BHARATHIAR UNIVERSITY,COIMBATORE-641 046

B.Sc. PHYSICS DEGREE COURSE

SCHEME OF EXAMINATIONS   (CBCS PATTERN)

(For the students admitted during the academic year 2014-2015and onwards)

Part	Study Components	Course Title	Ins. hrs / week	Dur.Hr	CIA	Marks	Total Marks	Credit
	Semester I							
I	Language-I		6	3	25	75	100	4
II	English-I		6	3	25	75	100	4
III	Core I – Mechanics, Properties of Matter and Sound		6	3	25	75	100	4
III	Practical I		3	-	-	-	-	-
III	Allied A - Mathematical Paper I * (or)		7	3	25	75	100	4
	Chemistry Theory I **		4	3	20	55	75	3
III	Allied Practical**		3	-	-	-	-	-
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language-II		6	3	25	75	100	4
II	English-II		6	3	25	75	100	4
III	Core II – Heat and Thermo Dynamics		4	3	25	75	100	4
III	Practical I		3	3	40	60	100	4
III	Allied A - Mathematical Paper II * (or)		7	3	25	75	100	4
	Chemistry Theory II **		4	3	20	55	75	3
III	Allied Practical**		3	3	20	30	50	2
IV	Value Education - Human Rights #		2	3	-	50	50	2
	Semester III							
I	Language-III		6	3	25	75	100	4
II	English-III		6	3	25	75	100	4
III	Core III – Optics		4	3	25	75	100	4
III	Practical II		2	-	-	-	-	-
III	Allied B - Mathematical Paper I * (or)		7	3	25	75	100	4
	Chemistry Theory I **		4	3	20	55	75	3
III	Allied Practical**		3	-	-	-	-	-
IV	Skill Based Subject - Instrumentation I		3	3	20	55	75	3
IV	Tamil @ / Advanced Tamil# (OR) Non-major elective - I (Yoga for Human Excellence)# / Women's Rights #		2	3	50		50	2
	Semester IV							
I	Language-IV		6	3	25	75	100	4
II	English-IV		6	3	25	75	100	4
III	Core IV – Atomic Physics and Spectroscopy		4	3	25	75	100	4

III	Practical II	2	3	40	60	100	4
III	Allied A - Mathematical Paper II * (or)	7	3	25	75	100	4
	Chemistry Theory II **	4	3	20	55	75	3
III	Allied Practical**	3	3	20	30	50	2
IV	Skill based Subject - Instrumentation II	3	3	20	55	75	3
IV	Tamil @ /Advanced Tamil # (OR) Non-major elective -II (General Awareness #)	2	3	50		50	2
	Semester V						
III	Core V – Mathematical Physics	5	3	25	75	100	4
III	Core VI – Electronics	4	3	25	75	100	4
III	Core VII – Solid State Physics	4	3	25	75	100	4
III	Core VIII – Electricity and Magnetism	4	3	25	75	100	4
III	Practical III - Electronics Alone	2	-	-	-	-	-
III	Practical IV - Digital and Micro Processor	2	-	-	-	-	-
III	Elective –I	5	3	25	75	100	4
	Practical - C and C++	3	-	-	-	-	-
IV	Skill based Subject - Instrumentation III	3	3	20	55	75	3
	Semester VI						
III	Core IX – Quantum Mechanics and Relativity	6	3	25	75	100	4
III	Core X - Nuclear Physics	5	3	25	75	100	4
III	Practical III - Electronics Alone	2	3	30	45	75	3
	Practical IV - Digital and Micro Processor	2	3	30	45	75	3
III	Elective –II	4	3	25	75	100	4
III	Elective –III	5	3	25	75	100	4
III	Practical V - C and C++	3	3	40	60	100	4
IV	Skill based Subjects Practical	3	3	30	45	75	3
V	Extension Activities @	-	-	-	-	50	2
	Total					3500	140

* For subjects without practical ** For subjects with Practical

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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List of Elective papers (Colleges can choose any one of the paper as electives)		
Elective – I	**A**	Principles of Programming Concepts and C Programming
	B	Energy Physcis
	C	Agricultural Physics
Elective – II	**A**	Micro Processors
	B	Optical Fibers and Fiber Optic Communication Systems
	C	Bio-Physics
Elective - III	**A**	Object Oriented Programming with C++
	B	Geo Physics

Note : The Syllabus for the above papers (except **Core paper VI – Electronics, Elective paper III A - Object Oriented Programming with C++ and Core Practical – IV Digital and Microprocessor**) be the same as prescribed for the academic year 2010-11. The syllabus for the Core paper VI – Electronics, Elective paper III A - Object Oriented Programming with C++ and Core Practical – IV Digital and Microprocessor are furnished below:

SEMESTER – V
CORE PAPER VI – ELECTRONICS
(for the candidates admitted from the academic year 2014-15 onwards)
No. of credit hours: 4 hours per week

Subject Description :
This paper presents the fundamentals of electronics and its theory which will be used for
Studies solving problems during research work.
Goal:
To enable the students to acquire the knowledge of electronics and to apply the principles
For the situation of different physical problems.
Objectives
To acquire knowledge and apply it to
 Various electronics and digital instruments
 To apply the development of the electronic and digital instruments.
 To motivate the students to apply the principles of electronics in their day– to – day life.

