks

1. Used google drive and ERP to share the course materials.
2. Used PPTs to explain the critical topics.
3. For the evaluation of CIE, students have done projects related to applications of IOT and submitted the report.

Name and Signature of the Faculty:

[Dr. Poorgothai. C]

Head of the Department
Electronics & Communication Engineering
HOD
Sir M VIT Bangalore 562 157

Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Subject : BETCK205H - Introduction to Internet of Things
Program :
Semester : 2
Filled By : 25
Division : 2A - EC

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	315	84.00	11	9	4	1	0
2	Presentation and Communication skills	3	318	84.80	11	10	3	1	0
3	Subject knowledge	3	306	81.60	11	6	7	1	0
4	Willingness to clarify doubts and provide guidance	3	309	82.40	11	8	4	2	0
5	Class Room Management	3	306	81.60	11	6	7	1	0
6	Use of Black board and other teaching aids	3	303	80.80	11	7	4	3	0
7	Preparedness for class	2	210	84.00	11	9	4	1	0
8	Fostering punctuality through his / her example	2	212	84.80	11	9	5	0	0
9	Confidence level of the teacher	2	208	83.20	12	5	8	0	0
10	Attire and mannerism	2	222	88.80	13	10	2	0	0
11	Overall assessment of the teacher	3	324	86.40	11	11	3	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	113	90.40	19	6	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	194	77.60	12	12	1		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	101	80.80	14	10	1		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	234	93.60	22	2	1		

Overall Score		
Max. Possible points	Obtained	Percentage
4375	3675	84%

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Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Subject : BETCK205H - Introduction to Internet of Things
Program :
Semester : 2
Filled By : 11
Division : 2B - EC

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	135	81.82	5	2	4	0	0
2	Presentation and Communication skills	3	138	83.64	6	1	4	0	0
3	Subject knowledge	3	138	83.64	6	1	4	0	0
4	Willingness to clarify doubts and provide guidance	3	138	83.64	6	1	4	0	0
5	Class Room Management	3	135	81.82	5	2	4	0	0
6	Use of Black board and other teaching aids	3	138	83.64	6	1	4	0	0
7	Preparedness for class	2	90	81.82	5	2	4	0	0
8	Fostering punctuality through his / her example	2	92	83.64	6	1	4	0	0
9	Confidence level of the teacher	2	92	83.64	6	1	4	0	0
10	Attire and mannerism	2	92	83.64	6	1	4	0	0
11	Overall assessment of the teacher	3	138	83.64	6	1	4	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	53	96.36	10	1	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	90	81.82	6	5	0		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	45	81.82	6	5	0		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	106	96.36	10	1	0		

Overall Score		
Max. Possible points	Obtained	Percentage
1925	1620	84.16%

Head of the Department
Electronics & Communications Engineering
Sir M VIT Bangalore 562 157

Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Program :
Filled By : 6
Subject : BETCK205H - Introduction to Internet of Things
Semester : 2
Division : 2C - ET

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	81	90.00	4	1	1	0	0
2	Presentation and Communication skills	3	81	90.00	4	1	1	0	0
3	Subject knowledge	3	84	93.33	5	0	1	0	0
4	Willingness to clarify doubts and provide guidance	3	81	90.00	4	1	1	0	0
5	Class Room Management	3	81	90.00	4	1	1	0	0
6	Use of Black board and other teaching aids	3	84	93.33	5	0	1	0	0
7	Preparedness for class	2	56	93.33	5	0	1	0	0
8	Fostering punctuality through his / her example	2	54	90.00	4	1	1	0	0
9	Confidence level of the teacher	2	56	93.33	5	0	1	0	0
10	Attire and mannerism	2	54	90.00	4	1	1	0	0
11	Overall assessment of the teacher	3	81	90.00	4	1	1	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	28	93.33	5	1	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	52	86.67	4	2	0		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	22	73.33	2	4	0		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	60	100.00	6	0	0		

Overall Score

Max. Possible points	Obtained	Percentage
1050	955	90.95%

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Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Program :
Filled By : 1

Subject : BETCK205H - Introduction to Internet of Things
Semester : 2
Division : 2E - EE

