S.V.K.P. & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE
(Autonomous)
Recognized by UGC as "College with Potential for Excellence"
Accredited by NAAC with "A" Grade
(Affiliated to ADIKAVI NANNAYA UNIVERSITY - Recognised by Govt. of Andhra Pradesh)
PENUGONDA-534 320, West Godavari District., (A.P.)

Department of Electronics, B.O.S Meeting
Academic Year – (2023-2024)

The Meeting of the board of Studies in Electronics is held on 15-11-2023 at 2.00 P.M. in zoom meeting in online mode.

Members Present:

S.No.	Name	Designation
1.	Dr. Y.V.V. Appa Rao, Principal S.V.K.P & Dr.K.S.Raju A&S College, Penugonda. mail id: svkp.penugonda@gmail.com Cell: 9704448889	Chairman
2.	Dr. Ch.Kanaka Rao, Principal Head of the Electronics Department, Sri.Y.N.College(A),Narasapuram. mailid:chintapalli.kanakarao@gmail.com Cell: 9848943943	University Nominee
3.	Mr.B.S.Seshagiri Rao, Lecturer in Electronics, BV RAJU College, Bhimavaram mail id: bssrao2011@gmail.com Cell: 9492741372	Subject Expert
4.	Mr. K.S.V Sambasiva Rao, Lecturer in Electronics, PB Siddhartha Arts & Science College, Vijayawada. mail id: sambakoka@gmail.com Cell: 9441469690	Subject Expert
6.	Mr. T. Naresh Babu, Lecturer in Electronics, S.V.K.P &Dr.K.S.Raju A & S College, Penugonda. mail id: nareshthotharamudi@gmail.com cell : 8074665309	Member
7.	Mr. T.Naga Ratna Reddy, Lions LED Lighting Industries, Penugonda. mail id: geetharatthn@gmail.com cell : 9989880112	Industrialist/ Academician
8.	Mr. P.Satya Srinivas, Lecturer in Physics, S.V.K.P & P.V Juniour College, Penugonda. mail id: srisuji.phy@gmail.com cell: 9908864413	Alumni

S. V. K. P. & Dr. K. S.Raju Arts & Science College(A), Penugonda

Agenda:

1. To frame the Syllabus, Blue Print and Model Question Paper for II semester of FIRST Year , for the Academic Year 2023-24 for the admitted batch 2023-24.
2. To discuss about the ratio of CIA (Continuous internal assessment) and SEE (Semester end examination) from the present ratio 25:75 to 30:70 for the 2023-2024 admitted batch onwards.
3. To suggest innovative teaching methods.
4. To submit proposal for conducting Seminars, Workshops etc.
5. To prepare syllabus for certificate/add- on programs.
6. To prepare a list of Examiners for Paper setting and valuation of papers.
7. Any other matter.

Resolutions:

1. Discussed and recommended that no changes are required in the proposed Syllabi . Blue Print and Model Question papers for both External and Internal Examinations.
2. It is recommended that the ratio of CIA (Continuous internal assessment) and SEE (Semester end examination) from the present ratio 25:75 to 30:70 for the 2023- 2024 admitted batch onwards.
3. Faculty of the Department are advised to use more ICT methods.
4. It is resolved to send proposals to UGC or any other funding agency for National Seminar/ Workshops etc.
5. Resolved to approve the syllabus for certificate/add- on programs.
6. It is resolved to approve the list of examiners prepared.

