P.R. GOVERNMENT COLLEGE, KAKINADA

AN AUTONOMOUS COLLEGE WITH POTENTIAL FOR EXCELLENCE

DEPARTMENT
OF
PHYSICS AND ELECTRONICS

Board of Studies

Electronics

2017 - 2018

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ALLOCATION OF CREDITS TO B.Sc.[ELECTRONICS] PROGRAMME –

2017 -2018
Department of Physics & Electronics

College : P.R. Government College (A), Kakinada   Programme :
B.Sc.   Subject : Electronics

S.No.	Semester	Course Code	Core / Elective	Course (Paper)	Hours/Week	Int.	Ext.	Total	No. of Credits	Course Credits
						Max. Marks				
1	I	EL1205	Core - 01	Circuit Analysis and AC Fundamentals	04	40	60	100	3	**3**
2	I	EL1205P	Core Practical -1	Circuit Analysis and AC Fundamentals	03	15	35	50	1	**1**
3	II	EL2205	Core - 02	Semi-conductors and Electronic Devices	04	40	60	100	3	**3**
4	II	EL2205P	Core Practical -2	Semi-conductors and Electronic Devices	03	15	35	50	1	**1**
4	III	EL3205	Core - 03	Power supplies- Analog Circuits	04	30	70	100	3	**3**
5	IV	EL4205	Core -4	Analog Circuits Applications and Communications	04	30	70	100	3	**3**
6	IV	EL4205GE	General Elective	Electronics and Communication Systems	02	30	70	100	2*	**2***
7	III & IV	EL4205P	Core Practical-2	Power supplies, Analog Circuits, Communications & Simulations	03	30	70	100	2	**2**
8	V	EL5209	Core - 05	Microprocessor	04	30	70	100	3	**3**
9	V	EL5210A	Elective -1 [Advanced]	Digital Electronics	02	30	70	100	2	**2**
10	V	EL5210B	Elective -2 [Advanced]	Instrumentation	02				2	
11	V	EL5209P	Core Practical-3	Digital Electronics Lab	03	15	35	50	1	**1**
12	V	EL5210AP	Elec. Pra.-1	Microprocessor Lab	03	15	35	50	1	**1**

13	V	EL5210BP	Elec. Pra.-2	Microprocessor Lab	03	15	35	50	1	
14	VI	EL6209	Core -06	Microcontroller	04	30	70	100	3	**3**
15	VI	EL6210A	Elective -3 [Skill based]	Advanced controller systems	02	30	70	100	2	**2**
16	VI	EL6210B	Elective-4 [Skill based]	Embedded Systems Application Programming	02				2	
17	VI	EL6209P	Core Practical-4	Embedded Systems Lab	03	15	35	50	1	**1**
18	VI	EL6210AP	Elec. Pra.-3	Embedded Systems Applications Lab	03	15	35	50	1	**1**
19	VI	EL6210BP	Elec. Pra.-4	Embedded Systems Applications Lab	03	15	35	50	1	
20	VI	ELPW	Project Work	Self Study & Skill based Project	02	-	-	50	2*	**2***
				Total Credits					40	**34* or 30**

Agenda items of BOS 2017 – 18

1. Departmental activities for 2017 – 18.

   Separate list enclosed

2. National / State level Seminars/Work shops/Conferences/training programs with topics and other details.

   Two days work shop national level   on solid state Physics

3. Change of modules in syllabus content

   Changes were made at the course level and are shown

4. Plan for utilization of funds for autonomous/CPE/other grants available for arranging guest lectures, faculty improvement programs, study tours equipping laboratories, reference books & other necessary teaching- learning material.

S. No.	Fund	Utilization	Amount
1.	UGC Autonomous	BOS	10,000
2.		Invited Lectures	10,000
3.	UGC – General Development Assistance	Lab equipment	2,50,000
4.		Reference books	50,000
5.		Teaching - learning material	20,000
6.	Spl. Fee funds	Minor repairs, stationery	25,000
		Out reach programme	10,000
	Total		3,75,000

5. Plan for organizing subject oriented community outreach programs & allocation of necessary funds.

   Department is planning to orient our students to give the training to the S.S.C. students of near by rural high school students for their Physical science subject.

6. Introduction of new programs-PG/UG/Diploma and certificates courses.

   The department is proposing to start M. Sc. Physics Course from 2017 - 2018.

7. Change in internal assessment exams for conducting II mid semester by way of Group Discussions (or) Quiz / Assignment/Seminar.

From the academic year 2017 – 2018 the department will change the pattern of internal assessment exams by the advice of the college administration. The external and internal marks ratio is 60 : 40.

Two internals are conducted each for 30 marks. The total is reduced to 15 marks.

The remaining 15 marks internal is further divided in to (05+ 05 + 05). 05 marks for the seminar in the concern course, 05 marks for assignments and 05 marks for group discussion/quiz..

From now on wards the Ist year students have Two internal exams each for 40 marks. The total is reduced to 20 marks and the remaining 20 marks to be distributed as 10 marks for Assignments, 5 marks for Student seminar and 5 marks for Quiz (or) Group discussion.

8. Conduct of Practical Examinations Semester wise for First year batch **2017-18**

9. Suggest panel of examiners/ paper setter & other expert nominees for BOS deliberations.
Separate list enclosed

10. Subject Electives for V & VI semesters are continued for this academic year also

From the academic year 2016 – 17 the college introducing subject electives in the final year & also Elective practical's

11. Methodologies of Teaching learning.

The department is following the methods
Lecture method
Problem solving method
Experimental method
Project method
Application method

12. Minimum marks to internal examination

Proposed for open discussion

13. Approval of syllabus, question papers, blue prints for model papers etc.

Approved

14. Any other proposal with the permission of the chair.

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Blue print for the model paper – Electronics
Semester End External examination
For I year core courses
2017 - 2018

Subject Core

S. No.	Type of question	Given in the Question paper			To be answered		
		No. of Questions	Marks allotted To each question	Total marks	No. of Questions	Marks allotted To each question	Total marks
1	Section – A Essay question	5	10	50	3	10	30
2	Section – B Short answer Question	9	5	45	6	5	30
TOTAL				**95**			**60**

Percentage of Choice given $= \frac{95-60}{95} \ x \ 100$

$$= \frac{35}{95} \ x \ 100 \qquad = 36.8 \%$$

Blue print - for internal Examinations

S. No.	Type of question	Given in the Question paper			To be answered		
		No. of Questions	Marks allotted To each question	Total marks	No. of Questions	Marks allotted To each question	Total marks
1	**Section – A** Very short answer questions	6	4	24	6	4	24
2	**Section – B** Short answer questions	3	8	24	2	8	16
	TOTAL			**48**			**40**

$$\text{Percentage of Choice given} = \frac{8}{48} \times 100 = 16.66\%$$

The total of two internals is reduced to 20 marks and the other 20 marks are further divided as follows

Seminar	= 5 marks
Assignment	= 10 marks
Group discussion/quiz	= 5 marks
Total	= 20 marks

Blue print for the model paper – Electronics
Semester End External examination
For II & III year core courses
2017 - 2018
Subject Core

S. No.	Type of question	Given in the Question paper			To be answered		
		No. of Questions	Marks allotted To each question	Total marks	No. of Questions	Marks allotted To each question	Total marks
1	Section – A Essay question	8	9	72	5	9	45
2	Section – B Short answer Question **and** Section – C Problems	10	5	50	5	5	25
TOTAL				**122**			**70**

