S.V.K.P. & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE
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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 -VI Meeting

Academic Year – (2024-2025)

The Meeting of the board of Studies in Electronics is held on 24-08-2024 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

5.	Mr. G.D.SRINIVASA REDDY Lecturer in Electronics, S.V.K.P &Dr.K.S.Raju A & S College,Penugonda. mail id: dreams.gd@gmail.com cell : 8801835321	Member
6.	Ch.srinivasa rao Lecturer in Electronics, S.V.K.P &Dr.K.S.Raju A & S College,Penugonda. Mail.id :srinu.apache@gmail.com Cell: 8500495938	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 III &IV semester of SECOND Year , for the Academic Year 2024-25 for the admitted batch 2023-24.
2. To suggest innovative teaching methods.
3. To submit proposal for conducting Seminars, Workshops etc.
4. To prepare syllabus for certificate/add- on programs.
5. To prepare a list of Examiners for Paper setting and valuation of papers.
6. 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. Faculty of the Department are advised to use more ICT methods.
3. It is resolved to send proposals to UGC or any other funding agency for National Seminar/ Workshops etc.
4. Resolved to approve the syllabus for certificate/add- on programmes
5. It is resolved to approve the list of examiners prepared.

S.No	NAME	DESIGNATION	SIGNATURE
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, Pricipal Head of the Electronics Department, Sri.Y.N.College(A),Narasapuram. mailid:chintapalli.kanakarao@gmail.com Cell: 9848943943	University Nominee	
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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-CurricularActivity	Extra-CurricularActivity	Total Marks
Unit I	2	5	5	30
Unit II	2			
Unit III	1			

Mid- term examination - II

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

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SEMESTER-III Syllabus w.e.f (2024-2025)

MAJOR AND MINOR

COURSE 5: SEMICONDUCTOR DEVICES AND MATERIALS

Objective:

1. To provide basic knowledge and concepts of Semiconductor materials and devices.
2. To facilitate students learn on the physical principles and operational characteristics of Semiconductor devices and some of its important applications. Pre-requisites: Basic understanding of semiconductors.

Outcomes:

Ability to apply basic concepts of Inorganic and Organic Semiconductor materials forelectronic device application in modern electronic industry.

- Detailed knowledge of various classifications and applications to VLSI, LEDs and solarcells.
- Holistic view of the latest progress in two-dimensional (2D)-one-dimensional (1D) andnano materials.
- Emphasis on nano-electronic applications such as Schottky barrier transistors, flexibleElectronics.

Unit I Inorganic and Organic Semiconductor (9 HRS)

Energy bands, carrier transport, mobility, drift-diffusivity, excess carrier, injection and recombination of the excess carriers, carrierstatistics; High field effects: velocity saturation, hot carriers and avalanche breakdown.

Unit II Majority carrier Devices (9 HRS)

MS contacts rectifier and non-rectifier, MIS structures,MESFET, hetero-junction, HEMT and band diagrams, I-V and C-V characteristics.

Unit III MOS structures (9HRS)

Semiconductor surfaces; The ideal and non-ideal MOS capacitor banddiagrams and CVs; Effects of oxide charges, defects and interface states. MOSFET:Structures and Device Characteristics, Short-Channel effects. Charge coupled Devices(CCDs), application to VLSI.

Unit IV Nonvolatile Memory Device (9HRS)

Optoelectronic Devices: solar cell, photo detectors, LEDs,laser diodes. Nano structures and concepts: quantum wells, supper lattice structures,nanorod, quantum dot, CNTs, 2D materials: grapheme, BN, MoS2 etc, matamaterials.

UNIT-V Multistage Amplifiers (9HRS)

BJT at high frequencies, frequency response of RC coupledamplifiers and transformer coupled amplifier.

Reference Books:-

1. Donald A. Neamen, Semiconductor Physics and Devices Basic Principles, 3rdedn.McGraw-Hil (2003)
2. B.G. Streetman and Sanjay Banerjee, Solid State Electronic Devices, 6thEdn., PrenticeHall, 2006.
3. S. M. Sze and Kwok K. Ng Physics of Semiconductor Devices, Wiley (2013).
4. M. Hussa, A. Dimoulas and A. Molle, 2D Materials for NanoElectronics,CRC press(2016)

SEMESTER-III

Practical Paper

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

Minimum of 6 Experiments to be done and Recorded.