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The blueprint for Internal examination question paper for UG Electronics

4 questions to be answered out of 6 questions

Each question carries 5 marks

Mid -term examination - I

Unit	No.of Questions	Co-Curricular Activity	Extra-Curricular Activity	Total Marks
Unit I	2	5	5	30
Unit II	2			
Unit III	1			

Mid- term examination - II

Unit	No.of Questions	Co-Curricular Activity	Extra-Curricular Activity	Total Marks
Unit III	1	5	5	30
Unit IV	2			
Unit V	2			

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II Semester Syllabus w.e.f (2023-24Admitted Batch)
MAJOR AND MINOR

COURSE 3: FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS

Objectives

The students will learn:

1) basics of electrostatics, Gauss theorem and its applications,
concept of a capacitor, various types of capacitors and dielectric constant,
magnetic effects of current, cells and the measuring instruments like ammeter and voltmeter,
2) basics of p-n junction, rectifying action of a diode, regulated power supplies and wave shaping circuits,
3) transistor and its three modes of operation, h-parameter model of a transistor and the frequency response of an amplifier.

UNIT-I

Electrostatics: Electric charges - Coulomb's law - Electric field - Electric intensity and electric potential - Relation between electric potential and intensity - Electric intensity and potential due to a uniform charged conducting sphere at a point outside, on and inside the conductor.

Electric dipole - Dipole moment - Intensity and potential due to a dipole – Statement and proof of Gauss law - Application of Gauss law to uniformly charged solid sphere.

UNIT-II

Capacitors: Definition and unit of capacity - Capacitance of a parallel plate capacitor - Effect of dielectric on capacity - Capacitors in series and parallel - Energy stored in a charged capacitors - Loss of energy on sharing of charges between two capacitors - Force of attraction between plates of charged parallel plate capacitor - Kelvin's attracted disc electrometer - Measurement of potential and dielectric constant.

Type of capacitors - Mica capacitor, Electrolytic capacitors, Variable air capacitor - Uses ofcapacitors.

UNIT-III

Electrical Measurements: Carey-Foster bridge - Determination of specific resistance - Potentiometer - Calibration of low and high range voltmeters - Calibration of Low rangeammeter.

Magnetic Effect of Current: Biot-Savart's law [Force on a conductor carrying current placed in a magnetic field] - Principle .construction and theory of a moving coil ballistic galvanometer - Measurement of figure of merit of B.G. - Comparison of capacitors using B.G.

UNIT-IV

Diode circuits and power Supplies: Junction diode characteristics - Half and full wave rectifiers - Expression for efficiency and ripple factor - Construction of low range power peak using diodes -Bridge rectifier - Filter circuits - Zener Diode - Characteristics - Regulated power supply using Zener diode - Clipper and Clamper using diodes.
Differentiator and integrator using resistor and capacitor

UNIT-V

Transistor circuits: Characteristics of a transistor in CB, CE modes - Relatively merits Graphical analysis in CE configuration - Transistor as a amplifier - RC coupled
Single stage amplifier - Frequency response - Thevenin's and Norton's theorems - h parameters.
Basis logic gates AND, OR, and NOT - Construction of basic logic gates using diodes andtransistors.

Text Books;

1. Electricity and Magnetism - *M. Narayanamoorthi and Others*, National Publishing Co., Chennai.
2. Electricity and Magnetism - *R. Murugeshan*, S. Chand & Co. Ltd., New Delhi, Revised Edition, 2006.
3. Principles of Electronics - *V.K. Mehta*, S. Chand & Co., 4/e, 2001.
4. Basic Electronics - *B.L. Theraja*, S. Chand & Co., 4/e, 2001.

Reference Books;

5. Electricity and Magnetism - *Brijlal & Subrahmanyam*, Ratan Prakashan Mandir,Agra.
6. Fundamentals of Electricity and Magnetism - *B.D. Duggal & C.L. Chhabra*, ShobanLal Nagin Chand & Co., Jallundur.
7. Physics, Vol. II - *Resnick, Halliday & Krane*, 5/e, John Wiley & Sons, Inc.,.
8. Basic Electronics - *B. Grob*, McGraw - hill, 6/e, NY, 1989.
9. Elements of Electronics - *Bagde & Singh*, S. Chand

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SECOUND SEMESTER END EXAMINATIONS

I B.Sc. –ELECTRONICS –: FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS

w.e.f 2023-24 Admitted Batch

MODEL PAPER

Paper code; 23ELE21

Time : **3hours** Max.Marks:**70.**

Answer any five questions from Section A & Section B choosing atleast two from each section.
Eachquestion carries 10 marks. 5x10=50 marks

Part – 1

Section-A

1.What is electric potential. Derive an expression for potential due to uniform charged conducting sphere

2.State and prove Gauss law in electrostatics and derive an expression for uniformly charged solid sphere

3.Derive an expression for the capacitance of parallel plate capacitor.

