BHARATHIAR UNIVERSITY,COIMBATORE-641 046

B.Sc. PHYSICS DEGREE COURSE

SCHEME OF EXAMINATIONS **(CBCS PATTERN)**

(For the students admitted during the academic year 2010-2011and onwards)

Part	Study Components	Course Title	Ins. hrs / week	Examinations				Credit
				Dur.Hr	CIA	Marks	Total Marks	
	Semester I							
I	Language-I		6	3	25	75	100	4
II	English-I		6	3	25	75	100	4
III	Core I – Heat and Thermo Dynamics		3	3	25	75	100	4
III	Core II – Mechanics, Properties of Matter and Sound		3	3	25	75	100	4
III	Major 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 III – Electricity and Magnetism		6	3	25	75	100	4
III	Major 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 IV – Optics		4	3	25	75	100	4
III	Major 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 V – Atomic Physics and Spectroscopy	4	3	25	75	100	4
III	Major 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 VI – Mathematical Physics	5	3	25	75	100	4
III	Core VII – Applied Electronics	4	3	25	75	100	4
III	Core VIII – Solid State Physics	4	3	25	75	100	4
III	Core IX – Principles of Digital Electronics	3	3	20	55	75	3
III	Major Practical III - Electronics Alone	2	-	-	-	-	-
III	Major Practical IV - Digital and Micro Processor	2	-	-	-	-	-
III	Elective –I	4	3	20	55	75	3
	Practical - C and C++	3	-	-	-	-	-
IV	Skill based Subject - Instrumentation III	3	3	20	55	75	3
	Semester VI						
III	Core X – Quantum Mechanics and Relativity	6	3	25	75	100	4
III	Core XI - Nuclear Physics	5	3	25	75	100	4
III	Major Practical III - Electronics Alone	2	3	30	45	75	3
	Major Practical IV - Digital and Micro Processor	2	3	30	45	75	3
III	Elective –II	4	3	20	55	75	3
III	Elective –III	5	3	20	55	75	3
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 I – Heat and Thermodynamics, Core Practical I & Elective III –A Object Oriented Programming with C++) be the same as prescribed for the academic year 2008-09. The syllabus for the Core Paper I – Heat and Thermodynamics, Core Practical I & Elective III-A Object Oriented Programming with C++ are furnished below :

SEMESTER – I
CORE PAPER I - HEAT AND THERMO DYNAMICS

No. of Credit Hours : 3 per week

Subject Description : This paper presents the principle of heat and Thermo dynamics.
Goal: To enable the students in order to learn the basic principles and concepts of Heat and Thermodynamics

Objectives
The aims is to provide the students

- To understand the principles of calorimetry
- understand the basic principle and laws of thermodynamics
- understand the concepts of entropy

UNIT I **(9 hrs)**

Definitions – Newton's law of cooling – specific heat of a liquid calendar and Barne's continuous flow method – two specific heats of a gas – specific heat of a gas by Joly's differential steam calorimeter – Regnault's method – Dulong and Petit's law – variation of specific heat ad atomic heat with temperature.

UNIT II **(9 hrs)**

Transmission of heat : Conduction – Co-efficient of the thermal conductivity – Cylindrical flow of heat – Determination of thermal conductivity of rubber and Lee's disc method for bad conductors. Conduction – Radiation – Black body – Wein's Law - Raleigh – Jean's Law – Stefan's law – Experimental Determination of Stefan's constant – Mathematical derivation of Stefan's law

UNIT III **(9 hrs)**

Kinetic theory of gases: Maxwell's law of distribution of molecular velocities – Experimental verification – equilibrium speed distribution of velocities. Mean free path – transport phenomena – diffusion – viscosity and thermal conduction of gases – Vander walls equation – relation between Vander Wall's constant and critical constants.

UNIT IV **(9 hrs)**

Laws of Thermodynamics: First law of thermodynamics – Isothermal and Adiabatic process – gas equation during an adiabatic process – Work done an adiabatic expansion of gas – Determination of γ by Clement and Desorme's method – second law of thermodynamics – Carnot's engine- Working efficiency – Carnot's refrigerator – Carnot's Theorem.

UNIT V **(9 hrs)**

Concept of entropy: Entropy Change in entropy in a reversible process and irreversible process – temperature entropy diagram – Entropy of a perfect gas – increase of entropy in any irreversible process – Thermo dynamics functions – Maxwell's thermodynamics relations and applications –Porous plug experiment – Joule Thomson effect – expression for temperature of inversion - Claussius and Clapeyron equation.

Books for Study

1. Thermal Physics, R. Murugesan, I Edi, 2002
2. Heat & Thermodynamics, Brijlal & N. Subramaniam
3. Heat – M. Narayanamurthi and N. Nagaratnam

Reference Books

1. Heat and Thermodynamics – Zemansky and R.H. Dcltanann
2. Heat and Thermodynamics – D.S. Mathur, S. Chand & Co, Edi 2002.
3. Heat and Thermodynamics – Agarwal, Singhal, Sathyaprakash
4. Thermal Physics – H.C. Saxena and Agarwal

CORE PRACTICAL I
(EXAMINATION AT THE END OF SECOND SEMESTER)

Credit Hours : 3 hours per week

ANY TWELVE EXPERIMENTS ONLY

1. Compound Pendulum.
2. Comparison of Viscosities – Capillary Flow Method
3. Young's Modulus – Non- Uniform bending – Pin and Microscope
4. Young's Modulus – Uniform bending – Optic lever
5. Rigidity modulus – Static Torsion – Scale and Telescope
6. Sonometer – Frequency of A.C.
7. Spectrometer – Refractive index of Solid Prism
8. Resonance Column – Velocity of Sound
9. Moment of magnet – Tan C Position
10. Characteristics of a Junction Diode
11. Spectrometer – (i.d) Curve
12. Air Wedge – Thickness of Wire
13. Field along the axis of a coil – Moment of a Magnet
14. Potentiometer – Specific Resistance of a wire
15. Potentiometer – Low range Ammeter Calibration
16. Young's Modulus Cantilever Depression – Pin & Microscope
17. Young's Modulus – Cantilever – Dynamic Method
18. Viscosity by Capillary flow method
19. Melde's Strings – Frequency of Vibrator.
20. Spectrometer – Refractive of liquid – Hollow prism.

ELECTIVE PAPER III – A

OBJECT ORIENTED PROGRAMMING WITH C++
(for the candidates admitted from the academic year 2010-11 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 – the main function – function prototyping – call be reference – inline functions – default arguments.

UNIT II

Function overloading – Math library functions – specifying a class – defining member functions – a C++ program with class – making an outside function Inline- Nesting of member functions – Static Data members – Static member functions – Friendly functions.

UNIT III

Constructions – Parameterized constructions – Multiple constructors in a class - Constructors with Default Arguments – copy constructor – Dynamic Constructors – Destructors – Defining Operator Overloading – Overloading unary operators – Overloading Binary operators – Rules for overloading operators.

UNIT IV

Inheritance : Defining derived classes – single Inheritance - Multilevel inheritance – Multiple Inheritance - Hierarchical Inheritance – Hybrid Inheritance – Pointers to Objects - This Pointer – Pointers to Derived Classes.

UNIT V

Virtual functions – Pure Virtual functions – C++ streams – C++ Stream classes – unformatted I/O operations – Formatted console I/O operations – Managing Output with manipulators – Designing our own manipulators.

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.