List of Experiments :-

1. To study the Hall Effect: determine the Hall coefficient, type of semiconductor andcarrier concentration in the given semiconductor sample.
2. To study the four probe method: calculate the resistivity and energy band gap of givensemiconductor sample.
3. To determine the resistivity of the given semiconductor specimen using Vander Pauwmethod.
4. To design a MOSFET as switching regulator for given duty cycle and plot the current-voltage (I-V) characteristic of MOSFET using Keithley.
5. To design a phase controlled rectifier using SCR and plot the I-V characteristic of SCRusing Keithley.
6. To design a relaxation oscillator using UJT and plot the I-V characteristic of UJT usingKeithley.
7. I-V characteristics measurement of a p-n diode/LEDs using Keithley - calculate itsideality factor.

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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THIRD SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –MAJOR1/MINOR SEMICONDUCTOR DEVICES AND MATERIALS

w.e.f 2023-34 Admitted Batch

MODEL PAPER

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

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

Part – 1

Section-A

1.Explain the concept of drift and diffusivity in semiconductors ?

2.Discuss the mechanism of avalanche breakdown in high fieldconditions?

3.Explain the I-V characterstics of metal-semiconductor(MS) contact ?

4Design a MESFET with specific electrical characterstics based on a given material parameters ?

5Analyze the effects of various oxide defects on the performance of MOS devices ?

Section-B

3.Design MOSFETwith specified electrical characterstics with short channel effects ?

4.Explain the operational principle of LED's and LASER diodes ?

8.Explain the principle and working of solar cell ?

9. Explain the concept of transformer coupling in amplifiers ?

10.calculate the frequency response of RC coupled amplifier ?

Part – 2

SECTION- C

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

11.Explain the energy bands in a semiconductor ?

12.what is meant by carrier transport ?

13.Write a short note on MIS structures ?

14.Explain the importance of hetero junction in semiconductor devices ?

15.Define ideal and non ideal MOS capacitors ?

16.what are the application of VLSI ?

17.what is meant by QUANTUM DOTS ?

18.Explain operation of Bipolar junction transistor ?

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

Part-1 : Answer any five questions choosing atleast two from each section.

Each questioncarries 10 marks. 5x10=50 marks

Part-2 : Answerany five questions.

Each question carries 5 marks. 5x4=20 marks

Unit	**Part-1**		**Part-2**	**Total Marks**
	Section-A	**Section-B**		
Unit I	2		2	28
Unit II	2		1	24
Unit III	1	1	2	28
Unit IV		2	1	24
Unit V		2	2	28
				132

(University Nominee) (Subject Expert)

(Subject Expert) (Head of the Department)

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SEMESTER-III Syllabus w.e.f (2023-2024)

MAJOR - II

COURSE 6: DIGITAL ELECTRONICS

Objectives:

- To understand the number systems, Binary codes and Complements.
- To understand the Boolean algebra and simplificationof Booleanexpressions.
- To analyze logic processes and implement logicaloperations usingcombinational logic circuits.
- To understand the concepts of sequential circuitsand to analyzesequential systems in terms of state machines.
- To understands characteristics of memory and their classification.
- To implement combinational and sequential circuits using VHDL.

Unit – I NUMBER SYSTEM AND CODES (9HRS)

Decimal, Binary, Hexadecimal, Octal. Codes:BCD, Gray and Excess-3 codes- code conversions-Complements (1's, 2's,9's and10's), Addition -Subtraction using complement methods.

Unit- II BOOLEAN ALGEBRA AND THEOREMS (9HRS)

Boolean Theorems, De-Morgan's laws.Digital logic gates, Multi level NAND & NOR gates. Standard representation oflogic functions (SOP and POS), Minimization Techniques (Karnaugh Map Method:2,3 variables).

UNIT-III COMBINATIONAL DIGITAL CIRCUITS (9HRS)

Adders-Half & full adder, Subtractor-Half and full subtractors, Parallel binary adder,Magnitude Comparator, Multiplexers (4:1)) and Demultiplexers (1:4), Encoder (8-line-to-3- line) and Decoder (3-line-to -8-line). IC-LOGIC FAMILIES: TTL logic,CMOS Logic families(NAND&NOR Gates).

UNIT-IV SEQUENTIAL DIGITAL CIRCUITS (9HRS)

Flip Flops: S-R FF , J-K FF, T and D type FFs, Master-Slave FFs, Excitation tables,

Registers:- Serial In Serial Out and Parallel In and Parallel Out, Counters

Asynchronous-,Mod-8,Mod- 10,Synchronous-4-bit &Ring counter.