Percentage of Choice given $= \frac{122-70}{122} \, x \, 100$

$$= \frac{52}{122} \, x \, 100 \qquad = 42.6 \%$$

Subject Electives

S. No.	Type of question	Given in the Question paper			To be answered		
		No. of Questions	Marks allotted To each question	Total marks	No. of Questions	Marks allotted To each question	Total marks
1	**Section – A** Long answer questions	4	10	40	2	10	20
2	**Section – B** Short questions	6	5	30	3	5	15
TOTAL				**70**			**35**

Percentage of Choice given $= \frac{(70-35) x \, 100}{70} = 50 \%$

Blue print - for internal Examinations

S. No.	Type of question	Given in the Question paper			To be answered		
		No. of Questions	Marks allotted To each question	Total marks	No. of Questions	Marks allotted To each question	Total marks
1	**Section – A** Very short answer questions	8	3	24	8	3	24
2	**Section – B** Short answer questions	2	6	12	1	6	6
	TOTAL			**36**			**30**

Percentage of Choice given $= \dfrac{6}{36} \times 100 = 16.66\%$

The total of two internals is reduced to 15 marks and the other 15 marks are further divided as follows

Seminar	= 5 marks
Assignment	= 5 marks
Group discussion/quiz	= 5 marks
Total	= 15 marks

Aims

- Provide students with a sound base of knowledge and understanding of Electronics principles, to expose them to the applications of these principles in a broad range of areas and to allow them to study some of these in depth.

- Provide students with comprehensive training in laboratory techniques and handling of experimental apparatus, data analysis and interpretation, and the communication of results.

- Foster students' development of transferable and personal skills, including those of problem-solving, analysis, independent learning, team-working, which will be essential to their future careers.

- To support teaching and learning with well-equipped Simulation laboratory.

- Equip students for employment in a broad range of disciplines, particularly those which value numerate graduates who can apply their knowledge and problem-solving skills to real-world situations.

Objectives

At the end of the course the students would be exposed to

- Ψ To have knowledge of basics of AC fundamentals, Network theorems, Resonance.
- Ψ To have comprehensive knowledge of P-N Junction, Bipolar Junction Transistor.
- Ψ To know the Advantages of FET .
- Ψ Familiarity with the Power supply, RC coupled amplifier, Operational amplifiers .
- Ψ To have knowledge of feedback and Oscillators.
- Ψ To know the applications of Op-Amps.
- Ψ To understand about communication.
- Ψ To improve knowledge in Digital Electronics.
- Ψ To have fundamentals of   Micro computer and Microprocessor.
- Ψ Familiarity with Microprocessor 8259& 8257 .
- Ψ To understand about Microcontrollers
- Ψ To have fundamentals in Embedded systems and its Applications.

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –1
Course – IA [Core- 01]   [Code : EL1205]
Circuit Analysis and AC Fundamentals - Syllabus
4 Hours/Week [Total : 60 hrs.]   2017-18   **Credits : 03**

Course Learning Outcomes

After completing the Basic Electronics program, students will be able to:

1. Students will demonstrate the ability to evaluate the parameters of basic electronic components (wires, resistors, capacitors, diodes etc.) based on their physical parameters and dimensions.

2. Students will reliably demonstrate the ability to solve basic DC circuits using Kirchhoff's current and voltage laws.

3. Students will reliably demonstrate skills in solving problems concerning voltage, potential, current and Ohm's law.

4. The capability to use abstractions to analyze and design simple electronic circuits.

5. An understanding of how complex devices such as semiconductor diodes and field-effect transistors are modeled and how the models are used in the design and analysis of useful circuits.

6. The capability to design and construct circuits, take measurements of circuit behavior and performance, compare with predicted circuit models and explain discrepancies.

7. Describe the scientific principles that apply to the basic flow of electricity and explain the function of various materials used as conducting, semiconducting, and insulating devices in the construction of standard electrical/electronic circuits.

8. The objective of this course is to provide you with a comprehensive understanding of electronic circuits and devices

9. Analyze resistive circuits and determine currents and voltages.

10. Analyze the transient behavior of RC and RL circuits

11. Provide the fundamental knowledge in electronics to enable understanding of its applications.

12. Provide hands-on opportunities for students to construct electronic circuits and build electronic projects of varying difficulty levels, ranging from simple to intermediate.

Learning Outcomes:

Students will able to

1. Learn how to develop and employ circuit models for elementary electronic components, e.g., resistors, sources, inductors, capacitors, diodes and transistors;

2. Become adept at using various methods of circuit analysis, including simplified methods such as series-parallel reductions, voltage and current dividers, and the node method;

3. Appreciate the consequences of linearity, in particular the principle of superposition and Thevenin-Norton equivalent circuits.

4. Develop the capability to analyze and design simple circuits containing non-linear elements such resistors, sources, inductors, capacitors.

5. Acquire experience in building and trouble-shooting simple electronic analog circuits.

6. distinguish between the two main types of voltage sources

7. distinguish between a voltage source and a current source

8. convert voltage sources to current sources, and vice versa

9. Identify a resistive voltage divider and apply the voltage division formula to solve related problems

10. Identify a resistive current divider and apply the current division formula to solve related problems

11. Define the terms 'circuit', 'load', 'source', 'short-circuit', 'open-circuit' and 'overload'

(a) apply Kirchhoff's current and voltage laws to a series-parallel resistive circuit

(b) apply branch current analysis to DC circuits

(c) apply Thevenin's theorem to simplify circuits for analysis

(d) calculate the Thevenin's parameters at the input and output terminals of BJT transistor amplifiers

(e) determine the conditions for maximum power transfer to any circuit element.

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –1
Course – IA [Core- 01]   [Code : EL1205]
Circuit Analysis and AC Fundamentals - Syllabus
4 Hours/Week [Total : 60 hrs.]   **2017-18**   **Credits : 03**
         L = Lecture   T = Tutorial   P = Practice   S =Seminar

UNIT-I[07 hrs.]

AC Fundamentals

Module -1:   The Sine (L) –Average and RMS values (L)–The J operator (L) – Polar and rectangular forms of complex numbers(L)– Complex impedance and admittance(L). (6)

UNIT-II [15 hrs.]

Passive networks

Module -2:   Concept of voltage and current sources (L) – K V L and K C L (P) - Node voltage analysis and method of mesh currents. (P) – Application of Kirchoffs laws in wheatstone bridge(S) (12)

UNIT-III [15 hrs.]

Network theorems

Module -3:   Superposition Theorem(L)–Thevenin's Theorem (L)– Norton's Theorem(S)–Maximum power transfer Theorem(L)– Application to simple networks(P). (12)

UNIT-IV [15 hrs.]

RC and RL Circuits

Module -4:   Transient response of RL and RC circuits with step input(L) – time constants(L). Frequency response of RC and RL circuits(L) – Types of Filters: Low pass filter (L) – High pass filter(S) – frequency response(L) .(18)

UNIT-V [08 hrs.]

Resonance

Module -5:   Series resonance RLC circuit (L) – Resonant frequency (T) – Q factor (L) – Band width(T) – parallel resonance RLC circuit. (10)

Fundamentals of semiconductor Physics

Module – 6:   Classification of solids, distinction between conductors, semi conductors and insulators on the basis of energy band theory. Intrinsic and extrinsic semi conductor, effect of temperature on extrinsic semi conductor.

