

GOVERNMENT COLLEGE [A]::RAJAHMUNDRY
[Re-accredited by NAAC with grade "A"]

DEPARTMENT OF ELECTRONICS

BOARD OF STUDIES
2014-15

20 MAY 2014

DEPARTMENT OF ELECTRONICS
CONSOLIDATED REPORT OF BOARD OF STUDIES FOR THE YEAR 2014-15

The meeting of Board of Studies of **ELECTRONICS** Department was convened at 10.30 A.M. on 13 May 2014 under the chairmanship of **Sri. B.V. Tirupanyam**, the Incharge of the Department. The following members were present.

S. No	Nominee	Name	Signature
1	University Nominee	Sri B.S. Seshagiri Rao	
2	Industrial Nominee		
3	Local Nominee	Sri D. Gangadharudu	
4	Staff Member	Sri T.Y.H.A.G.Gandhi	
5	Staff Member	K. Srinivasa Rao	
6	Staff Member	Sri T.K.Visweswara Rao	
7	Staff Member	Sri E.Nageswara Rao	
8	Staff Member	Dr. K. Rama Chandra Rao	
9	Staff Member	Esub Basha Shaik	
10	Staff Member	B. Durga Lakshmi	
11	Student (B. Sc, III Year)	Y.Suryanarayana	
12	Student (B. Sc, II Year)		
13	Student (B. Sc, I Year)		

Date

13 May 2014

Chairman
Board of Studies

Department of ELECTRONICS

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY
(Re-Accredited by NAAC with grade "A")
DEPARTMENT OF ELECTRONICS
BOARD OF STUDIES MEETING on 13 May 2014

RESOLUTIONS

1. It is resolved to introduce the Choice Based Credit System [CBCS] in I. B.Sc course from the academic year 2014-15 and approve the modular syllabus for the said course and books prescribed for it.
2. It is resolved to conduct practical examinations at the end of even number semester in Choice Based Credit System.
3. It is resolved to introduce the General elective-namely “ **Mobile Phone Repairing & Maintenance** ” course for II B.Sc students from the academic year 2015-16.
4. It is resolved to offer two advanced elective papers in semester V for III B.Sc students in place of paper IV from the academic year 2016-17 so as to enable the student to choose one of the two. The electives are 1. Embedded systems 2. Satellite Communication systems.
5. It is further resolved to offer two applied (Skill based) elective papers in semester VI for III B.Sc students in place of paper IV from the academic year 2016-17 so as to enable the student to choose one of the two. The elective papers are 1. Embedded systems and applications 2. 8086 Microprocessor and its applications.
6. It is resolved to approve the syllabi for II and III B.Sc course for all semesters and related prescribed books
7. It is resolved to approve the additional inputs for intelligent students of II and III B.Sc students on non-creditable basis, for all the Semesters except I & II semesters.
8. It is resolved to approve the model question papers for all semesters for a maximum of 75 marks and remaining 25 marks for internal assessment.
9. It is resolved to approve the list of examiners and paper setters for the academic year 2014-'15
10. It is resolved to approve the scheme of valuation for practical examination for all year-End practical examination for a maximum of 75 marks external, and 25 marks internal

University Nominee

Local Nominee

Subject Expert

Chairman
Board Of Studies

SYLLABI

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY
(Re-Accredited by NAAC with grade "A")
DEPARTMENT OF ELECTRONICS

B.Sc I year – Electronics

MODULE-I: Circuit Analysis

Semester – I (w.e.f. 2014-15)

- Nature of the Module : Core ; Nature of learning : Regular
- No.of hours/week : 04 ; Credits : 03; Total hours : 60.

No	Month and Week	No. of hours	Topic	Curricular activity	Co-curricular activity	Remarks
1.	June 2014 III	04	Chapter I: R,L and C Passive circuits <ul style="list-style-type: none"> • Construction, types and applications of Resistors • Construction, types and applications of Capacitors 			
2.	June 2014 IV	04	<ul style="list-style-type: none"> • Construction, types and applications of Inductors • Energy sources • Energy stored in Capacitor and Inductor 	Assignment	Group Discussion	
3.	July 2014 I	04	<ul style="list-style-type: none"> • Series and Parallel connections involving R,L and C Chapter II: Concept of voltage and current sources <ul style="list-style-type: none"> • Kirchoff's Voltage law (KVL) • Voltage division 	Seminar	Project work on KVL and KCL	

4.	July 2014 II	04	<ul style="list-style-type: none"> • Kirchoff's Current Law (KCL) • Current division • Application of KVL and KCL to simple circuits with resistors and sources 	Assignment		Field trip to APSEB sub station
5.	July 2014 III	04	<p>Chapter II: Concept of voltage and current</p> <p style="text-align: center;">sources</p> <p>contd....</p> <ul style="list-style-type: none"> • Node voltage analysis and method of mesh currents <p>Chapter III: A.C fundamentals</p> <ul style="list-style-type: none"> • The sine wave • Average value of A.C 	Seminar	---	
6.	July 2014 IV	04	<p>Chapter III: A.C fundamentals</p> <p>contd</p> <ul style="list-style-type: none"> • R.M.S value of A.C • The J operator • Polar and rectangular forms of complex numbers 	-----		
7.	August 2014 I	04	<p>Chapter III: A.C fundamentals</p> <p>contd</p> <ul style="list-style-type: none"> • Phasor diagram • Complex impedance • Complex admittance 	Assignment		Guest Lecture
8.	August 2014 II	04	<p>Chapter IV: Network Theorems</p> <ul style="list-style-type: none"> • Superposition theorem <p>Solving related problems</p>			Quiz
9.	August 2014 III	04	<p>Chapter IV: Network Theorems</p> <p>contd...</p> <ul style="list-style-type: none"> • Norton's theorem • Thevenin's theorem • Millman's theorem <p>Solving related problems</p>	Student seminar		
10.	August 2014 IV	04	<ul style="list-style-type: none"> • Maximum Power transfer theorem <p>Solving related problems</p> <ul style="list-style-type: none"> • Reciprocity theorem 	Assignment		Group Discussion

11.	September 2014 I	04	Chapter V: Resonance: <ul style="list-style-type: none"> • Series resonance of R,L and C circuits • Bandwidth of RLC • Q-factor, it' effect on bandwidth 		Project work	
12.	September 2014 II	04	Chapter V: Resonance contd <ul style="list-style-type: none"> • Parallel resonance of R,L and C circuits • Resonant frequency of Tank circuit 	Seminar		
13.	September 2014 III	04	<ul style="list-style-type: none"> • Q-factor of parallel resonance & it' effect on bandwidth • Selectivity • Filters: High & low pass • Frequency response • Passive differentiating & Integrating circuits 		Quiz	
14.	September 2014 IV	04	Chapter VI: Coupled Circuits: Mutual Inductance Coefficient of coupling	Assignment		
15.	October 2014 I	04	Ideal transformer Tuned circuits	Seminar	Group Discussion	

Reference Books:

1. Grob's basic Electronics – Mitchel E. Schulth 10th Edn. Tata McGraw Hill (TMH)
2. Network lines and fields – Ryder Prentice Hall of India (PHI)
3. Circuit analysis – P.Gnanasivam – Pearson Education.
4. Circuits and Networks – A.Sudhakar & Shyammohan S. Pillai – TMH.
5. Network Theory – Smarajit Ghosh – PHI.
6. Principles of Electronics - V.K.Mehtaand Rohit Mehta - S.Chand & Co
7. Pulse digital switching wavwforms - Millman & Taub – TMH
8. Applied Electronics – R.S.Sedha - S Chand & Co
9. A first course in Electronics - AA Khan & KK Day - PHI
10. Principles of Electronic circuits – Stanely G. Burns and Paul R. Bond – Galgotia
11. Electronic principles and applications - A.B.Bhattacharya - New Central Book Agency Pvt.,

Government College(A) :: Rajahmundry
B.Sc I year - Electronics
MODULE - I Circuit Analysis