UNIT- V MEMORYDEVICES (9HRS)

General Memory Operations, ROM, RAM (Static and Dynamic), PROM, EPROM,EEPROM,EAROM,

Outcomes:-

- Develop a digital logic and apply it to solve real life problems.
- Analyze, design and implement combinational logic circuits.
- Classify different semiconductor memories.
- Analyze, design and implement sequential logic circuits.
- Simulate and implement combinational and sequential logiccircuits usingVHDL

TEXT BOOKS:-

1 . M.Morris Mano, " Digital Design " 3rd Edition, PHI, NewDelhi.

2. Ronald J. Tocci. "Digital Systems-Principles and Applications" 6/e. PHI. New Delhi.1999.(UNITS I to IV)

3. G.K.Kharate-Digital electronics-oxford universitypress

4.S.Salivahana& S. Arivazhagan-Digital circuits anddesign

5.Fundamentals of Digital Circuits by AnandKumar

6.Digital Electronics-Deepak Garge, ,Pragathiprakasan, Meerut

REFERENCE BOOKS :-

1.Herbert Tauband Donald Schilling."DigitalIntegratedElectronics".McGraw Hill.1985.

2.S.K. Bose. "Digital Systems".2/e.New Age International.1992.

3.D.K. Anvekar and B.S. Sonade. "Electronic Data Converters : Fundamentals &Applications".TMH. 1994.

4. Malvino and Leach. " Digital Principles and Applications". TMG HillEdition

SEMESTER-III

Practical Paper : DIGITAL ELECTRONICS LAB

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

Minimum of 2 Experiments to be done and Recorded.

List of the Experiments:

1. Verification of IC-logicgates
2. Realization of basic gates using discrete components (resistor, diodes &transistor)
3. Realization of basic gates using Universal gates (NAND &NORgates)
4. Verification of Half adder and Full adder circuits usinggates
5. Verification of Half subtractor and Full subtractor usinggates.
6. Verification of truth tables- Multiplexer andDe-multiplexer.
7. Verification of truth tables- Encoder and decoder.
8. Verification of truth tables- RS , JK, T-F/F using NANDgates
9. 4-bit binary parallel adder and subtractor using IC7483

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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THIRD SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –DIGITAL ELECTRONICS

w.e.f (2023-24) Admitted BatchMODEL PAPER

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. Explain in detail about BCD Code ?
2. Explain the conversion of Decimal to Binary and binary to decimal with an example ?
3. Why NAND and NOR gates are universal gates? Realize AND, OR and NOT gatesusing NAND and NOR gates ?
4. Explain in detail about 3 variable karnaugh map method to simplify logic Expression ?
5. Explain the operation of a full adder circuit with its truth table ?

Section-B

6. Explain the working of TTL NAND Gate circuit with its truth table ?

7. Describe the working of Master slave JK flip-flop with its truth table ?

8. Draw the circuit diagram of decade counter and explain it's operation. Draw its timing diagram ?

9. Explain the operation of ROM ?

10. Explain the operation of Dynamic RAM ?

Part – 2

SECTION- C

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

1. Explain Excess-3 code with an example.

2. Subtract 11001 from 10101 using 2's complement method

3. Prove the Boolean identity (AB +C) (AB +D) = AB + CD

4. State and prove Demorgan's law's.

5. Write down differences between CMOS and TTL logic families.

6. Explain the working of Multiplexer (4:1) with its truth table.

7. Explain the operation of RS flip – flop with truth table

8. Explain EPROM and EEPROM in brief.

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

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

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

Unit	Part-1		Part-2	Total Marks
	Section-A	Section-B		
Unit I	2		2(1problem+1theory)	28
Unit II	2		2	28
Unit III	1	1	2	28
Unit IV		2	1	24
Unit V		2	1	24
				132

(University Nominee) (Subject Expert)

(Subject Expert) (Head of the Department)

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SEMESTER-III Syllabus w.e.f (2023-2024)

MAJOR - III

COURSE 7 : ANALOG ELECTRONICS

a. the design and working of RC coupled amplifiers, transformer coupled amplifiers and power amplifiers,

b. the concept of negative and positive feedback,

c. pulse shaping and Schmitt trigger, and

d. the op-amp characteristics, frequency response and its linear and non-linear applications.

UNIT-I Am plifiers (9HRS)

G eneral pr inciples of s m all signal amp li fi ers - Class ificatio n s - RC Co u pled amplifiers -Gain - Frequency response – Input and output impedance - Multistage amplifiers - Transformer coupledamplifiers - Equivalent circuits at low, medium and high frequencies – Emitter follower.Class A and Class B power amplifiers - Single ended and push-pull configurations – Power dissipation and output power calculations.

