

Gondwana University, Gadchiroli

Proposed Syllabus

B.Sc. III

Subject: Electronics

Semester - VI

Board of Studies - Electronics

Gondwana University, Gadchiroli

Scheme of Bachelor of Science for Semester Examination

Gondwana University, Gadchiroli

Subject: Electronics

Class	Semester	Paper	Teaching Scheme Per Week			Examination Scheme					
			Theory	Total	Practical	Theory Marks			Practical Marks	Total Marks	
						Paper	Internal Assessment				
							P-1	P-2	T		
B.Sc. I	I	I	3	6 + 1T*	6	50	10	10	20	30	150
		II	3			50					
	II	I	3	6 + 1T*	6	50	10	10	20	30	150
		II	3			50					
B. Sc. II	III	I	3	6 + 2T*	6	50	10	10	20	30	150
		II	3			50					
	IV	I	3	6 + 2T*	6	50	10	10	20	30	150
		II	3			50					
B.Sc. III	V	I	3	6 + 2T*	6	50	10	10	20	30	150
		II	3			50					
	VI	I	3	6 + 2T*	6	50	10	10	20	30	150
		II	3			50					

* Periods for Tutorials per batch.

Pattern of Question Papers (UG)

Time : 3 Hours

Maximum marks : 50

Question No.	Marks Allotted
--------------	----------------

Qu. 1 Either

From Unit - I	10
Or	
From Unit - I	10

Qu. 2 Either

From Unit - II	10
Or	
From Unit - II	10

Qu. 3 Either

From Unit - III	10
Or	
From Unit - III	10

Qu. 4 Either

From Unit - IV	10
Or	
From Unit - IV	10

Qu. 5 Attempt any 10

(a) Unit - I	2.5
(b) Unit - II	2.5
(c) Unit – III	2.5
(d) Unit – IV	2.5

The above pattern is for all two papers of each semester of B.Sc. I, B.Sc. II and B.Sc. III, w.e.f. 2014-15.

Subject: Electronics
Scheme for Semester-VI
W.E.F. 2014-15

The paper-I “**Microprocessor, Interfacing and Microcontrollers**” of semester-VI is compulsory, and the **paper-II (optional)** is from **Elective-I & II**.

The Elective-I is “**C-programming-II**” and the Elective-II is “**Electronic Instrumentation and communication -II**”.

Paper	No. of Periods per week (48 minutes each)			Marks					
	Lecture	Practical	Tutorial	Theory	Internal Assessment			Practical	Total
					P-1	P-2	T		
Paper-I (compulsory) Microprocessor, Interfacing and Microcontrollers	3	6	2	50	10	10	20	30	150
Paper-II (Elective-I/ Elective-II) C-programming-II / Electronic Instrumentation and communication -II	3			50					

B.Sc. III (Electronics)
(Semester-VI)
Paper- I (*compulsory*)
(Microprocessor, Interfacing and Microcontrollers)

UNIT I:

Keyboard interfacing: De-bouncing (Hardware and Software), DIP (ON/OFF) switch interfacing, 4 x 4 Matrix keyboard interfacing. *Display interfacing:* LED interfacing, SSD interfacing, multiple digits display. *ADC interfacing:* Interfacing of ADC (0800).

UNIT II:

Microprocessor Applications: Delay subroutine using one register, Delay subroutine using register pair, measurement of voltage and current, measurement of phase and frequency, measurement of Temperature and control, square wave generation and microprocessor based Traffic control.

UNIT III:

Intel 8086: Introduction, Architecture and Block Diagram, Operating modes, Registers, Interrupts, Addressing modes, Instruction Set, Assembler Directives and Simple Assembly Language Programs.

UNIT III:

Microcontrollers: Intel 8051: Block Diagram and its explanation, common features of 8051 series microcontrollers, Memory Addressing, Interrupts and Instruction Set and simple programs. *Intel 8096:* Block Diagram and its explanation, common features of 8096 series microcontrollers, Memory Addressing, Interrupts and Instruction Sets and simple programs.

Ref. Books:

1. Fundamentals of Microprocessor and Microcontrollers by B. Ram,
2. Microprocessor, Architecture, Programming, and Applications with 8085 by Ramesh S. Gaonkar,
3. Microprocessors and Interfacing by Douglas V. Hall,
4. Digital circuits and microprocessors by Taub.
5. Introduction to microprocessor by A P Mathur.
6. Microprocessors and Interfacing techniques Rodney Zaks and Austin Lesea (BPB).
7. Microprocessor, Principles and Applications by Ajit Pal.
8. Microprocessors by K. M. Hebber and K.C. Shet.

B.Sc. III (Electronics)
(Semester-VI)

Paper- II (*Elective-I*)

C-programming-II

Unit-I:

Arrays and User Defined Function,

One-dimensional arrays, Two-dimensional arrays, Initialization of two dimensional arrays, Concept of Multidimensional arrays. Need for User Defined Functions, Concept Associated with Functions, Return Values and Their Types. Category of functions: No arguments and no return values, arguments but no return values, arguments with return values.

Nesting of functions, recursion, Scope and Lifetime of Variables in Function.

Unit-II:

Structure, Unions and Pointers

Basic Concept of Structure, Operations on Structure, Array of Structure, Union, Difference in union and Structure.

Basic Concept of pointers, Pointer Expression, Pointers and arrays, Pointer and Character String, Pointer to Function.

Unit-III:

File management: Introduction,

Defining and Opening File, Closing a File, I/O Operations on File.