SCHEME OF VALUATION [THEORY]

S.No	Description	Marks
1	External Exam (Theory)	75
2	Internal Exam (Theory) (Best of the two)	25 [Theory - 15 Viva-Voce - 10]
	TOTAL	100

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY
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DEPARTMENT OF ELECTRONICS

B.Sc I year – Electronics

MODULE-I: Circuit Analysis

External Examination

Model Question Paper Setting

Duration: 3hrs

Max Marks :75

S.No	SECTION		
	SECTION - A [40 M]	SECTION-B [15 M]	SECTION-C
1	<ul style="list-style-type: none">• Four essay type questions (1-4) are to be given with internal choice in each question.• Each question carries 10 marks totaling to 40 marks in this section.• At least one question should be asked from each unit (consider two chapters as one unit).	<ul style="list-style-type: none">• Eight short answer type questions (5-12) are to be given.• Student has to answer any five of the eight questions.• Each question carries 3 marks totaling to 15 marks in this section.• Questions should be given covering all the chapters.	<ul style="list-style-type: none">• 10 very short answer type questions (13-22) are to be given.• Student has to answer all 10 questions.• Each question carries 2 marks totaling to 20 marks in this section.• Questions should be given covering all the chapters

Government College(A) :: Rajahmundry
I Semester end examination
B.Sc I year - Electronics
MODULE-I: Circuit Analysis

Semester-I
MODEL QUESTION PAPER

Duration : 3hrs

Max Marks: 75

Section - A

Answer any **FOUR** questions

4 x 10 = 40 Marks

1. Explain the terms peak, RMS and average values of a sinusoidal voltage.
Derive the relations among them.

OR

Define complex number. Explain how complex numbers can be used to express sinusoidal quantities.

2. State Kirchoff's voltage and current rules. Discuss method of mesh currents and determinant node voltage analysis.

OR

State and prove superposition theorem. Explain how this can be successfully employed in a network.

3. State and prove Millman's theorem.

OR

Discuss transient response of RC circuit containing DC sources.

4. Explain the transient response of an R-L circuit.

OR

Explain bandwidth and selectivity of a parallel resonant circuit.

Section - B

Answer any **FIVE** questions.

5 x 3 = 15 Marks

5. Explain the term power factor. What is its significance?
6. Derive an expression for mean value of A.C
7. What do you understand by an active and passive network.
8. State and prove compensation theorem.
9. The angular frequency of waveform is 500π radian/sec. Find it's a) Frequency b) Time period.
11. A sinusoidal waveform is given by
 $I = 10 \sin(6284t + 10^\circ)$ Ampere. Find it's a) Peak value b) rms value.
11. Find the branch circuit in the following circuit.
12. Obtain the resonant frequency and Q-factor for a series LCR circuit with $L = 3.0\text{H}$ and $C = 27\mu\text{f}$ and $R = 7.4 \Omega$.

Section - C

Answer all questions

10x 2 = 20 Marks

13. Define Virtual Volt.
14. What is the Crest factor of a sine wave.
15. What is the internal resistance of ideal voltage source.
16. State the Kirchoff's laws.
17. State reciprocity theorem
18. Find the load resistance for maximum power transfer from a source of 100V d.c. having internal resistance of 50 ohms
19. A Battery of 1.5V is connected in Series with a resistance of 20 ohms and 30 ohms. Find out Equivalent voltage and resistance across the points of 30 ohms resistance
20. What is the Ripple factor for shunt capacitor filter?
21. Draw RC integrating circuit.
22. Explain the term Quality factor.

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DEPARTMENT OF ELECTRONICS

B.Sc I year – Electronics

MODULE-II: ELECTRONIC DEVICES & CIRCUITS
Semester – II (w.e.f. 2014-15)

- Nature of the Module : Core ; Nature of learning : Regular
- No.of hours/week : 04 ; Credits : 03; Total hours : 60

S.No	Month and Week	No. of hours	Topic	Curricular activity	Co-curricular activity	Remarks
1.	November 2014 III	04	Chapter VI: PN junction diode Design and working Depletion region			
2.	November 2014 IV	04	Junction capacitance Diode equation Effect of temperature on reverse saturation current	Assignment	Group Discussion	
3.	December 2014 I	04	Voltage - Ampere characteristics of PN junction & Applications of Junction diode	Seminar	Project work on Solar Cells and LDRs	
4.	December II	04	Connecting PN junction diode in the circuit- Forward and reverse biasing.	Assignment	Field trip to BSNL network station	
5.	December III	04	Zener diodes, design, characteristics Applications		---	

				Seminar		
6.	December IV	04	Application of Diode capacitance in Varactor Diodes Tunnel diode -(basic principle only - importance of negative resistance) and simple applications.	-----		
7.	January 2015 I	04	Chapter VII: Bipolar Junction Transistor PNP & NPN transistors Design	Assignment	Guest Lecture	
8.	January 2015 II	04	, Current components in BJT Static characteristics of BJT		Quiz	
9.	January 2015 III	04	CB & CE & CC configurations (cut off, active & saturation regions), Early effect Experimental arrangement to study i/p & o/p characteristics in CE configuration Hybrid (h)-parameters h-parameter equivalent circuit	Student seminar		
10.	January 2015 IV	04	Determination of h parameters from the characteristic graphs Transistor: Biasing and load line analysis - Fixed bias and self bias arrangements.	Assignment	Group Discussion	
11.	February 2015 I	04	Chapter 8: FET Structure and working of JFET Output and Transfer characteristics. Experimental arrangement for studying the characteristics and to determine FET parameters. Advantages of FET over transistor.		Project work	

12.	February 2015 II	04	Applications of FET as voltage variable resistor and MOSFET as a switch MOSFET- Characteristics. UniJunction Transistor (UJT): Construction and working Characteristics	Seminar		
13.	February 2015 III	04	Applications of UJT as relaxation oscillator Chapter II: Photo Electronic Devices: Structure, Operation and applications of LDR, Photo voltaic cell, photodiode		Quiz	
14.	February 2015 IV	04	Structure, Operation and applications of Solar Cell Structure, Operation and applications of LED Structure, Operation and applications of LCD	Assignment		
15.	March 2015 I	04	Structure and working of SCR. Two-transistor representation - Characteristics of SCR - Experimental setup to study the SCR characteristics - Application of SCR for power control	Seminar	Group Discussion	

Reference Books:

1. Grob's basic Electronics - Mitchel E. Schulth 10th Edn. Tata McGraw Hill (TMH)
2. Electronic Devices and Circuits - Millman and Halkias - TMH
3. Electronic Devices and Circuits - Allen Mottershead - PHI
4. Principles of Electronics - V.K. Mehta and Rohit Mehta - S.Chand & Co
5. Electronic devices and circuit theory - R.L.Boylestad and L.Nashelsky - Pearson Education.
6. Pulse digital switching waveforms - Millman & Taub - TMH
7. Applied Electronics - R.S. Sedha - S Chand & Co
8. A first course in Electronics - A.A Khan & KK Day - PHI
9. Principles of Electronic circuits - Stanly G. Burns and Paul R. Bond - Galgotia

10. Electronic principles and applications - A.B. Bhattacharya - New Central Book Agency Pvt.,

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DEPARTMENT OF ELECTRONICS

B.Sc I year – Electronics
SEMESTER-II
MODULE-II: Electronic Devices & Circuits

External Examination

Model Question Paper Setting

Duration: 3hrs

Max Marks :75

S.No	SECTION		
	SECTION - A [40 M]	SECTION-B [15 M]	SECTION-C [20 M]
1	<ul style="list-style-type: none">• Four essay type questions (1-4) are to be given with internal choice in each question.• Each question carries 10 marks totaling to 40 marks in this section.• At least one question should be asked from each unit (consider two chapters as one unit).	<ul style="list-style-type: none">• Eight short answer type questions (5-12) are to be given.• Student has to answer any five of the eight questions.• Each question carries 3 marks totaling to 15 marks in this section.• Questions should be given covering all the chapters.	<ul style="list-style-type: none">• 10 very short answer type questions (13-22) are to be given.• Student has to answer all 10 questions.• Each question carries 2 marks totaling to 20 marks in this section.• Questions should be given covering all the chapters

Government College(A) :: Rajahmundry
II Semester end examination
B.Sc I year - Electronics
MODULE-I: Electronic Devices and Circuits

Semester-II
MODEL QUESTION PAPER

Duration : 3 hrs

Max. Marks: 75

Section - A

Answer any **FOUR** questions

4 x 10 = 40 Marks

1. Describe the working of p-n junction diode under forward and reverse biasing.

OR

Write about the working and uses of a tunnel diode.