UNIT-II Feedback Amplifiers (9HRS)

Basic concept of feedback amplifiers - Transfer gain with feedback -General characteristics of negative feedback amplifier - Effect of negative feedback on gain – Gain stability - Distortion and bandwidth - Input and output resistance in the case of various types of feedback - Analysis of voltage and current in feedback amplifier circuits.

UNIT-III Operational Amplifiers (9HRS)

Principles - Transfer characteristics - Various offset parameters -Differential gain - CMRR - Slew rate – Bandwidth

UNIT-IV Op-amp Circuits (9HRS)

Basic operational amplifier circuits under inverting and non- inverting modes -Adder - Subtractor - Integrator – Differentiator - Comparator - Sine, square and triangular waveformgenerators - Active filters - Sample and Hold circuits.

UNIT-V Oscillators (9HRS)

Positive feedback - Stability issues - Feedback requirement of oscillations -Barkhausen criterion for oscillation – Hartley, Colpitts, Phase shift and Wien bridge oscillators -Condition for oscillation and frequency derivation – Crystal oscillator - UJT relaxation oscillator.Monostable, bistable and astable multivibrators - Schmitt trigger.

Text Books :-

1. Introduction to Integrated Electronics - V. Vijayendran, S.Viswanathan (Printers &Publishers) Pvt. Ltd., Chennai, 2005.

2. Electronic Circuits and Systems - Y.N. Bapat, Tata McGraw Hill Publishing Co. Ltd.

Reference Books :-

1. Electronic Devices and Circuits - G.K. Mithal, Khanna Publishers, Delhi.

2. Hand Book of Electronics - Gupta & Kumar, Pragati Prakashan, Meerut.

3. Electronic Devices and Circuit Theory - R. Boylestad & L. Nashelsky, Prentice Hall of India Private Limited, 6/e.

4. Electronic Devices and Circuits - J.P. Agarwal & Amit Agarwal, PrakasamPublishers.

5. Linear Integrated Circuits - D. Roy Choudhury & Shail Jain, New Age International (P) Limited

SEMESTER-III

Practical Paper major3P: ANALOG ELECTRONICS

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

Minimum of 6 Experiments to be done and Recorded.

syllabus:

1. Op-Amp as inverting andnon-inverting
2. Op-Amp Voltage follower.
3. Op-Amp as integrator anddifferentiator
4. Op-Amp as adder
5. Op-Amp as voltage to currentconverter
6. Op-Amp as square wave-generator
7. Amplitude modulation anddemodulation.
8. AM Transmitter andReceiver.
9. FM Transmitter andReceiver.

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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THIRD SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –ANALOG ELECTRONICS

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

MODEL PAPER

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. Analyze the difference between CLASS A and CLASS B power amplifiers in terms of efficiency and power dissipation ?
2. Calculate the gain and frequency response of RC coupled amplifier ?
3. Explain how feedback affects the gain stability and bandwidth of an amplifier ?
4. calculate the transfer gain of a feedback amplifier given the feedback network parameters ?
5. Describe the transfer characterstics of an operational amplifier ?

Section-B

6. Analyze the effect of various offset parameters on the performance of an operational amplifier?

7.Design an integrator circuit using an op-amp and calculate the output waveform for a given input signal ?

8.Explain the frequency response of sine wave generator based on operational amplifier ?

9.Explain the positive feedback in oscillators ?Describe stability issues ?

10.Explain the construction and working of wien – bridge oscillator ?

Part -2

SECTION- C

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

11.Explain power dissipation ?

12.Explain distortion and bandwidth ?

13.what is the effect of negative feedback on gain ?

14.Explain SLEW rate ?

15.Explain active filters ?

16.Write about sample and hold circuits ?

17.Explain monostable multivibrator ?

18.what is meant by Schmitt trigger ?

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

Part-1 : Answer any five questions choosing atleast two from each section.
Eachquestioncarries10marks. 5x10=50 marks

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

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

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SEMESTER-III Syllabus w.e.f (2023-2024)

MAJOR - IV

COURSE 8: ELECTRONIC COMMUNICATION SYSTEM

UNIT-I :-Antenna (9HRS)

Effective resistance - Efficiency - Directive gain - Bandwidth, Beam widthandpolarization - Dipole - Folded dipole - Arrays - Yagi - Uda - Helical - Discone -Parabolic - Dish Antennas - Ground wave, sky wave and space wave propagation - Skipdistance - Maximum usable frequency.

