



TECNIA INSTITUTE OF ADVANCED STUDIES

NAAC GRADE "A" INSTITUTE (CYCLE-1)

Approved by AICTE, Ministry of Education Govt. of India,
Affiliated to G.G.S.I.P. University & Recognized Under Sec. 2(f) of UGC Act 1956.
INSTITUTIONAL AREA, MADHUBAN CHOWK, ROHINI, DELHI-110085

Department of Information, Communication & Technology

Bachelor of Computer Applications (BCA) 3Yrs.

As per Scheme of Examination & Syllabi for BCA Scheme and Syllabus
(w.e.f. Academic Session 2021-22) Affiliated Institutions of GGSIP University, Delhi.

COURSE OUTCOMES (COs)

FIRST SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCA 171	Practical – I 'C' Prog. Lab	0	4	2	BCA 175#	Practical-III Web Tech Lab	0	4	2
BCA 173#	Practical – II IT Lab	0	4	2	BCA 181	Bridge Course in Mathematics	2	0	0

COURSE OUTCOMES (COs)

C.CODE: BCA 171 COURSE: Practical – I 'C' Prog. Lab				C.CODE: BCA 175# COURSE: Practical-III Web Tech Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Develop programming skills by learning the fundamentals of structured programming using C Language	BTL3	PO1,PO2,PO3	CO1	Develop static web pages through HTML, CSS, JavaScript bootstrap and XML	BTL3	PO4,PO5
CO2	Design and develop programs using arrays, storage classes ,functions and to understand memory management through pointers	BTL4	PO1,PO2,PO3	CO2	Implement different constructs and programming techniques provided by JavaScript.	BTL3, BTL1	PO4,PO8
CO3	Critically analyze real world problems using structures, unions and develop applications for handling text and binary files.	BTL5	PO1,PO2,PO3, PO4,PO5	CO3	Adapt HTML, CSS, JavaScript, bootstrap and XML syntax and semantics to build web pages.	BTL1, BTL5	PO4
CO4	Explore the use of command line arguments, string manipulation and standard libraries.	BTL5	PO1,PO2,PO4	CO4	Develop Client-Side Scripts using JavaScript to display the contents dynamically.	BTL3	PO4,PO5

C.CODE: BCA 173# COURSE: Practical – II IT Lab				C.CODE: BCA 181 COURSE: Bridge Course in Mathematics			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Work with basic DOS Commands and Windows Explorer.	BTL3	PO1,PO2	CO1	Understand the various approaches dealing the data using theory of matrices	BTL2	PO1,PO2, PO3,PO4
CO2	Create Word Documents using advanced features of MS Word.	BTL3	PO1,PO2	CO2	Understand and apply the concepts of determinants	BTL3	PO1,PO2
CO3	Create Worksheet using advanced features of MS Excel.	BTL3	PO1,PO2	CO3	Understand the concept of calculus such as limit, continuity and differentiability.	BTL4	PO1,PO2, PO3,PO4,PO5
CO4	Create interactive Presentation using advanced features of MS Power-point.	BTL3	PO1,PO2	CO4	Appraise and determine the correct logic and solutions for any given real world problem using application of integration & integral calculus	BTL5	PO1,PO2, PO3,PO4,PO5

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COURSE OUTCOMES (COs)

SECOND SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCA 134	Front End Design Tool VB.Net Lab	0	4	2	BCA 172	Practical-IV WBP Lab	0	4	2
BCA 136	Statistical Analysis using Excel	0	4	2	BCA 174	Practical – V DS Lab	0	4	2
BCA 138	Designing Lab Photoshop	0	4	2	BCA176#	Practical – VI DBMS Lab	0	4	2

COURSE OUTCOMES (COs)

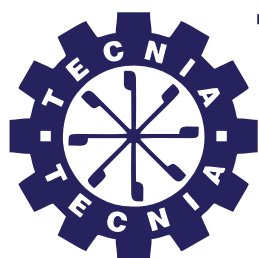
C.CODE: BCA 134 COURSE: Front End Design Tool VB.Net Lab				C.CODE: BCA 172 COURSE: Practical-IV WBP Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Design Console application using basic programming concepts.	BTL3	PO3,PO5	CO1	Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's.	BTL3	PO1,PO2, PO3,PO7
CO2	Design Windows application using control	BTL3	PO3,PO5	CO2	Have a good understanding of Web Application Terminologies.	BTL1, BTL2	PO1,PO2, PO3,PO7, PO10
CO3	Understand and use of different Data Structures, Exception Handling	BTL2	PO3,PO5	CO3	Learn how to link and publish web sites	BTL1, BTL2	PO1,PO2, PO3,PO4
CO4	Learn basic concepts of OOPS. Design classes and interfaces	BTL2	PO3,PO5				