UNIT 1 – Oscillators (12 hrs)
Introduction - Types of oscillators - Fundamental principle of oscillators - Concept of feedback
Oscillators - Hartley oscillator –Analysis - Colpitts oscillator–Analysis - Phase shift
Oscillator-Analysis - Wien bridge oscillator – Analysis.

UNIT 2 -- Solid state switching circuits (12 hrs)
Introduction - important terms - Collector leakage current - Saturation collector current -
Switching transistors - Switching action transistor – OFF region – ON region – Active Region.
Multivibrator – Types of multivibrator –Transistor Astable multivibrator – circuit details -
Operations - ON or OFF time – transistor mono stable multivibrator -Circuit details – operations
– Transistor Bistable multivibrator - Circuit details – operations.

UNIT 3-- Wave Shaping Circuits (12 hrs)
Differentiating circuit - Output waveforms - Integrating circuit – Output waveforms-Important
Applications of diodes – Clipping circuit – positive clipper – biased clipper – combinations
Clipper – applications of clipper- Clamping Circuits-basic idea of a clamper-Positive clamper –
Operations – negative clamper.

UNIT 4--Number Systems (12 hrs)
Binary number system –Binary to decimal conversion –Decimal to binary conversion –
Hexadecimal number system –Hexadecimal to decimal conversion –Decimal to Hexadecimal
conversion –Octal number system –octal to decimal conversion –Decimal to octal conversion –
Binary addition –Binary subtraction -8421BCD code-ASCII code-Multiplexer-Demultiplexer.

UNIT 5—Logic circuits: (12 hrs)
Basic logic gates-NOT ,OR, AND gates-NAND,NOR,X-OR gates-Logic circuits and logic
expressions –Laws of Boolean algebra –Demorgon's theorems-NAND as universal gate –NOR
as universal gate –Half adder-Full adder-Half subtractor-Full subtractor.

Book for Study and Reference
1. Foundation of Electronics D Chattopadhyaya & R C Raksjti
2. Principles of Electronics V K Metha
3. Applied Electronics R S Sedha
4. Integrated Electronics Millman and Halkias
5. Electronics devises and Circuits Millman and Halkias.
6. Digital fundamentals-V.Vijayendran,S.Viswanathan(printers&publishers)pvt.Ltd.
7. Digital Principles and Applications – Albert Paul Malvino & Donald P Leach
    (Fourth Edition, TMH)

ELECTIVE PAPER III – A

OBJECT ORIENTED PROGRAMMING WITH C++
(for the candidates admitted from the academic year 2014-15 onwards)

UNIT I
Structure of C++ Program – Tokens – Keywords – Identifiers and constant basic data types – user defined data types – derived data types – symbolic constants – type compatibility – declaration of variables – dynamical initialization of variables – reference variables – operator in C++ - scope resolution operators.

UNIT II
 The main function – function prototyping – call be reference – inline functions-
Function overloading – Math library functions – specifying a class – defining member functions

– C++ program with class – making an outside function Inline- Nesting of member functions – Static Data members – Static member functions – Friendly functions.

UNIT III
Constructors – Parameterized constructors – Multiple constructors in a class - Constructors with Default Arguments – copy constructor – Dynamic Constructors

UNIT IV
 Destructors- Defining Operator Overloading – Overloading unary operators – Overloading Binary operators – Rules for overloading operators.

UNIT V
Inheritance : Defining derived classes – single Inheritance - Multilevel inheritance – Multiple Inheritance - Hierarchical Inheritance

Books for reference
Text Book
1. "Object Oriented Programming with C++" by E. Balagurusamy, Second Edition.
2. Programming with C++, John R. Hubbard, II Edition 2002, TMH Publications.

PRACTICAL – IV : DIGITAL AND MICROPROCESSOR (EXAMINATION AT THE END OF SIXTH SEMESTER)

ANY TWELVE (12) EXPERIMENTS ONLY

1. Verification of Truth tables of IC gates: OR, AND, NOT, XOR, NOR and NAND.
2. NAND as universal building block- AND, OR, NOT
3. Verification of De Morgan's theorem.
4. Boolean Algebra – problem solving
5. Study of RS Flip-Flop.
6. Study of Shift –Registers –Serial in Parallel out
7. Decade counter using 7490.
8. Half Adder
9. Full Adder
10. Half Subtractor and Full Subtractor.
11. 4 BIT – Binary Adder & Subtractor using 7483.
12. Code converter (Binary to gray and vice versa) & Seven segment Decoder
13. Binary Counter using 7493.
14. Parity check logic.
15. Up/Down Counter using 74190
16. 8085 ALP for 8 bit Addition and Subtraction
17. 8085 ALP for 8 Bit Multiplication
18. 8085 ALP for 8 Bit Division
19. 8085 ALP for finding the Biggest number element in the array
20. 8085 ALP for Sum of the elements in the Array