Reference Books:

1. Grob's Basic Electronics - Mitchel E.Schultz 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.Sudhaksr & Shyammohan S. Palli - TMH
5. Network Theory - Smarajit Ghosh - PHI
6. Electronic Devices and Circuits-Millman and Halkias - TMH
7. Electronic Devices and Circuits-Allen Mottershead - PHI
8. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
9. Electronic Devices and Circuit Theory- R.L.Boylestad and L.Nashelsky- Pearson Education.
10. Pulse digital switching waveforms -Millman &Taub - TMH.
11. Applied Electronics- R.S.Sedha - S Chand &Co
12. A First course in Electronics- AA Khan & KK Day- PHI
13. Principles of Electronic circuits- Stanely G.Burns and Paul R. Bond- Galgotia.
14. Electronic Principles and Applications – A.B. Bhattacharya- New Central Book Agency Pvt.
15. Basic Electronics   D.C. Tayal
16. Basic Electronics   Grobb
17. Electrical Technology II   B.L. Thereja & A.K. Thereja
18. Electronics   Ryder
19. Hand book of Electronics   Gupta & Kumar
20. Unified Electronics Vol 1 & 2   Arora

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ELECTRONICS

SEMESTER – I

Circuit Analysis and AC Fundamentals

MODEL PAPER –IA

Core-01   **Code : EL1205**   **Credit : 03**

2017-18

Time : $2\frac{1}{2}$ Hrs.   Max.Marks : 60

Section A

3 Questions to be answered from 5 Questions   **3x10=30M**

Section B

6 Questions to be answered from 9 Questions   **6x5=30M**

Blue Print

Chapter Name	Essay Questions [10 marks]	Short Questions [5 marks]	Problems [5 marks]	Marks allotted
AC Fundamentals	01	02	01	25
Passive networks				
Network theorems	02	02	01	35
RC and RL Circuits				
Resonance	02	02	01	35
Fundamentals of semiconductor physics				
Total Marks				95

P.R. GOVERNMENT COLLEGE (A)
SYLLABUS
Electronics-Practical [Core 1]
Sem. I   [Code : EL2205P]

2017-18

2 Hours/Week [Total hours- 45]   **Credits : 01**

Any **Five** experiments.

1. Measurement of peak voltage, frequency and phase using CRO….1

2. Thevenin's theorem – verification…..1

3. Norton's theorem – verification…..1

4. Maximum power transfer theorem – verification….1

5. CR circuit - Frequency response- (Low pass and High pass)…..1

6. LR circuit - Frequency response- (Low pass and High pass)…..1

7. CR and LR circuits - Differentiation and integration - tracing of waveforms..1

8. LCR–Series resonance circuit–Frequency response–Determination of f_o, Q and band width….1

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P.R. GOVERNMENT COLLEGE (A), KAKINADA
SYLLABUS
Electronics-Semester – II
Course – IB [Core- 2]
[Code : EL2205]

Semi-conductor physics and Electronic Devices.

4 Hours/Week[Total : 60 hrs.]   **2017-18**   **Credits : 3**

Course Learning Outcomes

The subject aims :
- ✓ Students will reliably demonstrate skills in solving problems concerning
- ✓ The capability to use abstractions to analyze and design BJT simple electronic circuits
- ✓ The capability to design and construct circuits, take measurements of circuit behavior and performance, compare with predicted circuit models and explain discrepancies.
- ✓ Describe the scientific principles that apply to the basic
- ✓ Understand the Photo Electric Devices.
- ✓ Analyze the SCR, FET, UJT.
- ✓ Provide hands-on opportunities for students to construct electronic circuits and build electronic projects of varying difficulty levels, ranging from simple to intermediate
- ✓ Cultivate and sustain students' interest in learning through circuit simulations and self-assessment activities
- ✓ Promote active learning through activities such as information search and presentations

Learning Outcomes:

Students will be able to:
- ➤ Recall construction, working, V-I characteristics of PN Junction Diode & Zener Diode.
- ➤ Observe Fixed bias and self bias arrangement
- ➤ Compare FET over BJT
- ➤ Explain UJT as a relaxation oscillator
- ➤ Demonstrate Solar Cell and LED
- ➤ Determination of h-parameters from the characteristics of

P.R. GOVERNMENT COLLEGE (A), KAKINADA
SYLLABUS
Electronics-Semester – II
Course – IB [Core- 2]
[Code : EL2205]

Semi-conductor physics and Electronic Devices.

4 Hours/Week[Total : 60 hrs.]   **2017-18**   **Credits : 3**

L = Lecture   T = Tutorial   P = Practice   S =Seminar

UNIT-I (15 hours)

P-N Junction

Module -1:   Depletion region(L)   – Junction capacitance (L) – Diode equation (no derivation) (L) – Effect of temperature on reverse saturation current(L)   – construction, working, V-I characteristics and simple applications of i) Junction diode ii) Zener diode (L).

UNIT-II (15 hours)

Bipolar Junction Transistor (BJT)

Module -2*:   PNP and NPN transistors working(L) –current components in BJT(L) – BJT characteristics (Input and Output) in CB, CC, CE configurations (L) – Transistor as an amplifier – h-parameters (L) – h-parameter equivalent circuit(L) – hybrid equivalent circuit of CE amplifier. Determination of h-parameters from the static characteristics(T). Transistor biasing – fixed bias, collector to base bias and self bias methods(L) – transistor D.C load line analysis(L).

UNIT-III (15 hours)

Field Effect Transistor (FET)

Module -3*:   Structure and working of JFET and MOSFET (L) – output and transfer characteristics(L) – Experimental arrangement for studying the characteristics and to determine FET parameters(L). Application of FET as voltage variable resistor(L) - Advantages of FET over BJT(L).

<center>*Uni Junction Transistor (UJT)*</center>

Module -4: Structure and working of UJT(L) - Characteristics. Application of UJT as a relaxation oscillator(L).

UNIT-IV(15 hours)

<center>*Silicon Controlled Rectifier*</center>

Module -5*:* Structure and working of SCR(L). Two transistor representation, Characteristics of SCR(L). Experimental set up to study the SCR characteristics(S). Application of SCR for power control(L).

<center>*Photo Electric Devices*</center>

Module -6*:* Structure and operation of LDR, Photo voltaic cell, Photo diode, Solar Cell and LED(L).

Reference Books:

21. Grob's Basic Electronics - Mitchel E.Schultz 10th Edn. Tata McGraw Hill (TMH)
22. Network lines and fields- Ryder- Prentice Hall of India (PHI)
23. Circuit analysis - P.Gnanasivam- Pearson Education
24. Circuits and Networks - A.Sudhaksr & Shyammohan S. Palli - TMH
25. Network Theory - Smarajit Ghosh - PHI
26. Electronic Devices and Circuits-Millman and Halkias - TMH
27. Electronic Devices and Circuits-Allen Mottershead - PHI
28. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
29. Electronic Devices and Circuit Theory- R.L.Boylestad and L.Nashelsky- Pearson Education.
30. Pulse digital switching waveforms -Millman &Taub - TMH.
31. Applied Electronics- R.S.Sedha - S Chand &Co
32. A First course in Electronics- AA Khan & KK Day- PHI
33. Principles of Electronic circuits- Stanely G.Burns and Paul R. Bond- Galgotia.
34. Electronic Principles and Applications – A.B. Bhattacharya- New Central Book Agency Pvt.
35. Basic Electronics   D.C. Tayal
36. Basic Electronics   Grobb
37. Electrical Technology II   B.L. Thereja & A.K. Thereja
38. Electronics   Ryder
39. Hand book of Electronics   Gupta & Kumar
40. Unified Electronics Vol 1 & 2   Arora

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Core-02	Code : EL2205	Credit : 3

Note:- Set the question paper as per the blue print given.