2. Discuss the action of a NPN transistor and draw a circuit diagram to obtain output characteristics for this transistor.

OR

Define h-parameters for a low frequency CE transistor.

Give an equivalent h-parameter model for a BJT under CE configuration.

3. Discuss the output and transfer characteristics of JFET.

OR

What is the significance of threshold voltage in enhance mode and depletion mode MOSFET.

4. Discuss the Construction and characteristic of Uni junction transistor.

OR

Give the basic structure of SCR. Explain SCR characteristics.

Section - B

Answer any **FIVE** questions.

5 x 3 = 15 Marks

5. Draw V-I characteristics of a junction diode and explain.
6. Explain the operation of a Varicap diode.
7. Explain active region, saturation region and cut-off region in transistor operation.
8. Define α and β parameters of a transistor.
9. Write applications of JFET.
10. Draw circuits of voltage divider-bias and self-bias in JFET.
11. Define the terms 'interbase resistance' and 'intrinsic stand off ratio'.
12. Write about photovoltaic cell.

Section - C

Answer All questions.

10 x 2 = 20 Marks

13. Write the diode equation
14. The current through a p-n junction diode is 55 ma at a forward bias voltage of 3V.
If the temperature is 27c, find the static and dynamic resistance of diode
15. Draw the V-I characteristics of Tunnel diode
16. Draw the BJT static Characters
17. What are the hybrid parameters of transistor?
18. Give the circuit symbol for p- channel MOSFET
19. Sketch in small signal FET model
20. Explain the construction of solar cell
21. What is the critical wavelength of photo conductor
22. Write any two differences between LED and LCD.

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DEPARTMENT OF ELECTRONICS

B.Sc I year – Electronics
PRACTICAL-I

MODULE-I[P]: CIRCUIT ANALYSIS & ELECTRONIC DEVICES
Semester – II (w.e.f. 2014-15)

Circuit Analysis and Electronic devices & Circuits Laboratory

1. Measurement of peak voltage, frequency and phase using CRO.
2. Thevenin's theorem – verification.
3. Norton's theorem – verification.
4. Maximum power transfer theorem – verification.
5. CR and LR circuits – Frequency response (Low pass and High pass).
6. CR and LR circuits – Differentiation and integration – tracing of waveforms.
7. LCR – Series resonance circuit – Frequency response – Determination of f_o , Q and bandwidth.
8. To draw volt-ampere characteristics of Junction diode and determine the cut-in voltage, forward and reverse resistances.
9. Zener diode V-I characteristics – Determination of Zener breakdown voltage.
10. Voltage regulator using Zener diode.
11. BJT input and output characteristics (CE configuration) and determination of h-parameters.
12. FET – Characteristics and determination of FET parameters.
13. UJT as relaxation oscillator.
14. LDR – characteristics.
15. SCR Volt-ampere characteristics.

Note: Student has to perform any 12 experiments.

Government College (A):: Rajahmundry

B.Sc II Year- Electronics

SEMESTER III

(w.e.f 2011-12 admitted batch)

PAPER-II: Analog Circuits and Communications

UNIT- I

Power Supplies: Rectifiers- Half wave, full wave and bridge rectifiers- Efficiency- Ripple factor- Regulation - Harmonic components in rectified output

UNIT-II

Types of filters- Choke input (inductor) filter- Shunt capacitor filter- L section and Π section filters - Block diagram of regulated power supply - Series and shunt regulated power supplies - Three terminal regulators (78XX and 79XX) - Principle and working of switch mode power supply (SMPS).

UNIT-III

Amplifiers- classification of amplifiers-RC Coupled Amplifier: Analysis and frequency response of single stage RC coupled CE amplifier. Positive and negative feedback- Effect of feedback on gain, band width, noise, input and output impedances-Emitter follower and Darlington pair (simple treatment without derivation)

UNIT-IV

Operational Amplifiers: Differential amplifier-double ended input and single ended output- Block diagram of Op-Amp- Ideal characteristics of Op-Amp- Op-Amp parameters- Input resistance- Output resistance- Common mode rejection ratio (CMMR) - Slew rate- Offset voltages - Input bias current-

Reference Books:

1. Operational Amplifiers and Linear Integrated Circuits- Ramakant A. Gayakwad
2. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
3. Applied Electronics- R.S. Sedha- S Chand &Co
4. Basic electronics- Gupta Kumar Sharma
5. Analog Electronics- L.K. Maheswari and M.M.S. Anand- PHI
6. Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)
7. Unified Electronics Vol I,II,III & IV

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
DEPARTMENT OF ELECTRONICS
ADDITIONAL INPUTS

CLASS : II B.Sc

SEMESTER : III

PAPER : II

TITLE OF THE PAPER : Analog circuits and communication

TOPICS IN THE UNIVERSITY SYLLABUS	ADDITIONAL TOPICS INCLUDED UNDER AUTONOMOUS SETUP
1. Power supplies 2. Rectifiers-filters 3. Amplifier-RC coupled amplifier 4. Fundamentals on op-amp	1. DC/AC load line analysis 2. Different types of fabrication to from p-n junction <ol style="list-style-type: none"> i. Crown junction ii. Alloy junction iii. Diffusion junction iv. Epitaxial junction v. Point contact junction Derivation of depletion layer width and barrier potential Derivation of diode equation

Government College(A) :: Rajahmundry

B.Sc II year - Electronics

PAPER-II, SEMESTER III &IV

SCHEME OF VALUATION [THEORY]

S.No	Description	Marks
1	External Exam (Theory)	75
2	Internal Exam (Theory)	25 • [Theory - 15 (Best of the two) Viva-Voce - 10]
	TOTAL	100

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY
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DEPARTMENT OF ELECTRONICS

B.Sc II year - Electronics

PAPER-II: SEMESTER- III &IV

External Examination

Model Question Paper Setting

Duration: 3hrs

Max Marks :75

S.No	SECTION		
	SECTION - A [40 M]	SECTION-B [15 M]	SECTION-C
1	<ul style="list-style-type: none">• Four essay type questions (1-4) are to be given with internal choice in each question.• Each question carries 10 marks totaling to 40 marks in this section.• At least one question should be asked from each unit (consider two chapters as one unit).	<ul style="list-style-type: none">• Eight short answer type questions (5-12) are to be given.• Student has to answer any five of the eight questions.• Each question carries 3 marks totaling to 15 marks in this section.• Questions should be given covering all the chapters.	<ul style="list-style-type: none">• 10 very short answer type questions (13-22) are to be given.• Student has to answer all 10 questions.• Each question carries 2 marks totaling to 20 marks in this section.• Questions should be given covering all the chapters

Government college (Autonomous) – Rajahmundry
Accredited by NAAC Grade 'A'
B.Sc II year Electronics Semester III admitted batch 2011-2012
Paper II - Analog circuits and communication

Model Paper

Time : 3hrs

Max Marks:75

Section – A

Answer **ALL** questions

4x10=40

1. Draw the circuit diagram of RC coupled amplifier. Discuss its frequency response.

Or

What is negative feed back? Discuss the effect of negative feed back on (i) Gain
(ii) I/P impedance

2. Draw the circuit of Full wave rectifier and find I_{dc} and I_{ac} and efficiency.

Or

Obtain the harmonic components in its rectifier output

3. Explain shunt capacitor filter with a neat circuit.

Or

Explain the principle and working of switch mode power supply.