Error Handling,

Random Access to Files, Command Line Arguments.

Unit-IV

Principle of Object Oriented Programming, Software evaluation, Oop paradigm. Basic concept of Oop, Benefits of Oop, Application of Oop. Introduction to C++, Applications of C++, Difference between C and C++.

C++: Tokens, Keywords, Identifiers, Constants, Variables, Basic data types.

Operators in C++ : cin, cout, new, delete, Manipulators, Operators overloading, Simple C++ programs.

List of Reference Books:

1. ANSI C- Programming ,by Balaguruswamy,
2. Object Oriented Programming with C++ by Balaguruswamy,
3. C++ , by Yashwant Kanetkar,
4. Let Us “C”, by Yashwant Kanetkar.
6. Programming in “C” and”C++”, by Mahapatra
7. Programming in “C”, by Rajaraman.

B.Sc. III (Electronics)
(Semester-VI)

(Elective-II)

Electronic Instrumentation and Communication-II

Unit-I

Digital instruments: Basic concept, general digital system, I/O devices, digital logic system, Crystal and clock generator: Crystal oscillator (TTL and CMOS), clock waveform,TTL clock, 555 timer as astable and monostable multivibrator, standard (1Hz) gate pulse, Input signal conditioning: requirement, comparators and schmitt trigger, gated output, frequency ratio measurement, time interval measurement.

Unit-II

Digital clock: Basic concept, block diagram, counter for 1Hz standard output, divided by 12/24 counters,presetting of time, fast-slow setting, Audio Alarm circuit, Digital multimeters: Block diagram,Attenuators(DC voltage),Input circuit for AC/DC (peak,average and RMS),

Unit-III

Concept of Satellite Communication, Block diagram of Satellite Communication and its Applications, Computer Networking LAN, WAN, and MAN, Computer Topology, Concept of MODEM and its Block diagram.

Unit-IV

Concept of Fax Machine, scanning mechanism in fax and its block diagram, Fiber optic communication system, advantages of fiber optic cable over conventional cable. Concept of cellular telephone, Block diagram of cell phone, advantages of cell phone, Concept of RADAR, Types of RADAR: Pulsed and CW radar, Block diagram of Pulsed RADAR, Applications of RADAR.

Reference Book:

1. Instrumentation measurement and feedback, Barry and Jones,
2. Digital instrumentation , A J Bowens

3. Introduction to system design using ICs B S Sonde.
4. Digital principle and Applications by Malvino and Leach.
5. Digital Electronics by R. L. Tokheim.
6. Instrumentation measurement and analysis by B C Nakra and K K Chaudhary.
7. Linear Integrator circuits by K R Botkar.
8. Electronic Instrumentation and Measurement Techniques- W.D. Cooper, A.D. Helfrick
9. Electronic Communication – D. Frenzel
10. Electronic Communication system – Roddy Coolen
11. Electronic Communication system- George Kennedy
12. Fiber Optic Communication- D.C. Agarwal
13. Fiber Optic Communication-Gerd Keiser
14. Satellite Communication – Robert Gagliardi

Internal Assessment (20 marks)

	P-1(10)	P-2(10)	T (20)
Attendance	03	03	06
Home assignment	04	04	08
Seminar/	03	03	06
Industrial Visit/			
Workshop Practice			

PRACTICALS for the semester-VI

It is divided into two sections i.e. Section-A and Section-B. At least five experiments from compulsory paper (**section-A**) and five experiments from optional / elective paper (**section-B**) must be performed and the practical record book duly signed should be submitted at the time of examination. Each student is expected to perform one experiment from each section, in the University Examination. The duration of practical examination is six hours.

Marks Distribution:

	Record	Experiment	Viva	Total
Section – A	3	9	3	15
Section – B	3	9	3	15
			Total	30

LIST OF EXPERIMENTS**Section-A: (Compulsory paper)**

1. Study of counter program using 8255 PPI and microprocessor 8085.
2. Study of SSD Interfacing using 8255 PPI and microprocessor 8085.
3. Study of LED Interfacing using 8255 PPI and microprocessor 8085.
4. Study of ALP using 8086 microprocessor for data transfer.
5. Study of ALP using 8086 microprocessor for addition.
6. Study of ALP using 8086 microprocessor for subtraction.
7. Study of ALP using 8086 microprocessor for multiplication and division.
8. Study of ALP using 8086 microprocessor for ones and twos compliment.
9. Study of microcontroller-8051.
10. Study of microcontroller-8096.

Section-B: (optional/elective paper)**Elective-I: C-programming-II:**

1. Programs on one dimensional array.
2. Programs on two dimensional arrays.
3. Programs on user defined functions (No argument no return value).
4. Programs on user defined functions (Argument but no return value).
5. Programs on user defined functions (Argument with return value).
6. Programs on user defined functions (Nesting of function).
7. Programs on user defined functions (Recursion).
8. Programs on Structure.
9. Programs on arrays and structure.
10. Programs on Unions
11. Programs on pointers.
12. Programs on Pointers and arrays
13. Programs on Pointer to Function
14. Programs on file management.

15. Simple programs in C++.

Section-B: (optional/elective paper)

Elective-II –Electronic instrumentation and communication-II:

1. Design and Study A. M. Modulator
2. Design and Study F. M. Modulator
3. Design and Study P. M. Modulator
4. Design and Study A. M. Demodulator
5. Design and Study F. M. Demodulator