4. What is capacitor? Explain the types of capacitor .Mention its uses.

5. Determine the specific resistance from Carey forster bridge .

Section-B

6. Explain the construction and working of Moving Coil Galvanometer

7. Explain the working of Full wave Bridge rectifier and find its ripple factor.

8. Explain the working of Differentiator and Integrator using capacitor and resistor

9.Explain the characteristics of CE configuration.

10.Explain the construction and working of basic logic gates.

Part – 2

SECTION- C

Answer any five questions. **5x4=20 marks**

1. Explain Coulomb's law in electrostatics.
2. What is an electric dipole .Find the potential due to a dipole at any point
3. Describe an expression for the energy stored in a condencer.
4. Explain the working of serial and parallel capacitor.
5. Explain the calibration of low range ammeter.
6. State and explain Biot Savarts law
7. Explain the regulated power supply using Zener diode.
8. Explain the frequency response of Thevenin and Nortans theorems

The blueprint for II semester-end examination question paper for Electronics

Part-1 : Answer any five questions choosing at least two from each section. Each question carries 10 marks. 5x10=50 marks

Part-2 : Answer any five questions. Each question carries 4 marks. 5x4=20 marks

Unit	Part-1		Part-2	Total Marks
	Section-A	Section-B		
Unit I	2		2	28
Unit II	2		2	28
Unit III	1	1	2	28
Unit IV		2	1	24
Unit V		2	1	24
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(University Nominee) (Subject Expert)

(Subject Expert) (Head of the Department)

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II Semester Syllabus w.e.f (2023-24 Admitted Batch)

COURSE 4: CIRCUIT THEORY AND ELECTRONIC DEVICES

Objectives:

- To explain the basic concepts and laws of DC and AC electrical networks and solve them using mesh and nodal analysis techniques.
- To analyze circuits in time and frequency domain.
- To synthesize the networks using passive elements.
- To understand the construction, working and VI characteristics of electronic devices.
- To understand the concept of power supply.

UNIT- 1:

SINUSOIDAL ALTERNATING WAVEFORMS:

Definition of current and voltage. The sine wave, general format of sine wave for voltage or current, phase relations, average value, effective (R.M.S) values. Differences between A.C and D.C. Phase relation of R ,L and C

UNIT-II:

PASSIVE NETWORKS AND NETWORKS THEOREMS (D.C):

Branch current method, Nodal Analysis, star to delta & delta to star conversions. Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power, Milliman and Reciprocity theorems .

UNIT-III:

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, Q – Factor.

UNIT-IV:

BJT, FET and UJT:

BJT: Construction, working, and characteristics of CE Configurations. Hybrid parameters and hybrid equivalent circuit of CE Transistor,

FET: Construction, working and characteristics of JFET and MOSFET. Advantages of FET over BJT.

UJT: Construction, working and characteristics of UJT. UJT as aRelaxation oscillator.

UNIT-V:

POWER SUPPLIES & PHOTO ELECTRIC DEVICES

Rectifiers :Half wave ,full wave rectifiers-Efficiency-ripple factor- Filters- L- section & π-section filters. Three terminal fixed voltage I.C. regulators (78XX and &79XX). Light Emitting Diode – Photo diode and LDR.

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 Circuit Theory----------Robert L. Boylestad & Louis Nashelsky.