4. Draw the circuit diagram of emitter coupled differential amplifier and explain its working and characteristics.

Or

What are the characteristics of an ideal Op Amp. Explain about common mode Gain.

Section B

Answer any **FIVE** of the following:

5X3=15

5. Explain the block diagram of op amp and explain each block
6. Draw the circuit of bridge rectifier.
7. Draw the block diagram of regulated power supply.
8. Explain the characteristics Emitter follower.
9. The DC output voltage is 40 V at full load and 41 V without any load current. Calculate the load regulation factor in percent.
10. The mid frequency of RC coupled amplifier is 200. If lower and upper cutoff frequencies are 20 Htz and 50 Htz. calculate the frequencies at which gain reduces to 100.
11. Amplitude has a bandwidth of 200 K Hz and voltage gain of 40 db. What will be its bandwidth if 5 % negative feedback is introduced?
12. If an op.amp has an output signal of 10V with slew rate of 2V/ms. Calculate the power band width in amplifier.

Section C

Answer **ALL** questions

10X2=20

13. An op amp has a CMRR value of 60 db and difference mode gain of 1200. Find common mode gain.
14. Define Input offset current.
15. What is the slew rate for ideal op amp.
16. What is 'Peak Inverse Voltage' in half wave rectifier?
17. Write a brief note on regulated power supply.
18. How many diodes are required in Full Wave rectifier?
19. AC power of 100W is applied as input to a half wave rectifier. Find the rectifier efficiency of the dc power obtained is 40W.
20. What is the use of bypass capacitor in RC coupled amplifier.
21. Draw the circuit of transistor shunt voltage regulator.
22. Define positive feedback.

Government College:: Rajahmundry
B.Sc II year – Electronics
Paper-II: Analog circuits and communication

Semester – IV (w.e.f. 2011 – 2012)

UNIT-I

Basic Op-Amp circuits- Inverting Op-Amp- Virtual ground- Non-inverting Op-Amp- Frequency response of Op-Amp. Interpretation of Op-Amp data sheets.

UNIT-II

Applications of Op-Amps: Summing amplifier- subtractor- Voltage follower- Integrator-Differentiator - Comparator- Logarithmic amplifier- Sine wave [Wein Bridge] and square wave [Astable] generators- Triangular wave generator- Monostable multivibrator- Solving simple second order differential equation. Basic Op-Amp series regulator and shunt regulator.

UNIT-III

Communications: Need for modulation-Types of modulation- Amplitude, Frequency and Phase modulation.

Amplitude modulation-side bands- modulation index- square law diode modulator- Demodulation- diode detector.

Frequency modulation working of simple frequency modulator- Ratio detection of FM waves- Advantages of frequency modulation.

AM and FM radio receivers [block diagram approach].

Reference Books:

1. Operational Amplifiers and Linear Integrated Circuits- K. Lalkishore - Pearson Education
2. Operational Amplifiers and Linear Integrated Circuits- Ramakant A. Gayakwad
3. Electronic Communication Systems - George Kennedy & Bernard Davis - TMH.
4. Electronic Communication -D. Roddy & J. Coolen- PHI
5. Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)
6. Microelectronics- J. Millman and A. Grabel - TMH
7. Principles of Electronic Communication Systems –Louis E. Frenzel -TMH

**GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
DEPARTMENT OF ELECTRONICS
ADDITIONAL INPUTS**

CLASS : II B.Sc

SEMESTER : IV

PAPER : II

TITLE OF THE PAPER : Analog circuits and communication

TOPICS IN THE UNIVERSITY SYLLABUS	ADDITIONAL TOPICS INCLUDED UNDER AUTONOMOUS SETUP
Basic op amp circuits	Application of op amp
Oscillators	Concept,essential of oscillators,Phase shift oscillator,Hartely-colpites oscillator and crystal oscillator
Amplitude FM modulation	Pulse digital modulation Quantization pulse code modulation delta modulation adaptive modulation comparision-Optical fibre communication-the general system advantages-Ray theory transimission

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY

B.Sc II Year - Electronics

PRACTICAL PAPER-II (90 hours - 30 Sessions)

Paper-II: Analog Circuits and Communications Lab

1. D.C Power supply
2. Single stage RC - coupled amplifier - frequency response.
3. Inverting amplifier.
4. Non- inverting amplifier.
5. Comparator.
6. Integrator.
7. Differentiator.
8. OP-Amp as Wien bridge oscillator.
9. Astable multivibrator - Determination of frequency (using IC741 Op-Amp).
10. Monostable multivibrator-Determination of pulse width (using IC 741Op Amp).
11. Voltage regulator using IC- 7805and IC-7905.
12. AM modulator and Demodulator.
13. FM modulator.

Any 10 experiments are to be performed by the student.

Government College (A), Rajahmundry
II B.Sc- Electronics
Paper - II Analog circuits and communication
Year End Examination (w.e.f. 2009-2010)

Scheme of Valuation for Practical Examinations

External Marks : 75M
Internal Marks : 25M

Total Marks : 100M

S.No	Description	External Marks	Internal Marks
1	Formula & Explanation of symbols	10	3
2	Tabular form and circuit diagram (If required)	10	3
3	Circuit connections	05	02
4	Observations	15	03
5	Calculation & Graphs	10	02
6	Result	05	02
7	Procedure & Precautions	05	04
8	Viva-Voce	05	03
9	Record	10	03
	GRAND TOTAL	75	25

Government College:: Rajahmundry

B.Sc III Year - Electronics

Semester – V (w.e.f. 2011 – 2012)

PAPER – III: Digital Electronics and Microprocessor 8085

UNIT-I

Introduction to number systems, Logic gates OR, AND, NOT, X-OR, NAND, NOR gates - Truth tables - Positive and negative logic - Logic families and their characteristics - RTL, DTL, ECL, TTL and CMOS.- Universal building blocks NAND and NOR gates. Laws of Boolean algebra -De Morgan's Theorems - Boolean identities - Simplification of Boolean expressions-Algebraic method- Karnaugh Map method - Sum of products (SOP) and Product of sums (POS).

UNIT-II

Combinational and Sequential circuits: Comparators - Multiplexer and De-Multiplexer - Encoder- Decoder, seven segment LED- Half adder, Full adder and Parallel adder circuits. Flip flops - RS, D, JK and JK Master-Slave (working and truth tables) - Registers - Shift Registers - SIPO, SISO, PISO and PIPO registers- Application of registers- Semiconductor memories - Organization and working- Synchronous and asynchronous binary counters, Up/Down counters- Decade counter (7490) - working, truth tables and timing diagrams - Application of counters: Digital clock.

Reference Books:

1. Digital Principles and Applications- Malvino & Leach- TMH
2. Digital Fundamentals - F. Loyd & Jain- Pearson Education
3. Modern Digital Electronics- R.P Jain-TMH
4. Fundamentals of Digital Circuits- Anand Kumar- PHI
5. Digital Systems - Rajkamal- Pearson Education
6. Digital Electronic Principles and Integrated Circuits- Maini- Willey India
7. Digital Electronics- Gothman-
8. Digital Electronics -J.W. Bignel & Robert Donova- Thomson Publishers (Indian 5th Ed)

Government College(A) :: Rajahmundry

B.Sc III year - Electronics

Paper - III: Digital Electronics and Microprocessors.

