

Gondwana University, Gadchiroli

Proposed Syllabus

B.Sc. II

Subject: Electronics

Semester-III & IV

Board of Studies - Electronics

Gondwana University Gadchiroli

Scheme of Bachelor of Science for Semester Examination

Subject: Electronics

Class	Semester	Theory Paper	Teaching Scheme Per Week			Examination Scheme					
			Theory	Total Periods	Practical	Theory Marks			Practical Marks	Total Marks	
						Theory Paper	Internal Assessment				
							Paper - I	Paper - II			Total
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

a) From Unit - I 2.5

b) From Unit - II 2.5

c) From Unit - III 2.5

d) From Unit - IV 2.5

The above pattern is for both papers of each semester of B.Sc. II, w.e.f. 2013-14.

Details of the Syllabus
Second Year B.Sc.
Subject: Electronics
Scheme for Semester-IV
W.E.F. 2013-14

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: Power Amplifier, Oscillators and Power Supplies	3	6	2	50	10	10	20	30	150
Paper – II: Digital Electronics - II	3			50					

(Semester-IV)

Paper-I

Power Amplifier, Oscillators and Power Supplies

Unit-I

Power amplifier: Introduction to power transistor, difference between voltage and power amplifier, class A amplifier with resistive load and its efficiency, transformer coupled class A power amplifier and its efficiency, push pull amplifier, complimentary- symmetry power amplifier.

Unit-II

Oscillator:- Introduction, Barkhausen criterion for oscillation, frequency determination device, L-C oscillator circuit, phase shift oscillator, Wein bridge oscillator, transistor Colpitts oscillator and Hartley oscillator (frequency derivation not required).

(Numericals on determination of frequency of different oscillators using equations directly) .

Unit-III

Power Supply: Unregulated DC Power Supply and its Disadvantages, Regulated DC Power Supply, Terms related to Regulated Power Supply, Concepts of Series and Shunt type Regulator, Zener regulator, Transistor Regulator, Series Pass Regulator, Short Circuit Protection.(Simple numericals are expected).

Unit-IV

IC Voltage Regulator: Advantage of Three Terminal Voltage Regulator, LM 317 Voltage Regulator: Functional block diagram, Working and Application, IC 78XX, IC 79XX three terminal Regulators, Dual power supply using IC 78XX and 79XX. (Numerical based on design of IC-78XX, IC-79XX and LM 317 Regulators are expected).

Concept of organic electronic devices: diode and transistor

(Semester-IV)

Paper II

Digital Electronics-II

Unit-I

Registers: Concept, Left Shift, Right Shift, SISO, SIPO, PISO, PIPO Registers, Buffer register.
Memories: Introduction, Memory Organization and Operation, Classification. Memory Expansion (word size and word length). (Simple numerical are expected).

Unit-II

Semiconductor Memories: Diode matrix ROM, Concept of on chips decoding, Bipolar, MOS RAM, static and dynamic RAM cell, Charge coupled device and concept of flash memories. (Simple numerical s are expected).

Unit-III

Concept of data acquisition system, need of A/D and D/A Converter, D/A Converter Parameter: Range, Resolution, Linearity and Speed. Weighted Resistor type D/A, Limitations of Weighted type D/A, R-2R Ladder D/A and Limitations, R-2R Ladder D/A using Op-Amp. (Simple numerical are expected)

Unit-IV

A/D Conversion - Parameters: Range, Resolution and Speed. Counter type, Single Slope A/D Converters, Dual Slope A/D Converter, and Successive Approximation Type A/D Converter.
Digital Instruments: Digital frequency meter, digital clock.
(Simple numerical are expected)

Internal Assessment (20 marks)

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

PRACTICALS (conducted by internal and external examiner)

It is divided into two sections i.e. Section-A and Section-B. At least five experiments from each section 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:

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

Section A

1. Study of unregulated power supply.
2. Study of Zener Diode as a Voltage Regulator
3. Study of LM 317 and its uses as a Variable Voltage Regulator
4. Study of IC 78XX as voltage regulator.
5. Study of IC 79XX as voltage regulator.
6. Study of Wien Bridge Oscillator.
7. Study of Phase Shift Oscillator.
8. Study of push pull amplifier.

Section B

1. Study of SISO Shift Register using IC 7476.
2. Study of SIPO Shift Register using IC 7476.
3. Study of D to A convertor.
4. Study of R-2R Ladder D to A convertor using Op-Amp IC 741.
5. Study of A to D convertor
6. Study of digital clock.
7. Study of ROM
8. Study of PROM
9. Study of RAM.

Reference Books

1. Digital System Principle and Application by, R. J. Tocci
2. Modern Digital Electronics by, R. P. Jain.
3. Digital Principles and Application by, Malvino and Leach.
4. Digital and Analogue Technique by, Navneeth, Kale and Gokhale.
5. Integrated Electronics by Botkar
6. Fundamental Digital Electronics - Floyd
7. Elements of Electronics by, Singh, Bagade
8. Principle of Electronics by, V. K. Mehta
9. Electronics Devices and Circuit by, Allen Mottershed
10. Monograph Circuit Design by, Goyal and Khetan.
11. Basic electronics – B.L. Thareja
12. Electronics, Discrete and integrated Circuits – Y.M.Bapat
13. Basic electronics Linear Circuits – R.N.Bhargawa
14. Principle Electronics - Malvino
15. Electronics devices & circuits –Jacob Milliman & C.C. Hulkiyas
16. Integrated circuits –Jacob Milliman & C.C. Hulkiyas