5. Electronic Devices and Circuits I – T.L.Floyd- PHI Fifth Edition

REFERENCE BOOKS:

1. Engineering Circuit Analysis By: Hayt & Kemmerly - MG.

2. Networks and Systems – D.Roy Chowdary.

3. Unified Electronics (Circuit Analysis and ElectronicDevices) by Agarwal- Arora

4. Electric Circuit Analysis- S.R. Paranjothi- New Age International.

5. Integrated Electronics – Millmam & Halkias.

6. Electronic Devices & Circuits – Bogart.

7. Sedha R.S., A Text Book Of Applied Electronics, S.Chand & Company Ltd

Outcomes:-

- ✓ Apply concepts of electric network topology, nodes, branches,loops to solve circuit problems including the use of computer simulation.
- ✓ Apply time and frequency concepts of analysis.
- ✓ Synthesize the network using passive elements.
- ✓ Know about amplifier circuits, switching circuits and oscillatorcircuits their design and use in electronics.
- ✓ Design and construction of a power supply.

SEMESTER-II

COURSE 4: CIRCUIT THEORY AND ELECTRONIC DEVICES

Work load: 30 Hrs per semester 2hrs\Week.

Minimum of 2 Experiments to be done and Recorded.

List of the Experiments:

1. Thevenin's Theorem-verification
2. Norton's Theorem-verification
3. Maximum Power Transfer Theorem-verification
4. LCR series resonance circuit.
5. BJT input and output characteristics
6. FET Output andtransfer characteristics
7. UJT VI characteristics
8. LDR characteristics
9. IC regulated power supply(IC-7805)

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

Scheme of Evalution

Practicals :-50 Marks

Formula & Explanation:	**6**
Tabular Form+Graph+Circuit Diagram:	**6**
Observations:	**12**
Caluclation,Graph, Precautions& Result:	**6**
Viva-Voce:	**10**
Record:	**10**

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SECOUND SEMESTER END EXAMINATIONS

I B.Sc. – CIRCUIT THEORY AND ELECTRONIC DEVICES

w.e.f (2023-24) Admitted Batch

MODEL PAPER

PAPER CODE ;23ELE22

Time : 3hours Max.Marks:70.

Answer any five questions from Section A & Section B choosing at least two from each section.
Eachquestion carries 10 marks. 5x10=50 marks

Part – 1

Section-A

1.Derive the expressions for Average value and RMS value of AC current.

2.Explain the V-I phase relation for the circuit containing R, L and C.

3State and prove maximum power transfer theorem?

4.State and prove Thevenin's theorem.

5. Deduce expressions for resonant frequency and Q-factor for a Series resonant circuit.

Section-B

6.Obtain the expressions for resonant frequency and Q-factor for a Parallel resonant circuit.

7.Draw and explain input and output characteristics of transistor in CE configuration.

8.Explain the working and characteristics of FET.

9.Explain the working of Full wave Bridge rectifier and find its ripple factor.

10.Explain the construction and working of LED. Mention its applications.

Part – 2

SECTION- C

Answer any five questions. **5x4=20 marks**

9. Expain current and voltage.
10. Difference between AC and DC.
11. State and prove Superposition theorem.
12. Explain Star to Delta and Delta to Star conversion .
13. Describe the working of RC circuit as Integrator.
14. Explain about RL as a low pass filter.
15. What are the advantages of FET over BJT?
16. Explain the working of L-section filter.

The blueprint for II semester-end examination question paper for Electronics

Part-1 : Answer any five questions choosing at least two from each section.
Each questioncarries 10 marks. 5x10=50 marks

Part-2 ; Answer any five questions. Each question carries 4 marks. 5x4=20 marks

Unit	Part-1		Part-2	Total Marks
	Section-A	Section-B		
Unit I	2		2	28
Unit II	2		2	28
Unit III	1	1	2	28
Unit IV		2	1	24
Unit V		2	1	24
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