Paper - IV: Embedded systems and applications

Semester End Examinations [SEM V & VI]

SCHEME OF VALUATION [THEORY]

S.No	Description	Marks
1	External Exam (Theory)	75
2	Internal Exam (Theory)	25 • [Theory - 15 (Best of the two) Viva-Voce - 10]
	TOTAL	100

GOVERNMENT COLLEGE (AUTONOMOUS):: RAJAHMUNDRY
(Re-Accredited by NAAC with grade "A")
DEPARTMENT OF ELECTRONICS

B.Sc III year – Electronics

PAPER-III & IV: SEMESTER- V & VI

External Examination

Model Question Paper Setting

Duration: 3hrs

Max Marks :75

S.No	SECTION		
	SECTION - A [40 M]	SECTION-B [15 M]	SECTION-C [20 M]
1	<ul style="list-style-type: none">• Four essay type questions (1-4) are to be given with internal choice in each question.• Each question carries 10 marks totaling to 40 marks in this section.• At least one question should be asked from each unit (consider two chapters as one unit).	<ul style="list-style-type: none">• Eight short answer type questions (5-12) are to be given.• Student has to answer any five of the eight questions.• Each question carries 3 marks totaling to 15 marks in this section.• Questions should be given covering all the chapters.	<ul style="list-style-type: none">• 10 very short answer type questions (13-22) are to be given.• Student has to answer all 10 questions.• Each question carries 2 marks totaling to 20 marks in this section.• Questions should be given covering all the chapters

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
V SEMESTER EXAMINATIONS – MODEL PAPER
III B.SC. ELECTRONICS – PAPER III
(W.E.F 2011 – 2012)
DIGITAL ELECTRONICS & MICROPROCESSOR 8085

3 hrs

Max.Marks:75

Section – A

Answer all questions

4X10=40

- 1. Reduce the expression**

$$AB + A'C + AB'C(AB+C)$$

Or

Compare the relative merits of CMOS, TTL and ECL logic families.

- 2. Simplify the following Boolean function in product of sums(POS)**

$$F(A,B,C,D) = E(0,1,2,5,8,9,10)$$

Or

Prepare K-map and obtain minimized expression for the following function

and don't care conditions in terms of min terms (SOP)

$$F(A,B,C,D) = E_{O-Ring} m(1,3,7,11,15) + d(0,25)$$

- 3. Describe JK-Flip flop and Master-Slave JK Flip flop.**

Or

Describe a clocked R-S flip flop.

- 4. Describe the operation of half adder and full adder.**

Or

Explain the working of a BCD decade counter.

Section – B

Answer any FIVE questions

5X3=15

1. Show that positive logic AND operation is equivalent to a negative logic OR operation.
2. De Morganise the function AB'
3. Draw a three input NOR gate and write the truth table.
4. How will connect NOR gates to perform the OR function.
5. Write a note on multiplexer .
6. Describe the operation of a S-R latch.
7. What do you understand by sequential and combinational logic circuits.
8. Explain the working types of memory.

Section – C

Answer all questions

10X2=20

9. Convert each binary number to decimal.
110011.11
10. Using 2's compliment perform the subtractions
110011 – 100111
11. Convert each hexa decimal number to binary.
a) A14 b) 5C8
12. Add the hexa decimal numbers
3A2C, 2B10
13. Sketch a circuit to implement the given equation
 $X = A.B + C.D$
14. Write the procedure to convert from binary to BCD code.
15. What is the word size in the following ROMs.
32X4
16. An asynchronous counter has four flip flops and the propagation delay of each flip flop is 20 ns. Calculate the maximum counting speed of the counter.
17. What will be the state of the output of encoder 74147 if the inputs are X_3, X_7, X_5 ?
18. What will be the maximum number of outputs for a decoder with a 6 – bit data word

Government College:: Rajahmundry

B.Sc III Year - Electronics
Semester - VI (w.e.f. 2011 - 2012)

PAPER - III Digital Electronics and Microprocessor 8085

UNIT-III

Introduction to Microcomputer and Microprocessor:

Intel 8085 Microprocessor - central processing unit CPU - arithmetic and logic unit ALU - timing and control unit - register organization - address, data and control buses- pin configuration of 8085 and its description. Timing diagrams- Instruction cycle, machine cycle, fetch and execute cycles.

Instruction set of 8085:

instruction and data formats- classification of instructions -addressing modes. Assembly language programming examples of 8 and 16 bit addition, subtraction, multiplication and division. Finding the largest and smallest in a data array. Programming examples using stacks and subroutines.

UNIT-IV

Interfacing peripherals and applications:

Programmable peripheral interface (8255) - D/A and A/D converters: Successive Approximation A/D converter- Binary weighted D/A converter- R/2R ladder D/A converter - interfacing of A/D and D/A converters to the Microprocessor. Stepper motor control.

Reference Books:

1. Microprocessor Architecture and Programming - Ramesh S. Goanker- Penram
2. Introduction to Microprocessor - Aditya. P. Mathur- TMH
3. Microprocessors and Microcontrollers Hardware and Interfacing- Mathivannan- PHI
4. Fundamentals of Microprocessors and Microcontrollers - B. Ram-Dhanpat Rai & Sons.
5. Advanced Microprocessor and Peripherals, Architecture, Programming and Interface- A.K.Ray and K.N. Bhurchandi- TMH
6. Microprocessor Lab Premier- K.A. Krishna Murthy

GOVERNMENT COLLEGE (AUTONOMOUS)::RAJAHMUNDRY

VI SEMESTER EXAMINATIONS – MODEL PAPER

III B.SC. ELECTRONICS – PAPER III

(W.E.F 2011 – 2012)

DIGITAL ELECTRONICS & MICROPROCESSOR 8085

Time : 3 hrs

Max.Marks:75

Section – A

Answer all questions

4X10=40

1. Explain the need to demultiplex the bus $AD_7 - AD_0$
Or
Explain the functions of the ALE and I/O/M signals of the 8085 microprocessor.
2. Explain the stack structure of 8085 in detail.
Or
Draw and discuss the internal block diagram of 8085.
3. Draw and discuss the read and write cycle timing diagram of 8085
Or
Explain the physical address formation in 8085.
4. Draw block diagram of 8255 and explain working each block.
Or
Explain about stepper motor and write the program to run it.

Section – B

Answer any five questions

5X3=15

1. Explain the function of each component of a computer.
2. Define opcode and operand and specify the opcode and the operand in the instruction MOV H,L.
3. Specify the function of the address bus and the direction of the information flow on the address bus.
4. What are the functions of program counter and stack pointer 16 bit registers.
5. If the 8085 address 87H and 79H. Specify the contents of the accumulator and the status of the S, Z and CY flags.
6. What operation can be performed by using the instruction ADD B.
7. Explain the process of A/D converter.
8. Classify the instruction set of 8085.

Section – C

Answer any five questions

10X2=20

13. If the memory chip size is 1024X4 bits. How many chips are required to make up 2K (2048) bytes of memory ?

14. Identify the memory locations of that are cleared by the following instructions.

MVI B,00H

LXI H, XX75H

MOV M,B

INX H

MOV M,B

HALT

15. Explain how many times the following loop will be executed

LXI B,0007H

LOOP DCX B

JNZ LOOP

16. Write an ALP to find out multiplication of two 8-bit hexa decimal numbers.

17. Write a program to ADD the two hexa numbers 7A and 46 and to store the sum at memory location XX98H and the flag status at location XX97H.

18. Draw timing diagrams for the following 8085 instructions

MVI M,data

19. What are 8085 systems is Reset all the interrupts including the TRAP are disabled?

20. What is the definition of operating system

21. Specify the stack locations and their contents after the execution of the CALL instruction.

22. Write short note on digital to analog converter

Government College:: Rajahmundry
B.Sc III Year - Electronics
PAPER - III: Digital Electronics and Microprocessor 8085

PRACTICAL PAPER-III
Digital Electronics and Microprocessor Lab

1. Verification of truth tables of OR, AND, NOT, NAND, NOR, EX-OR gates (By using 7400-series)
2. Construction of gates using NAND, NOR gates.
3. Construction of Half and Full adders and verifying their truth tables.
4. Operation and verifying truth tables of flip-flops- RS, D, and JK using ICs.
5. Construction of Decade counters (7490).
6. Driving Stepper motor using JK flip-flop
7. Binary addition & subtraction. (8-bit & 16-bit)
8. Multiplication & division.
9. Picking up largest/smallest number.
10. Arranging -ascending/descending order.
11. Decimal addition (DAA) & Subtraction.
12. Time delay generation
13. Interfacing R-2R Ladder network (DAC) (4 bits) to generate waveforms.
14. Interfacing a stepper motor and rotating it clockwise/anti clockwise through a known angle.