2017-18

Time : $2\frac{1}{2}$ Hrs. Max.Marks : 60

Section A

3 Questions to be answered from 5 Questions   3x10=30M

Section B

6 Questions to be answered from 9 Questions   6x5=30M

Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
P-N Junction	02	02	01	35
Bipolar Junction Transistor (BJT)				
Field Effect Transistor (FET)	02	02	01	35
Uni Junction Transistor (UJT)				
Silicon Controlled Rectifier (SCR)	01	02	01	25
Photo Electric Devices				
Total Marks				95

P.R. GOVERNMENT COLLEGE (A)
SYLLABUS
Electronics-Practical [Core 2]
Sem. II   [Code : EL2205P]

2017-18

2 Hours/Week [Total hours-45]   **Credits : 01**

Any **Five** experiments.

9. To draw volt-ampere characteristics of Junction diode and determine the cut-in voltage, forward and reverse resistances….

10. Zener diode V-I Characteristics– Determination of Zener breakdown voltage..

11. Voltage regulator using Zener diode…

12. BJT input and output characteristics (CE configuration) and determination of 'h' parameters…..

13. FET –Characteristics and determination of FET parameters…..

14. UJT as relaxation oscillator or V-I characteristics…..

15. LDR- characteristics…..

16. SCR Volt-ampere characteristics…..

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P.R. GOVERNMENT COLLEGE (A),KAKINADA
Syllabus
B.Sc. II Year- Electronics – Semester - III

                              Curse–IIA [Core- 3]   **[Code : EL3205]**
                          Power supplies- Analog Circuits
4 Hours/Week[Total : 60 hrs]   **2017-2018**   **Credits : 3**

Course Learning Outcomes

The subject aims :
- ✓ The capability to use abstractions to analyze and design RC Coupled Amplifier
- ✓ Describes the Amplifiers
- ✓ Analyze the Operational Amplifiers
- ✓ Provide hands-on opportunities for students to construct Rectifiers, Filters& regulated power supplies
- ✓ Cultivate and sustain students' interest in learning through circuit simulations and self-assessment activities
- ✓ Students will reliably demonstrate skills in solving problems concerning

Learning Outcomes:

Students will be able to:
- ➢ Define Slew rate, Common mode rejection ratio.
- ➢ Distinguish Differences between Half wave Rectifiers and full wave rectifier
- ➢ Analyze CE amplifier using hybrid parameters
- ➢ Explain Differential amplifier
- ➢ Demonstrate Types of filters

P.R. GOVERNMENT COLLEGE (A),KAKINADA
Syllabus
B.Sc. II Year- Electronics – Semester - III

Curse–IIA [Core- 3]   [Code : EL3205]
Power supplies- Analog Circuits
4 Hours/Week[Total : 60 hrs]   **2017-2018**   **Credits : 3**

UNIT-I **(30 hours)**

L = Lecture   **T = Tutorial**   **P = Practice**   **S =Seminar**

Rectifiers

Module -1:-   Rectification and diode as a rectifier (L) - Construction ,Working, dc values, rms values, Rectifier efficiency, Riffle factor ,Peak inverse voltage, Voltage regulation in case of 1)Half wave rectifier (L) 2) Full wave rectifier & Differences between Half wave Rectifiers and full wave rectifier (P) 3) Circuit and working of Bridge type rectifier (L) - Differences between Bridge type and Full wave rectifiers (P)

Filters& regulated power supplies

Module -2:-   Harmonic components in rectified output (P) – Types of filters- Choke input (inductor) filter (L) - Shunt capacitor filter(L) - L section and π section filters (S) (Qualitative only) – Block diagram of regulated power supply - Series and shunt regulated power supplies (L) – Principle and working of switch mode power supply (SMPS) (L).

UNIT-II(10 hours)

Amplifiers

Module -3 :-   Introduction to amplifiers(L)-Practical circuit of CE transistor amplifier(S)- Analysis of CE amplifier using hybrid parameters(T).

RC Coupled Amplifier

Module -4:   RC coupled amplifier (L) - function of circuit components(S)- frequency response curve (low frequency, mid frequency and high

frequency)(L) Mathematical analysis of RC coupled CE amplifier(T).

UNIT-III **(20 hours)**

Operational Amplifiers

Module -5*:* Differential amplifier(L)- Block diagram of Op-Amp- Ideal characteristics of Op-Amp- Loop Gain (open and closed loop gains)(L)- Op-Amp parameters(L)- Input resistance- Output resistance- Common mode rejection ratio (CMMR) (L)- Slew rate(L)- Basic Op-Amp circuits(L)- Inverting Op-Amp- Virtual ground(S)- Non-inverting Op-Amp- Frequency response of Op-Amp(L).

Reference Books:

1. Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)
2. Microelectronics- J. Millman and A. Grabel - TMH
3. Operational Amplifiers and Linear Integrated Circuits- Ramakant A. Gayakwad-Prentice Hall of India (PHI).
4. Operational Amplifiers and Linear Integrated Circuits- K. Lalkishore - Pearson Education
5. Analog Electronics- L.K. Maheswari and M.M.S. Anand- PHI
6. Applied Electronics- R.S.Sedha- S Chand &Co
7. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
8. A first Course in Electronics – A.A.Khan & K.K. Dey - PHI
9. Electronic Communication Systems - George Kennedy & Bernard Davis - TMH.
10. Electronic Communication -D. Roddy & J. Coolen- PHI
11. Principles of Electronic Communication Systems –Louis E. Frenzel -TMH

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P.R. GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester – 3
PAPER–IIA

Power supplies, Analog Circuits

Core-03   **Code : EL3205**   **Credit : 3**

<u>2017-2018</u>

<u>Note</u>:- Set the question paper as per the blue print given at the end of this model paper.

Time : 3 hrs   Max. Marks : 70

<u>Section – A</u>

Answer any **FOUR** questions.   4 x 10 M = 40 M

1. Essay question from Module 1
2. Essay question from Module 1
3. Essay question from Module 2
4. Essay question from Module 3
5. Essay question from Module 4
6. Essay question from Module 5
7. Essay question from Module 5

<u>Section – B</u>

Answer any **SIX** questions   6 x 5M = 30M

8. Short answer question from Module 1
9. Short answer question from Module 2
10. Short answer question from Module 2
11. Short answer question from Module 4
12. Short answer question from Module 5
13. Short answer question from Module 5
14. Problem from Module 1
15. Problem from Module 2
16. Problem from Module 5

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Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
1. Rectifiers	2	1	1	30
2. Filters & regulated power supplies	1	2	1	25
3. Amplifiers	1	Nil	Nil	10
4. RC coupled amplifier	1	1	Nil	15
5. Operational Amplifiers	2	2	1	35
Total Marks				115

B.Sc. II Year- Electronics – Semester - IV
PAPER–IIB   [Core-04]   **[Code : EL4205]**
Analog Circuits and Communications
4 Hours/Week[Total : 60 hrs.]   ~~2017-2018~~   **Credit : 3**

Course Learning Outcomes

The subject aims :
- ✓ Students will reliably demonstrate skills in solving simple second order differential equation.
- ✓ The capability to explain the concept of feedback
- ✓ Describes the concept of Oscillators.
- ✓ Understand the Types of modulations.
- ✓ Provide hands-on opportunities for students to construct electronic circuits and build electronic projects of varying difficulty levels, ranging from simple to intermediate
- ✓ Cultivate and sustain students' interest in learning through circuit simulations and self-assessment activities
- ✓ Promote active learning through activities such as information search and presentations.