UNIT-II:- Modulation (9HRS)

modulation- Needs for Modulation - Types of Modulation - Amplitude Modulation- Generation and detections circuits - Balanced Modulator - DSB/SC and SSBModulation - VSB modulation. Block diagram of AM Radio transmitter and super heterodyne Receiver.

UNIT-III :-Frequency Modulation (9HRS)

Definition - Derivation of Modulatedwave - Generation of FM - Varactor diode and Reactance tube Modulators - Detectors -Balanced slope detector, Foster Seeley discriminator, ratio detector - Block diagram of FM transmitter and receiver.

UNIT-IV :- Pulse Modulation (9HRS)

Pulse modulation,Sampling theorem - PAM, PWM, , PCM - quantizing, sampling,coding, decoding, quantization error, delta modulation and adaptive delta modulation.

UNIT-V :- Multiplexing (9HRS)

Multiplexing, FDM, TDM, CDMA - ASK, FSK, PSK –Advantages ofDigitalCommunication - Introduction to Microwave, Fiber optic, Satellite Communications- RADAR - range equation.

Text Books:-

1. Electronic Communication Systems - George Kennedy, McGraw Hill Book Company, 4/e, 2005.
2. Co mm unicatio n E ngine erin g - T.G . Pa lanivel u, A nu ra dh a P u bli cato n s , 1/e, 20 0 2.

Reference Books :-

1. Communication System - Roddy & Coolen, 4/e, Pearson Education, 2005.
2. Principles of Communication Engineering - Anok Singh, 4/e,Sathyaprakasam Publicatio n s, 20 0 4.
3. Electronic Communi cation Syst em s Wayne T o m as i, 4/ e, Pears o n E du ca tion, 20 0 4

SEMESTER-III

Practical Paper major4P: ELECTRONIC COMMUNICATION SYSTEMS

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

Minimum of 6 Experiments to be done and Recorded.

1. To design an Amplitude Modulator using Transistor
2. To study envelope detector for demodulation of AM signal
3. To study FM - Generator and Detector circuit
4. To study AM Transmitter and Receiver
5. To study FM Transmitter and Receiver
6. To study Time Division Multiplexing (TDM)
7. To study Pulse Amplitude Modulation (PAM)
8. To study Pulse Width Modulation (PWM)
9. To study Pulse Position Modulation (PPM)
10. To study ASK, PSK and FSK modulator

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THIRD SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –ELECTRONIC COMMUNICATION SYSTEMS

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

MODEL PAPER

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. Describe construction and applications of yagi-uda,di pole,parabolic dish antennas ?
2. Explain different types of wave propagation ?
3. Design an AM transmitter block diagram and explain the function of each stage ?
4. Explain the principle and working of super heterodyne receiver ?
5. Construct the block diagram for an FM transimetter and explain the function of each stage ?

Section-B

6. Explain construction and working of Foster seeley discriminator ?
7. compare the performance of PCM versus delta modulation in digital communication ?
8. Explain pulse amplitude modulation (PAM) ?

9. Explain the principle of Frequency division Multiplexing (FDM) and its application to communication systems ?

10. Explain phase shift keying (PSK) ?

Part -2

SECTION- C

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

11. What is meant by skip distance ?

12. Explain the need of modulation in communication systems ?

13. Describe basic principles of Amplitude modulation ?

14. What are the key components of an FM transmitter ?

15. What is meant by ratio detector ?

16. Explain pulse modulation ?

17. What are the applications of satellite communication?

18. Explain the advantages of digital communication ?

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

Part-1 : Answer any five questions choosing atleast two from each section.
Eachquestioncarries10marks. 5x10=50 marks

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

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

(Subject Expert) (Head of the Department)

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SEMESTER-IV

Syllabus w.e.f (2023-2024)

MAJOR – 1/MINOR

COURSE 9:ELECTRICAL AND ELECTRONIC INSTRUMENTATION

UNIT-I DC and AC indicating Instruments (9HRS)

Accuracy and precision - Types of errors -PMMC galvanometer, sensitivity, Loading effect – Conversion of Galvanometer intoammeter, Voltmeter and Shunt type ohmmeter - Multimeter . Electrodynamometer - Thermocouple instrument - Electrostatic voltmeter - Watt-hour meter.

UNIT-II DC and AC bridges (9HRS)

Wheatstone bridge - Kelvin's bridge - Balancing conditionfor AC bridge - Maxwell's bridge – Schering's bridge - Wein's bridge -Determination of frequency.