Note: Students has to perform any 10 experiments

Government College (A), Rajahmundry

B.Sc III Year – Electronics

Paper – III: Digital electronics and Microprocessors 8085

Year End Examination (w.e.f. 2009-2010)

Scheme of valuation for Practical Examinations

External Marks : 75M

Internal Marks : 25M

Total Marks : 100M

I. Digital Electronics practicals

S. No	Description	External Marks	Internal Marks
1	Circuit	15	05
2	Circuit connection	20	10
3	Tables	20	05
4	Verification	20	05
	Total	75	25

II. Microprocessor related practicals

S. No	Description	External Marks	Internal Marks
1	Program	30	10
2	Flow chart	15	05
3	Execution	30	10
	Total	75	25

Government College:: Rajahmundry

B.Sc III Year - Electronics
Semester - V (w.e.f. 2011 - 2012)

PAPER - IV EMBEDDED SYSTEM AND APPLICATIONS

Unit- I (22 Hours)

The 8051 Microcontroller

Introduction to microcontrollers and embedded systems: Overview and block diagram of 8051. Architecture of 8051. Program counter and memory organisation. Data types and directives, Flag bits and PSW Register, Register banks and Stack; Pin diagram, Port organisation, I/O Programming, Bit manipulation. Interrupts and timer.

Unit-II (23 Hours)

Addressing modes, instruction set and assembly language programming of 8051

Addressing modes and accessing memory using various addressing modes. Instruction set: Arithmetic, Logical, Single Bit, Jump, Loop and Call Instructions and their usage. Time Delay Generation and Calculation; Timer/Counter Programming.

Programming examples: Addition, multiplication, subtraction, division, arranging a given set of numbers in ascending / descending order, picking the smallest / largest number among a given set of numbers, Accessing a specified port terminal and generating a rectangular waveform.

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems - By Muhammad Ali Mazidi and Janice Gillispie Mazidi- Pearson Education Asia, 4th Reprint, 2002
2. Microcontrollers - Theory and applications by Ajay V. Deshmukh-Tata McGraw-Hill
3. The 8051 Microcontroller - architecture, programming & applications By Kenneth J. Ayala- Penram International Publishing, 1995

Reference books contd

4. Programming and Customizing the 8051 Microcontroller – By Myke Predko- TMH, 2003
5. Design with Microcontrollers By - J B Peatman- TMH.
6. The 8051 Microcontroller - Programming, interfacing and applications by Howard Boyet and Ron Katz - (MII) Microprocessors Training Inc.
7. The concepts & features of Microcontrollers by Rajkamal – Wheeler Pub.

**GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
DEPARTMENT OF ELECTRONICS
ADDITIONAL INPUTS**

CLASS : III B.Sc.
SEMESTER : V
PAPER : IV
TITLE OF THE PAPER : EMBEDDED SYSTEM AND APPLICATIONS

TOPICS IN THE UNIVERSITY SYLLABUS	ADDITIONAL TOPICS INCLUDED UNDER AUTONOMOUS SET UP
<p>The 8051 Microcontroller</p> <p><i>Introduction to microcontrollers and embedded systems:</i> Overview and block diagram of 8051. Architecture of 8051. Program counter and memory organisation. Data types and directives, Flag bits and PSW Register, Register banks and Stack; Pin diagram, Port organisation, I/O Programming, Bit manipulation. Interrupts and timer.</p> <p>Addressing modes, instruction set and assembly language programming of 8051</p> <p>Addressing modes and accessing memory using various addressing modes. Instruction set: Arithmetic, Logical, Single Bit, Jump, Loop and Call Instructions and their usage. Time Delay Generation and Calculation; Timer/Counter Programming.</p> <p>Programming examples: Addition, multiplication, subtraction, division, arranging a given set of numbers in ascending / descending order, picking the smallest / largest number among a given set of numbers, Accessing a specified port terminal and generating a rectangular waveform.</p>	<p>Using Keil software write program for all arithmetic programmes</p>

GOVERNMENT COLLEGE, RAJAHMUNDRY
III B.Sc. – ELECTRONICS - VTH SEMESTER
MODERL QUESTION PAPER
(W.E.F 2011 – 2012)

PAPER IV – EMBEDDED SYSTEMS AND APPLICATIONS

Time ; 3 Hrs

Max Marks: 75

SECTION – A

Answer **all** questions

4x10 = 40

1. a. Explain about architecture of 8051 with block diagram
or
b. What are data types and directives in 8051 microcontroller and explain.
2. a. Draw the pin diagram of 8051 microcontroller and explain their function
Or
b. Explain in detail about Register banks and stack
3. a. What are addressing modes in 8051 microcontroller and explain with examples
Or
b. Explain about time delay generation and calculation with an example.
4. a. Write a program to arrange a given set of numbers in ascending order.
Or
b. Write a program to generate a rectangular waveform by accessing p1 port.

SECTION – B

Answer any **Five** questions.

5x3 = 15

5. Write the steps to create a program
6. Explain about program status word register
7. Write about unconditional jump instructions
8. Write a program for addition of two individual bytes
9. How to use port c as input
10. What is bit manipulation. Explain with an example
11. When is the OV flag set, explain with example
12. Write a program to clear 16 RAM locations starting at RAM address 0000H

Government College:: Rajahmundry

B.Sc III Year - Electronics

Semester - VI syllabus (w.e.f. 2011 - 2012)

PAPER - IV EMBEDDED SYSTEM AND APPLICATIONS

Unit - I

Interfacing of peripherals to Microcontroller

8051 interfacing to 8255, Programming the 8255, Interfacing other modes of the 8255, Basics of serial communication, 8051 connection to RS232, 8051 serial communication Programming, modes and protocols

Unit - II

Applications of Embedded Systems

Temperature measurement, Interfacing an LCD to the 8051, Interfacing to ADC, sensors, Interfacing a keyboard and generation different types of waveforms. Interfacing stepper motor , interfacing a DAC to the 8051

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems – By Muhammad Ali Mazidi and Janice Gillispie Mazidi- Pearson Education Asia, 4th Reprint, 2002
2. Microcontrollers – Theory and applications by Ajay V. Deshmukh-Tata McGraw-Hill
3. The 8051 Microcontroller - architecture, programming & applications By Kenneth J. Ayala- Penram International Publishing, 1995
4. Programming and Customizing the 8051 Microcontroller – By Myke Predko-TMH, 2003
5. Design with Microcontrollers By - J B Peatman- TMH.
6. The 8051 Microcontroller - Programming, interfacing and applications by Howard Boyet and Ron Katz - (MII) Microprocessors Training Inc.
7. The concepts & features of Microcontrollers by Rajkamal - Wheeler Pub.

**GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
DEPARTMENT OF ELECTRONICS
ADDITIONAL INPUTS**

CLASS : III B.Sc.