C.CODE: BCA 136 COURSE: Statistical Analysis using Excel				C.CODE: BCA 174 COURSE: Practical – V DS Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Understand the basic concepts of statistics and its application in the real life scenarios	BTL2	PO1,PO2,PO3	CO1	Implement basic operations on static linear data structures.	BTL3	PO1,PO2, PO3,PO4
CO2	Understand the means and mechanisms for applying the various skills used in the process of generating various statistical concepts by using MS Excel software	BTL3	PO1,PO2,PO3, PO5,PO8	CO2	Implement various operations on dynamic linear data structures.	BTL6	PO1,PO2, PO3,PO4,PO5
CO3	Developing the skills needed for understand the various features of MS Excel software which assist the user in the process of deriving statistical measures	BTL3	PO1,PO2,PO3, PO4,PO5,PO7	CO3	Implement basic operations on non-linear data structures	BTL3	PO1,PO2, PO3,PO4,PO5
CO4	Understand the skill needed to draw various forms of graphical representation based on statistical data.	BTL4	PO2,PO3,PO4 PO6	CO4	Implement searching techniques on linear and non- linear data Structures.	BTL4	PO1,PO2, PO3,PO4
CO5	Understand the various features of MS Excel involved in the process of compilation and summarizing of Statistical data and the skills needed to interpret the statistical data	BTL5	PO2,PO3,PO4 ,PO5,PO6,PO7, PO8	CO5	Implement sorting techniques on one dimensional array.	BTL4	PO1,PO2, PO3,PO4
CO6	Understand the skills needed to ensure the process of integrating data from multiple in MS Excel	BTL6	PO2,PO3,PO5, PO6,PO7,PO8				

C.CODE: BCA 138 COURSE: Designing Lab Photoshop				C.CODE: BCA 176# COURSE: Practical – VI DBMS Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Explain the basics of graphics designing & Adobe suite.	BTL1	PO6,PO11, PO14,PO20	CO1	Understand the structure and design of relational databases	BTL2	PO3
CO2	Exploring the Raster designing tools in Adobe Photoshop.	BTL3, BTL5	PO1,PO2,PO3, PO4,PO5,PO8 PO11,PO20	CO2	Write DDL statements in SQL to create, Modify and remove database objects.	BTL1, BTL3, BTL4	PO3,PO5,
CO3	Exploring the Vector designing tools in Adobe Photoshop.	BTL3, BTL5	PO6,PO7,PO9 PO13,PO11, PO20	CO3	Use constraints for the database	BTL1, BTL2, BTL3	PO3,PO5,
CO4	Exploring the image filters & adjustments in Adobe Photoshop.	BTL3, BTL5	PO10,PO11 PO20	CO4	Write DML statements in SQL to insert, Modify and remove data from database.	BTL4	PO3,PO5,
				CO5	Write SQL statements to retrieve data based on the conditions provided by the user	BTL1, BTL2, BTL3	PO3,PO5,
				CO6	Use index and Views in database	BTL2	PO3,PO5,
				CO7	Use structured query language (SQL) to an intermediate/ advanced level	BTL5, BTL6	PO4

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COURSE OUTCOMES (COs)

THIRD SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCAP 211#	Basics of Python Prog. Lab	0	2	1	BCA 235	ASP.Net	0	4	2
BCAP 213	Cyber Security Lab.	0	2	1	BCA 237	AR/VR	0	4	2
BCA 233	Designing Lab Corel Draw	0	4	2	BCA 271#	Practical – VII C++ Lab #	0	4	2

COURSE OUTCOMES (COs)

C.CODE: BCAP 211# COURSE: Basics of Python Prog. Lab				C.CODE: BCA 235 COURSE: ASP.Net			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Demonstrate knowledge of basic programming constructs in python	BTL2	PO1,PO2,PO3,PO7	CO1	Understand the designing and development of Web Application Components	BTL2	PO2
CO2	Illustrates string handling methods and user-defined functions in python	BTL3	PO1,PO2,PO3,PO7,PO10	CO2	Develop dynamic web pages using Web Server controls	BTL4	PO4,PO5
CO3	Applying data structures primitives like List, Dictionary and tuples.	BTL2	PO1,PO2,PO3,PO4	CO3	Design and create web applications with Validation controls	BTL3	PO6,PO7,PO8
CO4	Identify the commonly used operations involved in file handling	BTL3	PO1,PO2,PO3,PO4,PO7	CO4	Understand and Apply database connectivity to Web Applications	BTL5	PO3
CO5	To understand how python can be used for application development	BTL2	PO1,PO2,PO3,PO4,PO11				