Learning Outcomes:

Students will be able to:
- ➤ Recall Frequency modulation
- ➤ Observe Triangular wave generator arrangement
- ➤ Illustrate Amplitude modulation
- ➤ Distinguish Positive and negative feedback
- ➤ Explain Principle of oscillations
- ➤ Demonstrate Radio Broadcasting and Reception

P.R. GOVERNMENT COLLEGE (A), KAKINADA
ELECTRONICS SYLLABUS
B.Sc. II Year- Electronics – Semester - IV
PAPER–IIB   [Core-04]   [Code : EL4205]
Analog Circuits and Communications
4 Hours/Week[Total : 60 hrs.]   2017-2018   Credit : 3
**   L = Lecture   T = Tutorial   P = Practice   S =Seminar**

UNIT-I (7 hours)

Feedback

Module – 1   Concept of feedback (L), principle of feedback (L) - Positive and negative feedback(L) - Effect of negative feedback on gain (T), band width(T), noise, input and output impedances(T).

Oscillators

Module - 2   Introduction   to oscillator and oscillations(L) , essentials of transistor oscillator(L), Principle of oscillations (tank circuit(S) - Barkhausen criterion (L).

UNIT-II (23 hours)

Applications of Op-Amps

Module – 3   Summing amplifier- subtractor (T)- Voltage follower(L)- Integrator-Differentiator (P) – Comparator (L)- Logarithmic amplifier(L).

Module – 4   Sine wave [Wein Bridge] (L) and square wave [Astable] generators (L)- Triangular wave generator(S).

Module – 5   Solving simple second order differential equation(T). Op-Amp as voltage regulator(L).

UNIT-III (15 hours)

Communications - 1

Module – 6   Need for modulation(L)-Types of modulation(L) - Amplitude(L), Frequency (L) and Phase modulation(L).

Module – 7   **AMPLITUDE MODULATION:** Amplitude modulation(L)-side bands and band width(S)- modulation index-Analysis of amplitude modulated wave(T) - Amplitude modulator - simple diode modulator (L) and analysis(T) – Demodulation - diode detector (S)and analysis(T) – Limitations(P).

UNIT-IV (15 hours)

Communications - 2

Module – 8   **Frequency modulation**: Varactor diode as frequency modulator(T)(no derivation)- Advantages and disadvantages of frequency modulation(P)- Frequency deviation and carrier swing (S) – modulation index (L) – deviation ratio(L) – percent modulation (L) – Frequency spectrum and band width of FM waves (L) –FM demodulation (L) – double tuned discriminator (L).

Module – 9   **AM and FM radio receivers**: Radio Broadcasting and Reception (L) – Transmitter (L) – Radio Receiver (L)– AM Receiver (P) – FM Receivers - [block diagram approach](P).

Reference Books:

1. Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)
2. Microelectronics- J. Millman and A. Grabel - TMH
3. Operational Amplifiers and Linear Integrated Circuits- Ramakant A. Gayakwad- Prentice Hall of India (PHI).
4. Operational Amplifiers and Linear Integrated Circuits- K. Lalkishore - Pearson Education
5. Analog Electronics- L.K. Maheswari and M.M.S. Anand- PHI
6. Applied Electronics- R.S.Sedha- S Chand &Co
7. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
8. A first Course in Electronics – A.A.Khan & K.K. Dey - PHI
9. Electronic Communication Systems - George Kennedy & Bernard Davis - TMH.
10. Electronic Communication -D. Roddy & J. Coolen- PHI
11. Principles of Electronic Communication Systems –Louis E. Frenzel -TMH

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P.R. GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester – 4
PAPER–IIB

Analog Circuits and Communications

Core-04   **Code : EL4205**   **Credit : 3**

2017-2018

<u>Note</u>:- Set the question paper as per the blue print given at the end of this model paper.

Time : 3 hrs   Max. Marks : 70

Section – A

Answer any **FOUR** questions.   4 x 10 M = 40 M

1.   Essay question from Module 1
2.   Essay question from Module 3
3.   Essay question from Module 4
4.   Essay question from Module 7
5.   Essay question from Module 7
6.   Essay question from Module 8
7.   Essay question from Module 9

Section – B

Answer any **SIX** questions   6 x 5M = 30M

8.   Short answer question from Module 2
9.   Short answer question from Module 3
10.   Short answer question from Module 4
11.   Short answer question from Module 6
12.   Short answer question from Module 8
13.   Short answer question from Module 8
14.   Problem from Module 1
15.   Problem from Module 7
16.   Problem from Module 8

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Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
Feed back	1	Nil	1	15
Oscillators	Nil	1	Nil	5
Applications of Op-Amp.	2	2	Nil	30
Amplitude Modulation	2	1	1	30
Frequency modulation	1	2	1	25
AM & FM radio receivers	1	Nil	Nil	10
Total Marks				115

P.R. GOVERNMENT COLLEGE (A)
SYLLABUS
Electronics[Core]-Practicals
Sem. III & IV

Code : EL4205P   **Credit : 03**

2017-2018
Power Supplies,Analog Circuits and Communications Lab

3 Hours/Week
Total hours-90

1. D.C. Power supply and filters.
2. Single stage RC – coupled amplifier – frequency response.
3. OP-Amp (IC 741) as
   a) Inverting amplifier.
   b) Non- inverting amplifier.
   c) Comparator.
4. OP-Amp (IC 741) as
   a) Integrator.
   b) Differentiator.
5. OP-Amp as Wien bridge oscillator.
6. Astable multivibrator – Determination of frequency (using IC741 Op-Amp).
7. Monostable multivibrator–Determination of pulse width (using IC 741Op Amp).
8. Voltage regulator using IC- 7805and IC-7905.
9. AM modulator and Demodulator.
10. FM modulator.
11. Simulation experiments using appropriate electronic circuit simulation software.
    a.   RC coupled amplifier.
    b.   Wien bridge oscillator.
    c.   Astable multivibrator.
    d.   Amplitude Modulation.
    e.   Frequency Modulation.
    f.   Differentiator
    g.   Inverting amplifier
    h.   Non- inverting amplifier.
    i.   Integrator

Note: Student has to perform the following experiments
(1) Any 7 experiments among the experiment numbers1to10.
(2) In Experiment Number 11, any five is compulsory

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course – IIIA[Core-05]
[Code :EL 5209]
Microprocessor and Applications

3 Hours/Week[Total:45hrs]   **2017-18**   **Credits : 03**

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of microcomputer and microprocessor
- ✓ Comprehension about Programming Examples
- ✓ Know the applications of Interfacing of devices
- ✓ Evaluate the Cycles
- ✓ Analysis Block unit

Learning Outcomes:

Students will be able to:
- ➢ Recall data and control buses.
- ➢ Recognize PIN configuration of 8085 and its description
- ➢ Observe classification of instructions
- ➢ Illustrate Interfacing of I/O devices
- ➢ Demonstrate programmable timer/counter(8253)

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –5
Course – IIIA [Core-05]   [Code :EL 5209]
Microprocessor and Applications

3 Hours/Week[Total:45hrs]   **2017-18**   **Credits : 03**

UNIT –I(15Hrs)

Introduction to microcomputer and microprocessor

Module -1   Intel 8085 microprocessor-Central Processing unit (CPU)-arithmetic and logical unit (ALU)- timing and control unit- register organization-address, data and control buses.