SEMESTER : VI

PAPER : IV

TITLE OF THE PAPER : EMBEDDED SYSTEMS AND APPLICATIONS

UNIVERSITYSYLLABUS	Excess Input
<p>Interfacing of peripherals to Microcontroller</p> <p>8051 interfacing to 8255, Programming the 8255, Interfacing other modes of the 8255, Basics of serial communication,8051 connection to RS232, 8051 serial communication Programming, modes and protocols</p> <p>Applications of Embedded Systems</p> <p>Temperature measurement, Interfacing an LCD to the 8051, Interfacing to ADC, sensors, Interfacing a keyboard and generation different types of waveforms. Interfacing stepper motor , interfacing a DAC to the 805</p>	<p>Using keil software write program To write interfacing programmes.</p>

GOVERNMENT COLLEGE, RAJAHMUNDRY
III B.Sc. – ELECTRONICS – VI-TH SEMESTER
MODERL QUESTION PAPER
(W.E.F 2011 – 2012)

PAPER IV – EMBEDDED SYSTEMS AND APPLICATIONS

Time ; 3 Hrs

Max Marks: 75

SECTION – A

Answer **all** questions

4x10 = 40M

- 1: a) Mention the differences between synchronous, versus asynchronous Communications
Or
b) Explain the importance of different registers in the 8051 serial communication program.
2. a) Describe the function of the pins of a typical LCD
or
b) Describe the function of the pins of a typical ADC chip
3. a) How to interface temperature sensor to the 8051
Or
b) What are the features of 8255 and explain with pin diagram including mode selector of 8255.
4. a) Explain how a stepper motor interface with 8051 microcontroller
or
b) Explain how a key board can be interfaced with 8051 microcontroller.

SECTION – B

Answer any **Five** questions.

5x3 = 15M

5. What is the importance of TI Flag
6. Write the importance of RI flag bit
7. Explain about inside MAX 232
8. What are the steps to program ADC808/809
9. Explain how Digital to Analog Converter works
10. Write a program to produce a crude sine wave
11. Define the term memory mapped I/O and describe its application
12. Describe briefly how to expand the I/O ports of the 8051 by connecting to an 8255 chip

SECTION – C

Answer **All** questions

10x2 = 20M

13. Why do you use the MOVX instruction to access the ports of the 8255
14. What are address aliases
15. Describe the handshaking feature of 8255 application in printer interfacing
16. What is the purpose of the ULN 2003 placed between the 8051 and the stepper motor.
Can we use that for 3A motors
17. Indicate the steps to detect the key press
18. Calculate the number of steps per revolution for a step angle of 7,5 degree
19. For 16x2 LCD, the location of the last character of the line 1 is 8FH (its command code). Show how this value was calculated.
20. What is the difference between the V_{CC} and V_{EE} pins in LCD
21. State the absolute minimum number of signals needed to transfer data between two PCs connected. What are those.
22. What is the baud rate if use 'MOV TH1, #-1' to program the baud rate.

GOVERNMENT COLLEGE (AUTONOMOUS), RAJAHMUNDRY
DEPARTMENT OF ELECTRONICS
Paper - IV : PRACTICALS

Embedded Systems and Applications Lab

Microcontroller Experiments using 8051 kit

1. Multiplication of two numbers using MUL command (later using counter method for repeated addition)
2. Division of two numbers using DIV command (later using counter method for repeated subtraction)
3. Pick the smallest number among a given set of numbers
4. Pick the largest number among a given set of numbers
5. Arrange 'n' numbers in ascending order
6. Arrange 'n' numbers in descending order
7. Generate a specified time delay
8. Interface a ADC and a temperature sensor to measure temperature
9. Interface a DAC & Generate a stair case wave form – with step duration and no. of steps as variables
10. Flash a LED connected at a specified out put port terminal
11. Interface a stepper motor – and rotate it clock wise or anti clock wise through given angle steps
12. Using Keil software write a program to pick the smallest among a given set of numbers
13. Using Keil software write a program to pick the largest among a given set of numbers
14. Using Keil software write a program to arrange a given set of numbers in ascending order
15. Using Keil software write a program to arrange a given set of numbers in descending order
16. Using Keil software write a program to generate a rectangular wave form at a specified port terminal

Government College (A), Rajahmundry
B.Sc III Year – Electronics
Paper – IV: Embedded systems and applications
Year End Examination (w.e.f. 2009-2010)

Scheme of valuation for Practical Examinations

External Marks : 75M
Internal Marks : 25M

Total Marks : 100M

S. No	Description	External Marks	Internal Marks
1	Program	30	10
2	Flow chart	15	05
3	Execution	30	10
	Total	75	25

GOVERNMENT COLLEGE [A]::RAJAHMUNDRY
DEPT.OF ELECTRONICS
LIST OF EXAMINERS

S.No	Name of the Lecturer	College	Service in Degree College (years)	Paper (s) handled
1	Smt.A. Savitri	A.V.N.College, Visakhapatnam	13	I,II,III and IV
2	K. Nageswara Rao	GDC, Tanuku	12	I,II,III and IV
3	Dr.T.L. Rambabu	A.V.N.College, Visakhapatnam	11	I,II,III and IV
4	D. Gangadhurudu	M.R.College, Peddapuram	12	I,II,III and IV
5	T.N.V.K.V. Prasad	Dr.L.B.College. Visakhapatnam	11	I,II,III and IV
6	M.K.Kumar	D.N.R.College, Bhimavaram	11	I,II,III and IV
7	B.S.Seshagiri Rao	D.N.R College, Bhimavaram	11	I,II,III and IV
8	A.S.N.Murhy	M.R.College, Peddapuram	13	I,II,III and IV
9	S. Rama Rao	M.R.College, Peddapuram	13	I,II,III and IV
10	Ch. Kanaka Rao	Y.N.College, Narasapur	11	I,II,III and IV
11	V. Anil Raj Kumar	D.N.R College, Bhimavaram	11	I,II,III and IV
12	K. Srinivasa Rao	Govt.College(A) Rajahmundry	7	I,II,III

GENERAL ELECTIVE (W.E.F 2015-16]
&
ADVANCED & APPLIED ELECTIVES
(W.E.F 2016-17]

GOVERNMENT COLLEGE [A]:: RAJAHMUNDRY
DEPT.OF ELECTRONICS
GENERAL ELECTIVE PAPER for
II B.Sc COURSE (w.e.f 2015-16)

MOBILE PHONE REPAIRING & MAINTENANCE
TECHNOLOGY

Objective of the Course :

This course has been designed to provide an introduction to Mobile maintenance. The student will be able to troubleshoot problems of Mobile equipments.

At the end of the course the students will be having knowledge of:-

- Working of Mobile Sets
- Components used in Mobile Sets
- H/W & S/W Troubleshooting of Mobile
- Maintenance of Mobile sets

Outline Of the Course

S.No	TOPIC	HOURS	
		THEORY	PRACTICAL /TUTORIAL
1	Types of Mobile Handsets	06	06
2	Working Principle	06	06
3	Components used in Mobile handsets such as SIM Card, Battery, Memory etc	06	06
4	Tools and equipments use for Repairing and maintenance of Mobile Handsets	06	06

5	Software applications for troubleshooting of Mobile sets	06	06
6	Troubleshooting techniques regarding display, transmission, reception, volume control, charger, Battery etc	10	10
	TOTAL	40	40

Sub topics:

- Introduction of Basic Electronics.
- Mobile Components Identification & knowledge.
- Mobile Phone components working.
- Uses of Multimeter.
- Mobile Components Testing & Checking.
- Practical Testing of Components by Multimeter.

(BASIC MOBILE PHONE TECHNOLOGY & CODING)

- Introduction of Mobile Phone Technology.
- Type of Mobile Phone Technology.
- Working principal of Mobile Phone.
- Feature of Mobile Phone.(Bluetooth ,G.P.R.S., Infrared etc.)
- Removing Software Problem by Codes.
- Unlocking codes for G.S.M.Mobile.
- Unlocking codes for C.D.M.A. Mobile.
- Multimedia Set formatting Codes(For virus removing problems).
- Chinese Mobile Phone Codes.

CHIP LEVEL PRACTICAL TRAINING (100%)

- Proper use of Micro Iron ,SMD Rework Machine,Hpt Airgun,Etc.
- Soldering & Desoldering Practice.
- Chip Component Removing & Replacing.
- Jumper Practice.(Antina Switch Jumper,Track Breakage
- Jumper,Display Cont.Jumper etc.)
- Driver IC Jumper Practice. (SIM IC Jumper,Keypad I.C.Jumper,Display I.C.Jumper etc.)
- B.G.A. I.C Removing Practice.
- B.G.A. I.C Reballing Practice.