C.CODE: BCA 233 COURSE: Designing Lab Corel Draw				C.CODE: BCA 237 COURSE: AR/VR			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Explain the basics of graphics designing & CorelDraw suite.	BTL1	PO1,PO6	CO1	Familiarize the basics of augmented,virtual & mixed reality	BTL2	PO1,PO2,PO3,PO4
CO2	Exploring the vector & 3D tools in CorelDraw.	BTL3, BTL5	PO1,PO6	CO2	Understand and apply the game development basics	BTL3	PO1,PO2,PO3,PO4,PO5
CO3	Exploring the custom shapes & basics of printing in CorelDraw	BTL3, BTL5	PO1,PO6	CO3	Compare and implement the various XR development techniques.	BTL5	PO1,PO2,PO3,PO4,PO5
CO4	Exploring the workspaces & objects in CorelDraw.	BTL3, BTL5	PO1,PO6	CO4	Appraise the XR development using Unity Engine.	BTL5	PO1,PO2,PO3,PO4,PO5

C.CODE: BCA 271# COURSE: Practical – VII C++ Lab #			
CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Implement basic concepts of Object Oriented Programming	BTL3	PO3
CO2	Implement the concept of Classes and Objects	BTL3	PO2
CO3	Analyse and apply various polymorphism techniques to solve real life problems	BTL4	PO2,PO4
CO4	Implement Generic Classes, Exception Handling and variousfile operations	BTL4	PO4

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COURSE OUTCOMES (COs)

FOURTH SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCAP 212	Introduction to Data Science Lab	0	2	1	BCAP 218	Web Development with Python and Django Lab.	0	2	1
BCAP 214	Introduction to Artificial Intelligence Lab.	0	2	1	BCA 272	Practical –XII Java Lab	0	4	2
BCAP 216	Network Security Lab.	0	2	1	BCA 274	Practical – IX SE Lab	0	4	2

COURSE OUTCOMES (COs)

C.CODE: BCAP 212 COURSE: Introduction to Data Science Lab				C.CODE: BCA 218 COURSE: Web Development with Python and Django Lab.			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Basics of Data Science and Data Collection strategies	BTL2	PO1,PO2,PO3,PO7	CO1	Install and Configure Python and Django in a development and production environment	BTL1 BTL2 BTL3	PO4,PO5,PO6,PO8
CO2	Illustrating statistical analysis of data.	BTL3	PO1,PO2,PO3,PO7	CO2	Understands the security implications of Django using templates and develop secure websites with Django	BTL2 BTL3 BTL4 BTL6	PO4,PO5,PO8
CO3	Working with the data structures of python like series and Data Frames	BTL3	PO1,PO2,PO3,PO4	CO3	Utilize Django Models to build an interface with powerful relational databases	BTL3 BTL6	PO5,PO7,PO8
CO4	Statistical analysis of data with the help of python	BTL3	PO1,PO2,PO3	CO4	Design and develop forms (both ad-hoc and from Models and Data Models) and automate the validation and verification of data in those forms	BTL3 BTL4 BTL5 BTL6	PO6,PO8

C.CODE: BCAP 214 COURSE: Introduction to Artificial Intelligence Lab.				C.CODE: BCA 272 COURSE: Practical –XII Java Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	To understand elements constituting problems and learn to solve it by various uninformed & informed (heuristics based)	BTL1, BTL2, BTL3	PO1,PO2,PO4	CO1	Illustrate the Object-Oriented paradigm and Java language constructs	BTL2	PO3
CO2	To understand formal methods for representing the knowledge and the process of inference to derive new representations of the knowledge	BTL2, BTL3	PO1,PO2,PO4	CO2	To inculcate concepts of inheritance to create new classes from existing ones and design the classes needed given a problem specification.	BTL3	PO3
CO3	Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty	BTL3, BTL4	PO1,PO2,PO4	CO3	To apply various functions of String class	BTL3	PO4
CO4	Apply some mechanisms to create and improve AI system.	BTL3, BTL5	PO4,PO6,PO8	CO4	To facilitate students in handling exceptions and defining their own exceptions.	BTL4	PO4
				CO5	To manage input output using console and files	BTL4	PO4
				CO6	To apply the Java Thread model to develop multithreading applications.	BTL5	PO4
				CO7	To understand and apply the concepts of GUI programming using swings.	BTL6	PO5,PO6