Block unit

Module -2   PIN configuration of 8085 and its description- Block diagram of 8085 Microprocessor - timing diagram.

UNIT – II(10Hrs)

Cycles

Module -3   Instruction cycle, machine cycle, fetch and execute cycle, opcode fetch cycle- execution of MOV(A,B) instruction.

Instruction Set

Module -4   Instruction & data formats - classification of instructions - addressing modes – Different languages. assembler directives-counters   and time delay - Stack and sub routines - interrupts of 8085 microprocessor

UNIT - III(05Hrs)

Programming Examples

Module -5   Addition, subtraction, multiplication and Division, Finding the Largest & Smallest number in an 8-bit Array and addition of 16 bit numbers.

UNIT - IV(15Hrs)

Interfacing of devices

Module -6   Interfacing of I/O devices- and applications- ADC and Successive approximation ADC, DAC and R-2R ladder resistance circuit as DAC and their interfacing to microprocessor-programmable peripheral   interface(8255)-programmable timer/counter(8253) - interrupt

controller(8259) - DMA, DMA controller (8257).

Reference Books

1. Microprocessor Architecture, Programming & Applications with the 8085 & 8080 A
   Ramesh .S. Gaonkar(Wiley Eastern Ltd.)
2. Introduction to Microprocessors   Adithya . P. Mathur (TMH)
3. Fundamentals of Microprocessors & Microcomputers
   B. Ram DhanpatRai& sons 2003.
4. Microprocessors & Peripherals – through objective questions
   B.Venkata Ramani& Soma Skandan, TMH, 1999
5. Microprocessor Architecture and Programming – Ramesh S. Goanker- Penram
6. Introduction to Microprocessor   Aditya. P. Mathur- TMH
7. Microprocessors and Microcontrollers Hardware and Interfacing
   Mathivannan- PHI
8. Fundamentals of Microprocessors and Microcontrollers – B. Ram-DhanpatRai& Sons.
9. Advanced Microprocessor and Peripherals, Architecture, Programming and Interface
   A.K.Ray and K.N. Bhurchandi- TMH
10. Microprocessor Lab Premier   K.A. Krishna Murthy

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P.R. Govt. College (Autonomous), Kakinada

ELECTRONICS PAPER IV A -SEMESTER V

MICROPROCESSORS

MODEL PAPER

2017-18

Core – 05   Code – EL5209   Credits : 03

Note:- Set the question paper as per the blue print given at the end of this model paper.

TIME: 3 Hrs   Max marks :70

Section – A

Answer any **FOUR** questions.   4 x 10 M = 40 M

1. Essay question from Module 1
2. Essay question from Module 2
3. Essay question from Module 3
4. Essay question from Module 4
5. Essay (Program) question from Module 5
6. Essay question from Module 6
7. Essay question from Module 6

Section – B

Answer any **SIX** questions   6 x 5M = 30M

8. Short answer question from Module 1
9. Short answer question from Module 2
10. Short answer question from Module 2
11. Short answer question from Module 3
12. Short answer question from Module 4
13. Short answer question from Module 4
14. Short answer question from Module 6
15. Program from Module 5
16. Program from Module 5

Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
Introduction to microcomputer and microprocessor	1	1	Nil	15
Block unit	1	2	Nil	20
Cycles	1	1	Nil	15
Instruction set	1	2	Nil	20
programming examples	1		2	20
Interfacing of devices	2	1	Nil	25
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course – [Advanced Elective-1]
[Code : EL5210A]
Digital Electronics

2 Hours/Week   **[Total:30 hrs.]**   **2017-18**   **Credits : 02**

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of Number System
- ✓ Comprehension about Logic Gates
- ✓ Know the applications of Semiconductor Memories
- ✓ Evaluate Combinational Circuits
- ✓ Analysis Karnaugh maps

Learning Outcomes:

Students will be able to:
- ➢ Recall Binary number system.
- ➢ Recognize Universal building blocks
- ➢ Observe Flip flops-RS,D flip flops-JK and JK master-slave
- ➢ Demonstrate Logic families

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course – [Advanced Elective-1]
[Code : EL5210A]
Digital Electronics

4 Hours/Week   [Total:30 hrs.]   2017-18   Credits : 02

UNIT-I(7 hours)

Number System

Module -1:-   Binary number system- converting to Binary to decimal and vice-versa, Binary Addition and subtraction using 1's and 2's complement methods, hexadecimal Number system- converting to Binary to hex decimal and vice-versa, BCD code, gray code.

UNIT-II(7 hours)

Logic Gates

Module -2:-   OR, AND, NOT, XOR, 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. TTL   NAND Gate & CMOS NOR Gate.

UNIT-III(9 hours)

Combinational Circuits

Module -3:-   Laws of Boolean algebra-DeMorgan's theorems-
Boolean identities-simplification of Boolean expressions-Karnaugh maps-sum of products (SOP) and Product of sums (POS)

Sequential Circuits

Module -4:-   Flip flops - RS, D flip flops - JK and JK master-slave (working and truth tables).

UNIT-IV(7 hours)

Semiconductor Memories

Module -5:- Semiconductor memories-organization and working, Registers-Buffer register, shift resister, Serial in serial out, Serial in parallel out, parallel in serial out, parallel in parallel out.

Reference Books :

1. Integrated Electronics   Milliman and Halkias TMH
2. Modern Digital electronics   R.P.Jain
3. Electronic Communications   Kennedy
4. Principles of digital electronics   Malvino& Leach
5. Electronics Fundamentals   J.D.Ryder
6. Modern Electronics Communications   Gray and Miller
7. Op.Amp. and Linear integrated circuits   Samuel Seely
8. Basic Electronics and Linear Circuits   Bhargavaet. al
9. Digital Principles and Applications Malvino& Leach- TMH
10. Digital Fundamentals   F.Loyd& Jain- Pearson Education
11. Modern Digital Electronics   R.P Jain-TMH
12. Fundamentals of Digital Circuits   Anand Kumar- PHI
13. Digital Systems   Rajkamal- Pearson Education
14. Digital Electronic Principles and Integrated Circuits- Maini- Willey India
15. Digital Electronics-   Gothman-
16. Digital Electronics   J.W. Bignel& Robert Donova- Thomson
    Publishers (Indian 5th Ed)

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P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course – [Advanced Elective-1]
[Code : EL5210A]
Digital Electronics
MODEL PAPER
2017-2018

TIME:3 Hrs   Max marks :70

Answer any **FOUR** questions.   4 x 10 = 40 M.