UNIT-III Oscilloscopes (9HRS)

Block diagram - Deflection Sensitivity - Electrostatic Deflection -Electrostatic Focusing - CRT Screen - Measurement of Waveform frequency, phasedifference and Time intervals - Sampling Oscilloscope - Analog and Digital StorageOscilloscopes.

UNIT-IV Instrumentation Amplif iers and Signal Analysers (9HRS)

In strumentation amplifier -Electronic Voltmeter and Multimeter - Digital Voltmeter - Function Generator – Wave Analyser - Fundamentals of Spectrum Analyser.

UNIT-V Transducer and Display Devices (9HRS)

Strain Gauge - Unbounded Strain Gauge - LVDT -Resistance Thermometer - Photoelectric Transducer – Pen Recorder - Audio TapeRecorder - Seven Segment Display - LCD.

Text Books :-

1. Elec tronic Instrumentation and Measurement Techniques - W.D.Coo per & A .D. Helfrick, Prentice Hall of India.

2. Electronic Instrumentation and Measurement - Kalasi.

Reference Books

1. A Course i n Electrical and E lectronic Measurement andInstr u m entatio n - A .K. Sawhney, Dhanpat Rai and Sons.

2. Electronic Instrumentation and Measurements -P.B. Zbar, Mc Graw Hill International.

3. Measurement Systems Application and Design - Ernest O.Doebelin, 4/e, TataMcGraw Hill Publishing Co. LTD

SEMESTER-IV

Practical Paper major4P: ELECTRICAL AND ELECTRONIC INSTRUMENTATION

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

Minimum of 6 Experiments to be done and Recorded.

1. Study and operation of Multimeters (Analog and Digital), Function Generator, Regulated Power Supplies, CRO.
2. Study the generation of Lissajous figures to find unknown frequency and phase shift.
3. Frequency measurement using Wein Bridge.
4. Study of R, L, C and Q meter

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FOURTH SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –ELECTRICAL AND ELECTRONIC INSTRUMENTATION

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

MODEL PAPER

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. Explain the construction and working of permanent magnet moving coil instrument (PMMC)?
2. Explain the different types of errors associated with measurement ?
3. Explain principle and working of wheatstone bridge ? How to determine the unknown Resistance?
4. Describe the working principle of Schering's bridge and give the expression for measurement of unknown capacitor ?
5. Draw a block diagram and explain the basic principle of a digital storage oscilloscope ?

Section-B

6. Describe the working of a laboratory type of CRO along with it's various controls ?
7. Explain the fundamentals of spectrum analysers ?

8. Draw the block diagram of function generator and explain the method of producing sine wave?
9. Explain the working of linear variable different transformer (LVDT).Discuss it's advantages and disadvantages ?
10. Explain the photo electric transducer with working it's advantages ?

Part -2

SECTION- C

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

11. Write the applications of voltmeter and ammeter ?
12. How does a watt-hour meter measure electrical energy consumption ?
13. List and discuss the principle applications of Kelvin's Bridge ?
14. Draw the block diagram of sampling oscilloscope and it's parts ?
15. Distinguish between analog and digital storage oscilloscopes ?
16. Write the applications of Multimeter ?
17. Write about instrumentation amplifier ?
18. Write about seven segment display ?

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

Part-1 : Answer any five questions choosing atleast two from each section.
Eachquestioncarries10marks. 5x10=50 marks

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

Unit	Part-1		Part-2	Total Marks
	Section-A	Section-B		
Unit I	2		1	24
Unit II	2		2	28
Unit III	1	1	2	28
Unit IV		2	2	28
Unit V		2	1	24
				132

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SEMESTER-IV

Syllabus w.e.f (2023-2024)

MAJOR – II

COURSE 10:- MICRO CONTROLLER SYSTEM

OBJECTIVES:

- To understand the concepts of microcontroller based system.
- To enable design and programming of microcontroller based system.
- To know about the interfacing Circuits.

UNIT-I: - Introduction of micro controller (10HRS)

comparison of Microprocessor and micro controller,Evolution of microcontrollers from 4-bit to 32 bit , Development tools for microcontrollers, Assembler-Compiler-Simulator/Debugger.

UNIT -II:-Microcontroller Architecture(10HRS)

Overview and block diagram of 8051, Architecture of8051, program counter and memory organization, Data types and directives, PSWregister, Register banks and stack, pin diagram of 8051, Port organization, Interruptsand timers.