C.CODE: BCAP 216 COURSE: Network Security Lab.				C.CODE: BCA 274 COURSE: Practical – IX SE Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Define and explain the issues and basic concepts of Network Security. To understand how to draw a network model.	BTL1, BTL2, BTL4	PO7	CO1	To apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.	BTL2	PO3
CO2	To Explain, understand and summarize the concepts, types and features of Firewall.	BTL2	PO1,PO7	CO2	Demonstrate an understanding of & apply current theories, models, & Techniques that provide a basis for the software lifecycle.	BTL3	PO3
CO3	Explain and implement working of authentication, authorization, Packet security, IP Security, Firewall by using some suitable examples.	BTL2, BTL3	PO3,PO4,PO7	CO3	Analyzing and developing a software product along with its complete documentation	BTL3	PO4
CO4	Classify and organize the architecture of network security management.	BTL2, BTL4	PO7	CO4	Work as an individual and as part of a multidisciplinary team to develop and deliver Quality software in one or more significant application domains.	BTL4	PO4
CO5	Evaluate different Network Security algorithms with the help of program	BTL5	PO3,PO4,PO7	CO5	Demonstrate an ability to use the techniques and tools necessary for engineering practice	BTL4	PO4
CO6	Design and create a network security architecture for an organization.	BTL6	PO4,PO7,PO8				

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COURSE OUTCOMES (COs)

FIFTH SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCAP 311	Machine Learning with Python Lab.	0	2	1	BCA 371	Practical – X Linux - OS Lab	0	4	2
BCAP 313	Web Security Lab.	0	2	1	BCA 373	Practical – XI CG Lab C	0	4	2
BCAP 315	Web Development with Java & JSP Lab.	0	2	1					

COURSE OUTCOMES (COs)

C.CODE: BCAP 311 COURSE: Machine Learning with Python Lab.				C.CODE: BCA 371 COURSE: Practical – X Linux - OS Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Explain machine learning concepts on real world applications and problems.	BTL2	PO1,PO2,PO8	CO1	Understand Linux Environment with the help of its architecture	BTL1	PO1,PO2,
CO2	Analyze and Implement Regression techniques.	BTL2, BTL3	PO1,PO4,PO5, PO7	CO2	Understand the Linux environment by using general Linux Commands.	BTL2	PO1,PO2, PO4
CO3	Solve and design solution of Classification problem	BTL3, BTL6	PO2,PO3,PO4, PO8	CO3	Implement Process Related commands.	BTL4	PO1,PO2, PO4,PO5
CO4	Understand and implement Unsupervised learning algorithms	BTL2, BTL3	PO4,PO5,PO6, PO8	CO4	Implement File Permission concept.	BTL4	PO1,PO2, PO4,PO5
CO5	Interpret various machine learning algorithms in a range of real world applications.	BTL3	PO2, PO6,PO7	CO5	Understanding the shell script by combining commands.	BTL2	PO1,PO2, PO4

C.CODE: BCAP 313 COURSE: Web Security Lab.				C.CODE: BCAP 313 COURSE: Web Security Lab.			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Define overall web security infrastructure, components, issues and basic concept etc.	BTL1	PO1,PO4,PO7	CO1	Develop basic computer generated graphic and drawing of graphic objects on 2D display devices.	BTL3	PO1,PO6
CO2	Describe briefly various types of security like social media security, email security, web application and web services security etc. Explain Web related services.	BTL2	PO1,PO2,PO4, PO5,PO7	CO2	To perform various algorithms for generating objects	BTL4	PO4
CO3	Apply and implementing various vulnerabilities for Ethically hacking a websites / Web Applications.	BTL3	PO1,PO4,PO6, PO8	CO3	To implement various 2D transformation operations through matrices.	BTL4	PO4,PO8
CO4	Focusing Penetration Testing, Computer Forensics.	BTL4	PO1,PO2,PO7	CO4	Implementation of cohen-sutherland line clipping algorithm.	BTL3	PO1
CO5	Evaluate different web security algorithms with the help of program.	BTL5	PO1,PO3,PO4, PO6,PO7,PO8				
CO6	Design and implement XSS attacks, SQL Injection attack, password hashing and cracking.	BTL6	PO1,PO3,PO4, PO7,PO8				