1. Essay question from Module 1
2. Essay question from Module 2
3. Essay question from Module 2
4. Essay question from Module 3
5. Essay question from Module 4
6. Essay question from Module 5
7. Essay question from Module 5

Section – B

Answer any **SIX** Questions   6X5 =30M

8. Short answer question from Module 1
9. Short answer question from Module 2
10. Short answer question from Module 2
11. Short answer question from Module 4
12. Short answer question from Module 5
13. Short answer question from Module 5
14. Problem from Module 1
15. Problem from Module 1
16. Problem from Module 3

Blue Print

Chapter Name / Module Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
Introduction to number system	1	1	2	25
logic gates	2	2	Nil	30
Combinational	1	Nil	1	15
Sequential circuits	1	1	Nil	15
Semiconductor Memories	2	2	Nil	30
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course –[Advanced Elective-2]   [Code : EL5210B]
Electronics Instrumentation

2 Hours/Week   [Total:45hrs]   2016-17   Credits : 02

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of Electrodynamometer
- ✓ Comprehension about DC and AC indicating Instruments
- ✓ Know the applications of Instrumentation Amplifiers
- ✓ Evaluate DC and AC bridges
- ✓ Analysis Fundamentals of Spectrum

Learning Outcomes:

Students will be able to:
- ➢ Recall DC and AC bridges
- ➢ Recognize AC bridge
- ➢ Observe Function Generator
- ➢ Demonstrate Oscilloscopes

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course –[Advanced Elective-2]   [Code : EL5210B]
Electronics Instrumentation

2 Hours/Week   [Total:45hrs]   2016-17   Credits : 02

UNIT-I (8 Hours)

DC and AC indicating Instruments

Module 1:   Accuracy and precision - Types of errors - PMMC galvanometer, sensitivity, Loading effect - Conversion of Galvanometer into Ammeter, Voltmeter and Shunt type ohmmeter- Multimeter.

Electrodynamometer

Module 2   Thermocouple instrument - Electrostatic voltmeter -   Watt-hour meter.

UNIT-II (8 Hours)

DC and AC bridges

Module 3:   Wheatstone bridge - Balancing condition for AC bridge - Maxwell's bridge - Schering's bridge - Wein's bridge - Determination of frequency.

UNIT-III (9 Hours)

Oscilloscopes

Module 4:   Block diagram - Deflection Sensitivity - Electrostatic Deflection - Electrostatic Focusing - CRT Screen - Measurement of Waveform frequency, phase Difference and Time intervals - Sampling Oscilloscope - Analog and Digital Storage Oscilloscopes.

UNIT-IV (5 Hours)

Instrumentation Amplifiers

Module 5:   Electronic Voltmeter and Multimeter - Digital Voltmeter - Function Generator.

Wave Analyser

Module 6:   Fundamentals of Spectrum Analyser.

Reference Books

1. A Course in Electrical and Electronic Measurement and Instrumentation - A.K. Sawhney, DhanpatRai and Sons.

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

3. Measurement Systems Application and Design - Ernest O. Doebelin, 4/e, Tata McGraw Hill Publishing Co. Ltd.

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –V
Course –[Advanced Elective-2]   [Code : EL5210B]
Electronics Instrumentation

<u>Note</u>:-Set the question paper as per the blue print given at the end of this model paper.

MODEL PAPER
2017-2018

TIME:3 Hrs   Max marks :70

Answer any **FOUR** questions.   4 x 10 = 40 M.

1. Essay question from Module 1
2. Essay question from Module 1
3. Essay question from Module 3
4. Essay question from Module 3
5. Essay question from Module 4
6. Essay question from Module 4
7. Essay question from Module 5

Section – B

Answer any **SIX** Questions   6X5 =30M

8.   Short answer question from Module 1
9.   Short answer question from Module 2
10.   Short answer question from Module 3
11.   Short answer question from Module 4
12.   Short answer question from Module 5
13.   Short answer question from Module 6
14.   Problem from Module 1
15.   Problem from Module 3
16.   Problem from Module 3

Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
DC and AC indicating Instruments	02	01	01	30
Electrodynamometer	Nil	01	Nil	05
DC and AC bridges	02	01	02	35
Oscilloscopes	02	01	Nil	25
Instrumentation Amplifiers	01	01	Nil	15
Wave Analyser	Nil	01	Nil	05
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics Practicals Semister - V
2017-2018
Digital Electronics Lab

Core Practical – 3   **Course Code : EL5209P**

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. Binary addition & subtraction. (8-bit & 16-bit)

4. Multiplication & division.

5. Picking up largest/smallest number.

6. Arranging –ascending/descending order.

7. Decimal addition (DAA) & Subtraction.

8. Time delay generation

Elective Practical -01   **Course Code : EL5210AP**

Microprocessor Lab
1. Construction of Half and Full adders and verifying their truth tables.
2. Operation and verifying truth tables of flip- flops- RS, D, and JK using ICs.
3. Interfacing R-2R Ladder network (DAC) (4 bits) to generate waveforms.
4. Interfacing a stepper motor and rotating it clockwise/anti clockwise through a known angle.
5. Interfacing a seven segment display.

Elective Practical -02   **Course Code : EL5210BP**

Microprocessor Lab
1. Construction of Decade counters (7490).
2. Driving Stepper motor using JK flip-flop
3. Interfacing ADC for temperature measurement.
4. Simulation experiments using appropriate electronic circuit simulation.
    a) 4-bit parallel adder using combinational circuits.
    b) Decade counter using JK flip flops.
    c) Up/Down counter using JK flip flop.
    d) Up/Down counter using 7493.

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P.R.GOVERNMENT COLLEGE (A), KAKINADA

Electronics-Semester –VI

Course – IIIB[Core-06]

[Code : EL6209]

MICROCONTROLLER

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of Microcontrollers
- ✓ Applications of Port organization
- ✓ Evaluate the time delay generation and calculations
- ✓ Analysis Data communication.

Learning Outcomes:

Students will be able to:

- ➢ Overview of the 8051 family
- ➢ Recall Bit manipulation.
- ➢ Recognize PIN configuration of 8085 and its description
- ➢ Illustrate Boolean operations
- ➢ Demonstrate Data communication

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –6 (Core -6) [Code :EL 6209]
Course – IIIB
MICROCONTROLLER

3 Hours/Week[Total:45hrs]   **2017-18**   **Credits : 03**

UNIT – 1(15hours)

Introduction to Microcontrollers

Module-1   Microprocessors and Microcontrollers. 8-bit and 16- bit Microcontrollers, Harvard and Von-Neumann Architectures- Overview of the 8051 family. Architecture of 8051-Registers, Flag bits and PSW register, register bank and stack, Program counter, Data types and directives, Pin diagram and description of 8051 and memory organization.

UNIT – 2 (10 hours)

Instruction set of 8051 Microcontroller

Module -2   Addressing Modes and accessing memory using various addressing modes. Instruction set, Simple instructions for Data transfer, Arithmetic and Logical operations, Boolean operations, with suitable examples. Time delay generation and calculations.

UNIT – 3 (5hours)

Port assenting

Module -3   Port organization, I/O programming, Bit manipulation, Counter and timer programming for 8051.

UNIT - 4(15 hours)

Data communication

Module -4   Serial Communication – basics of serial communication, Half and Full duplex transmission, Asynchronous Serial Communication and framing, Data communication classification.8051 Serial Communication programming. 8051 Interrupts. Interrupt priority in the 8051.

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems – By Muhammad Ali Mazidi and Janice GillispieMazidi- 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 MykePredko- 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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Electronics-Semester –6 (Core -6) [Code :EL 6209]
Course – IIIB
MICROCONTROLLER

MODEL PAPER

3 Hours/Week[Total:45hrs]   **2017-18**   **Credits : 03**

Note:- Set the question paper as per the blue print given at the end of this model paper.