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	12	80.00	0	1	0	0	0
2	Presentation and Communication skills	3	12	80.00	0	1	0	0	0
3	Subject knowledge	3	12	80.00	0	1	0	0	0
4	Willingness to clarify doubts and provide guidance	3	12	80.00	0	1	0	0	0
5	Class Room Management	3	12	80.00	0	1	0	0	0
6	Use of Black board and other teaching aids	3	12	80.00	0	1	0	0	0
7	Preparedness for class	2	8	80.00	0	1	0	0	0
8	Fostering punctuality through his / her example	2	8	80.00	0	1	0	0	0
9	Confidence level of the teacher	2	8	80.00	0	1	0	0	0
10	Attire and mannerism	2	8	80.00	0	1	0	0	0
11	Overall assessment of the teacher	3	12	80.00	0	1	0	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	3	60.00	0	1	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	6	60.00	0	1	0		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	3	60.00	0	1	0		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	6	60.00	0	1	0		

Overall Score		
Max. Possible points	Obtained	Percentage
175	134	76.57%

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Sir M VIT Bangalore 562 157

Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Program :
Filled By : 2

Subject : BETCK205H - Introduction to Internet of Things
Semester : 2
Division : 2F - IS

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	24	80.00	1	0	1	0	0
2	Presentation and Communication skills	3	24	80.00	1	0	1	0	0
3	Subject knowledge	3	27	90.00	1	1	0	0	0
4	Willingness to clarify doubts and provide guidance	3	27	90.00	1	1	0	0	0
5	Class Room Management	3	27	90.00	1	1	0	0	0
6	Use of Black board and other teaching aids	3	27	90.00	1	1	0	0	0
7	Preparedness for class	2	18	90.00	1	1	0	0	0
8	Fostering punctuality through his / her example	2	12	60.00	1	0	0	0	1
9	Confidence level of the teacher	2	16	80.00	1	0	1	0	0
10	Attire and mannerism	2	12	60.00	1	0	0	0	1
11	Overall assessment of the teacher	3	24	80.00	1	0	1	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	10	100.00	2	0	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	12	60.00	1	0	1		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	6	60.00	1	0	1		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	12	60.00	1	0	1		

Overall Score

Max. Possible points	Obtained	Percentage
350	278	79.43%

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Student Feedback on Performance of Faculty || BE || Sem - 2 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Program :
Filled By : 3
Subject : BETCK205H - Introduction to Internet of Things
Semester : 2
Division : 2H - ME

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	36	80.00	1	1	1	0	0
2	Presentation and Communication skills	3	36	80.00	1	1	1	0	0
3	Subject knowledge	3	36	80.00	1	1	1	0	0
4	Willingness to clarify doubts and provide guidance	3	33	73.33	1	1	0	1	0
5	Class Room Management	3	36	80.00	1	1	1	0	0
6	Use of Black board and other teaching aids	3	36	80.00	1	1	1	0	0
7	Preparedness for class	2	24	80.00	1	1	1	0	0
8	Fostering punctuality through his / her example	2	24	80.00	1	1	1	0	0
9	Confidence level of the teacher	2	24	80.00	1	1	1	0	0
10	Attire and mannerism	2	24	80.00	1	1	1	0	0
11	Overall assessment of the teacher	3	39	86.67	2	0	1	0	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	13	86.67	2	1	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	18	60.00	1	1	1		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	13	86.67	2	1	0		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	30	100.00	3	0	0		

Overall Score		
Max. Possible points	Obtained	Percentage
525	422	80.38%

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10.7.24
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Sir M. VIT Bangalore 562 157

CBCS SCHEME

USN | 1 | MV | 23 | EC | 007 |

BETCK205H/BETCKH205

Second Semester B.E./B.Tech. Degree Examination, June/July 2024
Introduction to Internet of Things (IOT)