C.CODE: BCAP 315 COURSE: Web Development with Java & JSP Lab.			
CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Understand the concept of HTML, CSS and Java Script.	BTL2	PO3,PO4,PO5
CO2	Understand J2EE architecture, web application structure and web architecture models.	BTL2	PO3,PO4,PO5, PO8
CO3	Creating and configuring Servlets.	BTL6	PO3,PO4,PO5
CO4	Understand JDBC architecture and design database applications using JDBC.	BTL2	PO3,PO4,PO5, PO8
CO5	Design applications using JSP and JSF	BTL3	PO3,PO4,PO5, PO8
CO6	Elaborate the functional programming concepts of Hibernate,Struts and Springs.	BTL1	PO3,PO4,PO5, PO7,PO8

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COURSE OUTCOMES (COs)

SIXTH SEMESTER (Practical)

C.CODE	COURSE	L	T/P	CREDITS	C.CODE	COURSE	L	T/P	CREDITS
BCAP 312	Data Visualization & Analytics Lab.	0	2	1	BCAP 318	Mobile Application Development Lab.	0	2	1
BCAP 314	Deep Learning with Python Lab.	0	2	1	BCA 372	Practical – XII IOT Lab	0	4	2

COURSE OUTCOMES (COs)

C.CODE: BCAP 312 COURSE: Data Visualization & Analytics Lab.				C.CODE: BCAP 318 COURSE: Mobile Application Development Lab.			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Illustrating the features of Multithreading in python.	BTL2	PO1,PO2,PO3,PO5	CO1	Recognize the concept of application development for mobile devices.	BTL2	PO1,PO2
CO2	Analyzing data using suitable python library.	BTL2	PO1,PO2,PO3,PO7,PO10	CO2	Understand the basic technologies used by the Android platform	BTL2	PO1,PO2
CO3	Visualizing data using Matplotlib, Seaborn library.	BTL3	PO1,PO2,PO3,PO4	CO3	Recognize and use Android Environment Emulator and Application life cycle	BTL3	PO1,PO2,PO3,PO4
CO4	Develop python applications with database connectivity operations.	BTL3	PO1,PO2,PO3,PO4	CO4	Develop mobile applications for the Android operating system that use basic and advanced phone features	BTL5	PO1,PO2,PO3,PO4,PO7
				CO5	Deploy applications to the Android marketplace for distribution	BTL6	PO1,PO2,PO3,PO4,PO11
C.CODE: BCAP 314 COURSE: Deep Learning with Python Lab.				C.CODE: BCA 372 COURSE: Practical – XII IOT Lab			
CO#	THE COURSE OUTCOMES	BTL	MAPPING	CO#	THE COURSE OUTCOMES	BTL	MAPPING
CO1	Understand the basic concepts of Deep Learning and differentiate between shallow learning and deep learning.	BTL2	PO1,PO2,PO6	CO1	Understand the architecture and the functional blocks of Internet of Things.	BTL2	PO1,PO2,PO3
CO2	Implement various Deep Learning Models.	BTL3	PO2,PO3,PO4,PO8	CO2	Explain the concepts of Internet of Things and gain knowledge to design IoT applications	BTL2	PO1,PO2,PO3,PO7,PO10
CO3	Understand different Deep Learning architectures and training algorithms.	BTL3	PO1,PO2,PO3,PO5,PO8	CO3	Demonstrate the process of capturing and analyzing data in Internet of Things.	BTL3	PO1,PO2,PO3,PO4
CO4	Understanding Dimensionality Reduction and optimization in Deep Learning.	BTL4	PO1,PO2,PO3,PO4	CO4	Examine the various components involved in IoT design methodology.	BTL4	PO1,PO2,PO3,PO4,PO7
CO5	Understanding and implementing Recurrent Neural Network (RNN).27	BTL3	PO1,PO2,PO3,PO8	CO5	Evaluate an IoT device to work with a Cloud Computing infrastructure.	BTL5	PO1,PO2,PO3,PO4,PO11
CO6	Applying Deep Learning techniques in real life applications such as object detection and analysis.	BTL6	PO2,PO3,PO4,PO5,PO6,PO8	CO6	Implement IoT protocols for communication.	BTL6	PO1,PO2,PO3,PO4,PO6,PO7,PO8

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