GAYATRIVIDYAPARISHADCOLLEGEFOR DEGREEANDPGCOURSES(A)DEPARTMENTOF COMPUTERSCIENCE

I B.Sc. Honours MAJOR (ELECTRONICS)

W.E.F. AY 2023-24

COURSE STRUCTURE (SEMESTER-I)

Course	Total Marks	Internal Marks	External Marks	Teaching Hours Per Week	Credits
1. First Language: Telugu/ Hindi/ Sanskrit	100	40	60	4	3
2. Second Language: English	100	40	60	4	3
3. Multi Disny-1: Indian History	50	---	50	2	2
4. Skill Enhancement Course -1 Communication Skills	50	--	50	2	2
5. Skill Enhancement Course -2 Analytical Skills	50	-	50	2	2
TOTAL	350	80	270	14	12
1. MAJOR-1 Course-1 (i) Essentials and Applications of Mathematical, Physical and Chemical Sciences.	100	40 Mid- 20 Assgn-10 Activities-10	60	3	3
Lab / Practical/ Activities	-	-	-	2	1
2. MAJOR-2 Course-2 (i) Advances in Mathematical, Physical and Chemical Sciences.	100	40 Mid- 20 Assgn-10 Activities-10	60	3	3
Lab / Practical/ Activities	-	-	-	2	1
TOTAL	200	80	120	10	8
GRAND TOTAL	550	160	390	24	20

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COURSE STRUCTURE (SEMESTER-II)

Course	Total Marks	Internal Marks	External Marks	Teaching Hours Per Week	Credits
LANGUAGES, MULTI DISCIPLINARY AND SKILL ENHANCEMENT COURSES (COMMON FOR ALL)					
1. First Language: Telugu/ Hindi/ Sanskrit	100	40	60	4	3
2. Second Language: English	100	40	60	4	3
3. Skill Enhancement Food Adulteration	50	--	50	2	2
4. Skill Enhancement Business Writing	50	-	50	2	2
5. **Multidisciplinary** Indian History	50	-	50	2	2
TOTAL	350	80	270	14	12
PART II - CORE SUBJECTS MAJOR(Electronics) and MINOR (IoT)					
6. MAJOR- Course-3 Fundamentals of Electricity and Electronics	100	40 Mid- 20 Assgn-10 Activities-10	60	3	3
Lab / Practical: Fundamentals of Electricity and Electronics	50	25	25	2	1
7. MAJOR Course-4 Circuit Theory	100	40 Mid- 20 Assgn-10 Activities-10	60	3	3
Lab/Practical::Circuit Theory	50	25	25	2	1
8. MINOR in IoT Course-1 Digital Electronics	100	40 Mid- 20 Assgn-10 Activities-10	60	3	3
Lab/Practical::Digital Electronics	50	25	25	2	1
TOTAL	450	195	255	15	12
GRAND TOTAL	750	180	470	29	24

GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND P.G. COURSES (A)

DEPARTMENTOF ELECTRONICS

BLUE PRINT OF MARKS DISTRIBUTION FOR SEMESTER END EXAMINATION FOR MAJOR/MINOR SUBJECTS

SECTION-A			**5X2=10**
I	**UNIT**	**MARKS**	**COs**
1	UNIT-1	2	CO-1
2	UNIT-2	2	CO-2
3	UNIT-3	2	CO-3
4	UNIT-4	2	CO-4
5	UNIT-5	2	CO-5
SECTION-B			**10X5=50**
II	**UNIT**	**MARKS**	**COs**
6 A or B	UNIT-1	10	CO-1
7 A or B	UNIT-2	10	CO-2
8 A or B	UNIT-3	10	CO-3
9 A or B	UNIT-4	10	CO-4
10 A or B	UNIT-5	10	CO-5

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B.Sc. (Honours) with major ELECTRONICS w.e.f. 2023-24
Semester -II

COURSE3: FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS

SEM	COURSE TITLE	HOURS	CREDITS
2	Fundamentals of Electrical and Electronics	3+2	3+1

COURSE OBJECTIVES:

- Fundamentals of electrical and electronics engineering knowledge is necessary for B.Sc. students to know the essentials of electrical and electronics concepts.
- The course content should be taught and implemented with an aim to develop different skills in learning the basic concepts and identifying the passive components.
- This also enlightens the student on the fundamentals of semiconductors leading to the achievement of the basic competencies needed for which this course has been designed.

UNIT-1 BASICS OF ELECTRICAL CIRCUITS AND RESISTORS

Basic Terminology voltage, current, power, Resistance, conductance, Ohm's law and its limitations, V-I characteristics of a resistor, Types of resistors-Fixed and Variable, resistors in series and parallel, Current and Voltage Division Rules, Colour coding of resistors.

UNIT-2 INDUCTORS

Concept of inductance and back e.m.f, units of inductance, Faraday's law and Lenz's law of electromagnetic induction, Self and mutual inductance, Energy stored in an inductor, Inductance in series and parallel, Types of inductors- Fixed and Variable inductors, Construction and working of a transformer.

UNIT-3 CAPACITORS

Principles and units of capacitance, Dielectric Constant, Dielectric strength, capacitance of a parallel plate capacitor, Energy stored in a capacitor, types of capacitors- Mica, Ceramic, Electrolytic capacitor and variable capacitors, capacitors in series and parallel, colour coding of capacitors, testing of capacitors using multimeter.

UNIT-4 BASIC ELECTRICAL AND ELECTRONIC MEASURING INSTRUMENTS

Voltmeter, Ammeter, Wattmeter, galvanometer, CRO, Analog and digital multimeters, Audio oscillators, signal generators and frequency counter and methods of connecting them in electric and electronic circuits.