- B.G.A. I.C Replacing Practice.
- Driver I.C. Changing practice
- Display Changing Practice (Patta Displays)
- Ribben & Patta changing Practice .
- P.F.O. Changing.
- Pasted B.G.A.IC Removing Practice.
- Jack Changing Practice (Sim Jack,Charging Jack,Hand free Jack,Battery Connector).
- Bluetooth Module Changing Practice.
- Flap & Sliding Phone assembling Practice.

TRACING (FAULT FIND OUT)

- Mobile Phone Physically Testing.
- Fault Find Out in Mobile Phone.
- Track Reading in circuit Diagram Books.
- Track Checking on Mobile Board (Practically checking by multimeter).
- Track Checking with the components.
- Cool testing Of Mobile Phone.
- Hot testing in Mobile Phone.
- Track Checking comparision by other phone.

SOFTWARE TRAINING MODULE

- Basic Computer Knowledge.
- U.f.s Repairing Box Training.
- Micro Box Training (For Latest Multimedia Sets)

- Infinity Box Training (for Motorola ,L.G.,Chinese & 150 Other Phones)
- S.E.Tool Box Training.(For Sony Ericsson Sets)
- Universal Box Training (Spl.for I.M.E.I Repairing)
- Spider Box Training (For Chinese Phones)
- Ve-pro Box Training (For Chinese Phones)
- Application Software Training (Ring Tones, Games, Wall Papers, & Other
- Software :-Like Smart Movie Converter, I-phone Video Converters, I-phone Unlocking,I-pod Loading)

GOVERNMENT COLLEGE [A] :: RAJAHMUNDRY
DEPT.OF ELECTRONICS
ADVANCED ELECTIVE PAPER for
III B.Sc COURSE (w.e.f 2016-17)

ADVANCED ELECTIVE I: EMBEDDED SYSTEMS

Unit- I (22 Hours)

The 8051 Microcontroller

Introduction to microcontrollers and embedded systems: Overview and block diagram of 8051. Architecture of 8051. Program counter and memory organisation. Data types and directives, Flag bits and PSW Register, Register banks and Stack; Pin diagram, Port organisation, I/O Programming, Bit manipulation. Interrupts and timer.

Unit-II (23 Hours)

Addressing modes, instruction set and assembly language programming of 8051

Addressing modes and accessing memory using various addressing modes. Instruction set: Arithmetic, Logical, Single Bit, Jump, Loop and Call Instructions and their usage. Time Delay Generation and Calculation; Timer/Counter Programming.

Programming examples: Addition, multiplication, subtraction, division, arranging a given set of numbers in ascending / descending order, picking the smallest / largest number among a given set of numbers, Accessing a specified port terminal and generating a rectangular waveform.

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems – By Muhammad Ali Mazidi and Janice Gillispie Mazidi- Pearson Education Asia, 4th Reprint, 2002
2. Microcontrollers – Theory and applications by Ajay V. Deshmukh-Tata McGraw-Hill

3. The 8051 Microcontroller - architecture, programming & applications By Kenneth J. Ayala- Penram International Publishing, 1995

Reference books contd

4. Programming and Customizing the 8051 Microcontroller – By Myke Predko- TMH, 2003

5. Design with Microcontrollers By - J B Peatman- TMH.

6. The 8051 Microcontroller - Programming, interfacing and applications by Howard Boyet and Ron Katz - (MII) Microprocessors Training Inc.

7. The concepts & features of Microcontrollers by Rajkamal – Wheeler Pub

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ADVANCED ELECTIVE PAPER for

III B.Sc COURSE (w.e.f 2016-17)

Semester-v

ADVANCED ELECTIVE II: RADAR SYSTEMS & SATELLITE COMMUNICATION

Radar Systems:

Fundamental – A simple RADAR – overview of frequencies – Antenna gain Radar Equation – Accuracy and Resolution – Integration time and the Doppler shift (Ch 1 of Text Book 1)

Designing a surveillance radar – Radar and surveillance – Antenna beam – width consideration – pulse repetition frequency – unambiguous range and velocity – pulse length and sampling – radar cross section – clutter noise (Ch 2 of Text Book 1)

Tracking Radar – Sequential lobbing – conical scanning – Monopoles Radar – Tracking accuracy and Process – Frequency Agility – Radar guidance

Satellite Communication

Satellite System – Historical development of satellites – communication satellite systems – communication satellites – orbiting satellites – satellite frequency bands – satellite multiple access formats (Ch1 of Text Book 3).

Satellite orbits and inclination – Look angles, orbital perturbations, space craft and its subsystems – attitude and orbit control system – Telemetry, Tracking and Command – Power system – Transponder – Reliability and space qualification – launch vehicles

(Ch2 & 3 of Text Book 4)

UNIT - IV

Multiple Access Techniques – Time division multiple access – Frequency division multiple access – Code division multiple access – Space domain multiple access

(Ch 7 of Text Book 4).

Earth Station technology – Subsystem of an earth station – Transmitter – Receiver Tracking and pointing – Small earth station – different types of earth stations – Frequency coordination – Basic principles of special communication satellites – INMARSAT VSAT, GPS, RADARSAT, INTELST

Text Books:

1. Understanding Radar Systems – Simon Kingsley and Shaun Quegan.
2. Introduction to Radar Systems – MI Skolnik
3. Satellite Communication – Robert M. Gagliardi
4. Satellite Communication – Manojit Mitra

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DEPT.OF ELECTRONICS

APPLIED ELECTIVE PAPER for

III B.Sc COURSE (w.e.f 2016-17)

Semester-VI

APPLIED (SKILL BASED) ELECTIVE I: APPLICATIONS OF EMBEDDED SYSTEMS

Unit - I

Interfacing of peripherals to Microcontroller

8051 interfacing to 8255, Programming the 8255, Interfacing other modes of the 8255, Basics of serial communication, 8051 connection to RS232, 8051 serial communication Programming, modes and protocols

Unit - II

Applications of Embedded Systems

Temperature measurement, Interfacing an LCD to the 8051, Interfacing to ADC, sensors, Interfacing a keyboard and generation different types of waveforms. Interfacing stepper motor , interfacing a DAC to the 8051

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems – By Muhammad Ali Mazidi and Janice Gillispie Mazidi- Pearson Education Asia, 4th Reprint, 2002
2. Microcontrollers – Theory and applications by Ajay V. Deshmukh-Tata McGraw-Hill
3. The 8051 Microcontroller - architecture, programming & applications By Kenneth J. Ayala- Penram International Publishing, 1995
4. Programming and Customizing the 8051 Microcontroller – By Myke Predko-TMH, 2003
5. Design with Microcontrollers By - J B Peatman- TMH.
6. The 8051 Microcontroller - Programming, interfacing and applications by Howard Boyet and Ron Katz - (MII) Microprocessors Training Inc.
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Semester-VI
APPLIED (SKILL BASED) ELECTIVE II

8086 MICROPROCESSOR & ITSAPPLICATIONS

UNIT 1 :

Introduction, Microprocessor based computer system, Architecture of 8086 Microprocessor, Pin functions, Minimum / Maximum mode of operation.

UNIT 2 :

Read / Write timing diagrams, 8086 instruction set, Instruction template for data transfer instruction, addressing modes.

UNIT 3 :

Assembler directives, Programming examples.

UNIT 4 :

Linking and relocation, Stacks, Procedures, Interrupt and Interrupt routines, Macros.

UNIT 5: PROGRAMMING:

Addition of two 16-bit numbers, Subtraction of two 16-bit numbers, Multiplication of two 16-bit numbers, Division of two 16-bit numbers, Largest number in an array of data.

TEXTBOOKS:

1. Advanced Microprocessor and Peripherals- A.K.Ray and K.M. Bhurchandi, Tata McGraw Hill.
2. Microcomputer systems 8086/8088 family, Architecture, Programming and Design - Yu-Cheng Liu & Glenn A Gibson, 2nd Edition- July 2003, Prentice Hall of India.

THE END