UNIT-III:-Addressing modes, instruction set of 8051 (10HRS)

Addressing modes and accessingmemory usingvarious addressing modes, instruction set: Arithmetic, Logical, Simplebit, jump, loop and call instructions and their usage. Time delay generation and calculation, Timer/Counter Programming,

Unit -IV: -Assemble language programming Examples (15HRS)

Addition, Multiplication, Subtraction,division, arranging a given set of numbers in largest/smallest order.

UNIT-V :-Interfacing and Application of Microcontroller (15HRS)

Interfacing of – PPI 8255, DAC(0804), Temperature measurement (LM35), interfacing seven segment displays,displaying information on a LCD, control of a stepper Motor (Uni-Polar)

TEXT BOOKS:

1. The 8051 microcontroller and embedded systems using assembly and c-kennet j. Ayalam,Dhananjay V. gadre, cengage publishers
2. The 8051 microcontrollers and Embedded systems - By Muhammad Ali
3. Mazidi and JaniceGillispie Mazidi – Pearson Education Asia, 4th Reprint, 2002.

REFERENCE BOOKS:

1. Microcontrollers Architecture Programming, Interfacing and SystemDesign – Rajkamal.
2. The 8051 Microcontroller Architecture, Programming and Application -Kenneth J.Ajala , west publishing company (ST PAUL, NEW YORK, LOSANGELES, SAN FRANCISCO).
3. Microcontroller theory and application-Ajay V. Deshmukh

SEMESTER-IV

COURSE 10: MICRO CONTROLLER SYSTEM

Practical Credits: 1 2 hrs/week

LAB LIST:-

1. Addition And Subtraction Of Two 8-Bit Numbers.
2. Multiplication And Division Of Two 8-Bit Numbers.
3. Largest number /smallest in an array.
4. Exchange Of Higher And Lower Nibbles In Accumulator.
5. Addition Of Two 8-Bit Numbers (Keil Software).
6. Addition Of Two 16-Bt Numbers (Keil Software)
7. Subtraction Of Two 8-Bit Numbers (Keil Software).
8. Subtraction Of Two 16-Bit Numbers (Keil Software).
9. Multiplication Of Two 8-Bit Numbers (Keil Software).
11. Program For Swapping And Compliment Of 8-Bit Numbers (Keil Software).
12. Program To Find The Largest Number In Given Array (Keil Software).
13. Program To Find The Smallest Number In Given Array (Keil Software).
14. Interfacing Led To 8051 Microcontroller (Keil Software).
15. Interfacing Buzzer To 8051 Microcontroller (Keil Software).
16. Interfacing Relay To 8051 Microcontroller (Keil Software).
17. Interfacing Seven Segments To 8051 Microcontroller (Keil Software)

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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FOURTH SEMESTER END EXAMINATIONS
II B.Sc. –ELECTRONICS –MICROCONTROLLER SYSTEMS

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. Explain the difference between microprocessor and microcontroller ?
2. Explain the evolution of microcontroller from 4 bit to 32 bit ?
3. Explain the architecture of 8051 and explain each pin in detail ?
4. Explain about memory organization of 8051 ?
5. Explain about different types of Addressing modes. ?

Section-B

6. Explain about (i) single bit instruction (ii) loop instruction

   (iii) Arithmetic instruction with oneexample each.
7. Write a ALP program on largest number in an array.
8. Write an ALP (i) 8-bit addition (ii) multiplication of 8-bit.
9. Briefly explain the architecture of 8255(PPI).
10. Explain about interfacing of stepper motor to 8051 microcontroller.

Part – 2

SECTION- C

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

11. Write about evolution of microcontrollers
12. List and explain some 8051 16-bit registers.
13. Explain CALL instruction and stack.
14. Write an ALP program for division of two 8-bit numbers.
15. How the information is displayed on LCD?
16. Write short note on microcontroller testing tools.
17. Write about time delay generation ?
18. Draw the pin diagram for DAC.

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

Part-1 : Answer any five questions choosing atleast two from each section.
Eachquestioncarries10marks. 5x10=50 marks

Part -2 : Answer any five questions. Each question carries 5 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	1	24
Unit IV		2	1	24
Unit V		2	2	28
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SEMESTER-IV

Syllabus w.e.f (2023-2024)

MAJOR – III

COURSE 11:- MICRO PROCESSSOR SYSTEM

UNIT -I: CPU ARCHITECTURE

Introduction to Microprocessor, INTEL -8085(P)Architecture, CPU, ALU unit, Registerorganization, Address, data and control Buses.Pin configuration of 8085. Addressing modes 8086 Microprocessor: Architecture, Pindescription. Instruction format, Instruction Executiontiming, Addressing modes.