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Classify the network types based on physical topologies and connection types with schematic diagram.	10	L2	CO1
	b.	With a neat diagram, explain the interdependency technology for IOT planes.	10	L2	CO1
		OR			
Q.2	a.	With neat diagram, explain the network communication between two hosts following OSI model.	10	L2	CO1
	b.	Explain the interdependencies and reach of IoT over various application domains and networking paradigms.	10	L2	CO1
		Module – 2			
Q.3	a.	Outline the basic differences between transducers, sensors and actuators.	6	L2	CO2
	b.	Explain the major factors influence the choice of sensors in IoT based sensing applications.	8	L2	CO2
	c.	Define Sensor and explain the characteristics of sensor.	6	L1	CO1
		OR			
Q.4	a.	Classify the sensor based on : i) Power requirements ii) Sensor output iii) Power to be measured.	10	L2	CO2
	b.	Classify Sensing types on the nature of the environment and the physical sensors.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain IoT device design and selection considerations.	10	L2	CO2
	b.	What are the parameters considered for off loading the data and identify typical data offload locations available in context of IoT.	10	L2	CO2
		OR			
Q.6	a.	Explain event detection using onsite , offsite remote processing topology and collaborative processing technology.	10	L2	CO2
	b.	Classify the data based on how they can be accessed and stored and the importance of processing of IoT.	10	L2	CO2

Module – 4					
Q.7	**a.**	Explain the classification of virtualization based on the requirements of the user.	**6**	**L2**	**CO2**
	b.	Explain different types of cloud model.	**10**	**L2**	**CO1**
	c.	What is SLA and mention its metrics.	**4**	**L2**	**CO2**
OR					
Q.8	**a.**	What are the advantages of virtualization?	**10**	**L2**	**CO1**
	b.	Explain different types of cloud simulators with its features.	**10**	**L2**	**CO1**
Module – 5					
Q.9	**a.**	Explain the different components of health care IoT.	**10**	**L2**	**CO1**
	b.	Explain the architecture and advantages of vehicular IoT.	**10**	**L2**	**CO2**
OR					
Q.10	**a.**	What is Machine Learning? What are the advantages and challenges of Machine Learning?	**10**	**L2**	**CO2**
	b.	What are the advantages and risk of health care IoT?	**10**	**L2**	**CO2**

* * * * *

Student Feedback on Performance of Faculty || BE || Sem - 4 || 2023 - 24 | 2023-24 | SMVIT

Faculty : Dr. POONGOTHAI C
Program : B.E. - EC
Filled By : 43

Subject : BECL404 - Communication Laboratory
Semester : 4
Division : 4B - EC

Sr. No.	Question	Weight	Score Obtained	%	No. of students who have said				
					Excellent(5)	Very Good (4)	Good(3)	Fair(2)	Bad(1)
1	Planning of lectures and Presentation of subject matter in logical sequence	3	507	78.60	16	9	17	1	0
2	Presentation and Communication skills	3	516	80.00	17	11	13	2	0
3	Subject knowledge	3	510	79.07	16	10	16	1	0
4	Willingness to clarify doubts and provide guidance	3	510	79.07	16	10	16	1	0
5	Class Room Management	3	507	78.60	16	9	17	1	0
6	Use of Black board and other teaching aids	3	513	79.53	16	11	15	1	0
7	Preparedness for class	2	344	80.00	17	10	15	1	0
8	Fostering punctuality through his / her example	2	342	79.53	16	12	13	2	0
9	Confidence level of the teacher	2	340	79.07	16	10	16	1	0
10	Attire and mannerism	2	346	80.47	18	9	15	1	0
11	Overall assessment of the teacher	3	525	81.40	17	13	12	1	0
					Most of the times(5)	Rarely(3)	Never(1)		
12	Relates theory to applications of real world problems	1	187	86.98	29	14	0		
					Always(5)	Most of the time(3)	Rarely(1)		
13	Teaching in a way resulting in real learning / understanding and motivation	2	306	71.16	17	21	5		
					Impartial(5)	Justifiable(3)	Partial(1)		
14	Fairness in evaluation	1	175	81.40	26	14	3		
					Acceptable (5)	Slow(3)	Fast(1)		
15	Pace at which the subject is taught	2	394	91.63	35	7	1		

Overall Score		
Max. Possible points	Obtained	Percentage
7525	6022	80.03%

20.8.24

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