UNIT-5 FUNDAMENTALS OF SEMICONDUCTORS

Evolution of electronics, classification of solids based on electrical properties, band theory of solids, classification of materials, intrinsic and extrinsic semiconductors, Fermi levels of intrinsic and extrinsic semi conductors.

COURSE OUTCOMES:

The student acquires basic knowledge on

C.O.1: the basic terminologies and laws of Electrical circuits, different resistors and the measuring methods.

C.O.2: the basic concepts of magnetic circuits, different types of inductors and the measuring methods.

C.O.3: the basic principles of capacitance, different types of capacitors and their measuring methods.

C.O.4: Types of different measuring instruments and their usage.

C.O.5: the fundamentals of solids and their classification based on their energy bands.

TEXT BOOKS

1. Fundamentals of Electrical Circuits -Alexnda Charles.K &Amp; Sadiku Matthew
2. Circuits and Networks Analysis and Synthesis -A.Sudhakar ,Shyam Mohan,S.Palli
3. Electronic Devices &Op.amp Circuits -Bogart

REFERENCE BOOKS

1. Networks and Systems -D.Ray Chowdary
2. Principles of Electronics -V.K.MEHTA, ROHIT MEHTA
3. Engineering Circuit Analysis -Hayt and Kemmerly
4. Integrated Electronics-Milliman Halkias
5. Basic Electronics -B.L.Theraja
6. Fundamentals of Electrical Engineering -Don Jhonson
7. Introductory Circuit Analysis- Robert Boylestad

ELECTRONICS LAB-I

COURSE3: FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS

1. Measuring different values of resistors and capacitors using colour coding method.
2. Verification of Ohms law for resistors connected in series and parallel.
3. Measuring the values of resistors, capacitors and inductors connected in series and parallel.
4. Measurement of voltage, current and power through different passive elements.
5. Familiarisation of analog and digital multimeters.
6. Familiarisation of Function generator and CRO – measurement of amplitude, time period and frequency.
7. Measuring the phase using Lissajous patterns.
8. Black box using simulation.
9. Measuring different values of capacitors using colour coding method.

Lab experiments are to be done either on breadboard or using simulation software or both to compare the results depending on the necessity.

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Semester –II

COURSE 4: CIRCUIT THEORY

SEMESTER	COURSE TITLE	HOURS	CREDITS
2	CIRCUIT THEORY	3+2	3+1

OBJECTIVES:

- The student acquires abundant knowledge in understanding the circuit theory through the application of different techniques of network analysis.
- They will understand the response of RC,RL and RLC circuits
- They become familiar with all types of two port networks.

UNIT- 1: SINUSOIDAL ALTERNATING WAVEFORMS:

Definitions of current and voltage. The sine wave, general format of sine wave for voltage or current, phase relations, j-operator, phase, Analysis of average value and effective (R.M.S) values. Differences between A.C and D.C., common AC waveforms.

UNIT-II: KIRCHOFFS LAWS

Basic definitions of networks, constant voltage and current sources, source transformation techniques, Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), Branch current method, Node voltage method. Star to delta & delta to star conversions.

UNIT-III: NETWORKS THEOREMS

Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power, Milliman's and Reciprocity theorems.

UNIT-IV: RC, RL and RLC CIRCUITS:

Frequency response of RC and RL circuits, their action as low pass and high pass filters. Passive differentiating and integrating circuits. Series resonance and parallel resonance circuits, band width and Q – Factor.

UNIT-V: TWO PORT NETWORKS:

Single port and two Port Networks, input and output parameters of a two port network, Z-Parameters, Y-Parameters, h-parameters and Transmission (ABCD), T and pi networks and their inter conversion.

COURSE OUTCOMES:-

Student gets adequate knowledge on

C.O.1: signals, AC, DC and measuring their effective and average values.

C.O.2: the application of Kirchoff's laws to different networks.

C.O.3: real time applications of various network theorems.

C.O.4: designing approaches of different passive filters and resonant circuits for real time applications

C.O.5: different two port networks and their equivalent circuits.

TEXT BOOKS:

1. Introductory circuit Analysis (UBS Publications) ---- Robert L. Boylestad.
2. Electronic Devices and Circuit Theory --- Robert L. Boylestad & Louisashelsky.
3. Circuit Analysis by P.Gnanasivam- Pearson Education
4. Electronic Devices and Circuits I – T.L.Floyd- PHI Fifth Edition
5. Unified Electronics (Circuit Analysis and Electronic Devices) by Agarwal- Arora

REFERENCE BOOKS:

1. Engineering Circuit Analysis By: Hayt & Kemmerly - MG.
2. Networks and Systems – D.Roy Chowdary.
3. Electric Circuit Analysis- S.R. Paranjothi- New Age International.
4. Integrated Electronics – Millmam & Halkias.
5. Electronic Devices & Circuits – Bogart.
6. Sedha R.S., A Text Book Of Applied Electronics, S.Chand & Company Ltd

ELECTRONICS LAB-I (CIRCUIT THEORY)

LIST OF PRACTICALS:

1. Verification of KCL and KVL
2. Thevenin’s Theorem-verification
3. Norton's Theorem-verification
4. Maximum Power Transfer Theorem-verification
5. Superposition Theorem- verification
6. RC filters (Low pass & High Pass)
7. RL filters (Low pass & High Pass)
8. RC differentiator and Integrator Circuits
9. RL differentiator and Integrator Circuits
10. LCR series resonance circuit.
11. LCR parallel resonance circuit

Lab experiments are to be done either on breadboard or using simulation software or both to compare the results depending on the necessity.