UNIT -II: 8085 Instruction Set

Data transfer Instruction, Logical Instructions, Arithmetic Instructions, BranchInstructions,Machine Control instructions.

UNIT -III: Assembly Language

Programming using 8085, Programmes for Addition,Subtraction, Multiplication,Division, largest and smallest number in an array. BCDto ASCII and ASCIIto BCD.

UNIT -IV: Basic 8086 Configurations

Minimum mode and Maximum Mode, InterruptPriority Management I/O Interfaces: Serial Communication interfaces, ParallelCommunication, Programmable Timers, Keyboard and display, DMA controller

UNIT -V: ARM PROCESSOR: Introduction to 16/32 bit processors, Arm architecture& organization, Arm based MCUs, Programming model, Instruction set.

TEXTBOOKS:-

1. Microprocessor Architecture, Programming and Applications
2. with the 8085 – Penram International Publishing, Mumbai.- Ramesh S.Gaonakar
3. Microcomputer Systems the 8086/8088 family – YU-Cheng Liu and Glenn SA Gibson
4. Microcontrollers Architecture Programming, Interfacing and System Design– Raj Kamal Chapter: 15.1, 15.2, 15.3, 15.4.1
5. 8086 and 8088 Microprocessor by Tribel and avatar singh

REFERENCES:-

1. Microprocessors and Interfacing – Douglas V.Hall
2. Microprocessor and Digital Systems – Douglas V. Hall
3. Advanced Microprocessors & Microcontrollers - B.P.Singh & Renu Singh – New Age
4. The Intel Microprocessors – Architecture, Programming and Interfacing –Bary B.Brey.
5. Arm Architecture reference manual –Arm Ltd.

SEMESTER-IV

Practical Paper course 11: MICROPROCESSOR SYSTEMS

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

Minimum of 2 Experiments to be done and Recorded

Details of Lab/Practical/Experiments/Tutorials syllabus:

MICROPROCESSORS SYSTEMS: Programs using Intel 8085 /8086.

1. Addition and Subtraction (8-bit and16-bit)
2. Multiplication and Division (8-bit)
3. Largest number in an array.
4. Smallest number in an array.
5. Ascending Order
6. Descending Order
7. Program to Convert Two BCD Numbers into Hexa.
8. Program to Convert Hex Number in to BCD Number.
9. Program to Find the Square Root Of A Given Number.
10. Interfacing Experiments Using 8086 Microprocessor.

RECOMMENDED TEXT BOOKS:

1. 8085 Microprocessor and Its Applications by Nagoor kani RBA Publications.

2. Microprocessor 8086 programming and Interfacing Nagoor Kani, RBA Publications.

RECOMMENDED REFERENCE BOOKS:

1. Fundamentals of Microprocessor & Microcomputer: B. Ram—Danpat Rai Publications.

Scheme of Evaluation

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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FOURTH SEMESTER END EXAMINATIONS

II B.Sc. –ELECTRONICS –MICROPROCESSOR SYSTEM

w.e.f 2023-24Admitted Batch
MODEL PAPER

Time : 3hours Max.Marks:75.

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. Draw the pin diagram of 8085 microprocessor and explain?
2. Explain the various Addressing Modes of 8086 Microprocessor with examples.?
3. Explain logical and arthematic instruction of 8085 ?
4. Explain data transfer instruction of 8085?
5. Write an ALP to find the Largest number in a given array of 8-bit Numbers in 8085

Section-B

6. Write an ALP to arrange given array of 8-bit numbers in Ascending order of 8085
7. Explain the Pin Description of 8086 with neat diagram?
8. Explain in detail serial communication interfacing of 8086 Microprocessor?

9.Explain the ARM architecture in detail.?

10. Explain ARM instruction set ?

Part – 2

SECTION- C

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

11. Explain 8085 microprocessor register organization

12.Explain logical instructions of 8085 microprocessor.

13.Write an ALP to find the the addition of Two 8-bit Numbers

14.Write an ALP to find the Multiplication of Two 8-bit Numbers

15.Describe briefly about minimum mode configuration of 8086 microprocessor

16.Write a short note on interrupt priority of 8086 microprocessor.

17.Explain about parallel communication interfacing of 8086 Microprocessor.

18.Explain the features of ARM Processor.