TIME: 3 Hrs   Max marks :70 M

Section – A

Answer any **FOUR** questions.   4 x 10 M = 40M
1. Essay question from Module 1
2. Essay question from Module 1
3. Essay question from Module 2
4. Essay question from Module 2
5. Essay question from Module 3
6. Essay question from Module 4
7. Essay question from Module 4

Section – B

Answer any **SIX** questions   6 x 5M = 30M
8. Short answer question from Module 1
9. Short answer question from Module 1
10. Short answer question from Module 2
11. Short answer question from Module 2
12. Short answer question from Module 3
13. Short answer question from Module 4
14. Short answer question from Module 4
15. Program/Problem from Module 2
16. Program/Problem from Module 2

Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
Introduction to Microcontrollers:	2	2	Nil	30
Instruction set of 8051 Microcontroller	2	2	2	40
Port assenting :	1	1	Nil	15
Data communication	2	2	Nil	30
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course [Skill based Elective-3][Code : EL6210A]
Advanced controller systems

2 Hours/Week [Total:30 hrs]   **2017-18**   **Credits : 02**

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of Types of controllers
- ✓ Comprehension about microprocessor and microcontroller
- ✓ Know the applications of Embedded systems
- ✓ Evaluate classification of embedded system
- ✓ Analysis of clocking unit

Learning Outcomes:

Students will be able to:
- ➢ Recall I/O busses and I/O interfaces
- ➢ Recognize I/O ports
- ➢ Observe Software Embedded into system

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course [Skill based Elective-3][Code : EL6210A]
Advanced controller systems - Syllabus

2 Hours/Week [Total:30 hrs]   **2017-18**   **Credits : 02**

UNIT-I(10 Hours)

Types of controllers

Module -1:   MCS-51: MCS-51 Architecture, registers: Atmel Microcontrollers-Architectural overview of Atmel 89c51, PIC controllers- over view and features, PICX/7X,ALU, CPU registers, PIC oscillator connection.

UNIT-II(10 Hours)

Types of processors

Module -2:   Microprocessor, Microcontroller, DSP, ASSP, clocking unit, reset Unit, Memories, I/O ports, I/O busses and I/O interfaces.

UNIT-III(10 Hours)
Embedded systems

Module -3:   An Embedded system, Embedded system examples, classification of embedded system, Software Embedded into system, processor embedded into a system.

Reference Books:

1. The 8051 Microcontrollers and Embedded Systems – By Muhammad Ali Mazidi and Janice GillispieMazidi- 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 MykePredko- 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.

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course [Skill based Elective-3][Code : EL6210A]
Advanced controller systems
MODEL PAPER
2017-2018

Note:- Set the question paper as per the blue print given at the end of this model paper.

TIME:3Hrs   Max marks :70

SECTION A

Answer any **FOUR** questions.   4x10 = 40M

1. What is the meaning of Flash memory? What is the basic difference between 89C51 and 8051 Microcontrollers? When should we for flash Microcontrollers?
2. Draw the Block diagram of PIC 16C61 Microcontroller and briefly discuss the various functional blocks.
3. What are the essential structural units in (a) microprocessor (b) Embedded processor (c) Microcontroller (d) DSP (e) ASSP List each of these.
4. What are two types of devices used for designing embedded software? Give examples. Also explain the need of Device drivers and Device management software in the system.
5. Explain I/O ports and I/O interfaces.
6. Explain about software into an embedded system.

Answer any **SIX** questions   6x5 = 30M

SECTION-B

7. Write a note on embedded systems and its classification.
8. Explain "MUL AB" and "DIV AB" instructions and effects on the flags.
9. Draw and explain PIC oscillator counter.
10. Write different types of processor used in embedded system.
11. Draw the pin diagram of PIC 16C61/71 controller.
12. How to calculate clock pules of microcontroller.
13. Explain about I/O bus.
14. Explain about clocking unit.
15. Explain about RTOS.
16. Explain about watch dog timer.

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P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course [Skill based Elective-3][Code : EL6210A]
Advanced controller systems
MODEL PAPER
2017-2018

Note:- Set the question paper as per the blue print given at the end of this model paper.

TIME: 3 Hrs   Max marks :70 M

Section – A

Answer any **FOUR** questions.   4 x 10 M = 40M
1. Essay question from Module 1
2. Essay question from Module 1
3. Essay question from Module 1
4. Essay question from Module 2
5. Essay question from Module 2
6. Essay question from Module 3
7. Essay question from Module 3

Section – B

Answer any **SIX** questions   6 x 5M = 30M
8. Short answer question from Module 1
9. Short answer question from Module 1
10. Short answer question from Module 1
11. Short answer question from Module 2
12. Short answer question from Module 2
13. Short answer question from Module 2
14. Short answer question from Module 3
15. Short answer question from Module 3
16. Program/problem from Module 2

Blue Print

Chapter Name	Essay Questions 10 marks	Short Questions 5 marks	Problems 5 marks	Marks allotted
Types of controllers	3	3	Nil	45
Types of processor	2	3	1	40
Embedded systems	2	2	Nil	30
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course – [Skill based Elective-04]
[Code : EL6210B]
EMBEDDED SYSTEM APPLICATION PROGRAMMINGS

2 Hours/Week   **[Total: 30hrs.]**   2016-17   **Credits : 02**

Course Learning Outcomes

The subject aims :
- ✓ Knowledge of Types of languages
- ✓ Comprehension about Assembly language and High level
- ✓ Know the applications of ADC and DAC
- ✓ Evaluate Interfacing devices
- ✓ Analysis of Stepper motor

Learning Outcomes:

Students will be able to:
- ➢ Recall LCD interfacing
- ➢ Recognize Accessing a specified
- ➢ Observe Machine codes

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course – [Skill based Elective-04]
[Code : EL6210B]
EMBEDDED SYSTEM APPLICATION PROGRAMMINGS

2 Hours/Week   **[Total: 30hrs.]**   **2017-18**   **Credits : 02**

Module -1(10 Hours)

Types of languages: Assembly language ,High level, Machine codes language; Assembly Language programming: Addition, multiplication, subtraction, division, 16-bit addition, 16-bit subtraction, 16-bit multiplication.

Module -2 (10 Hours)
Assembly Language programming: 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.

Module -3 (10 Hours)
Interfacing devices   LCD interfacing to 8051 and displaying on a LCD, –programming for LCD, Interfacing of DAC, interfacing of ADC, Stepper motor interfacing to 8051and Control of a stepper motor, Key Board Interfacing.

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

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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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P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics-Semester –VI
Course – [Skill based Elective-04]
[Code : EL6210B]
EMBEDDED SYSTEM APPLICATION PROGRAMMINGS

MODEL PAPER
2017-2018

Note:- Set the question paper as per the blue print given at the end of this model paper.

TIME:3Hrs   Max marks :70M

Section – A

Answer any **FOUR** questions.   4 x 10 = 40 M.

1. Essay(Program) question from Module 1
2. Essay(Program) question from Module 1
3. Essay(Program) question from Module 2
4. Essay(Program) question from Module 2
5. Essay question from Module 3
6. Essay question from Module 3
7. Essay question from Module 3

Section – B

Answer any **SIX** Questions   6X5 =30M

8. Short answer question from Module 1
9. Short answer question from Module 3
10. Short answer question from Module 3
11. Short answer question from Module 3
12. Program from Module 1
13. Program from Module 1
14. Program from Module 1
15. Program from Module 2
16. Program from Module 2

Blue Print

Chapter Name	Essay Questions (programs) 10 marks	Short Questions 5 marks	Programs 5 marks	Marks allotted
Types of languages	2	1	3	40

Assembly language programming	2	Nil	2	30
Interfacing devices	3	3	Nil	45
Total Marks				115

P.R.GOVERNMENT COLLEGE (A), KAKINADA
Electronics Practicals Semister - VI
2017-2018
Embedded Systems and Applications Lab

3 Hours/Week
Each practical Total hours-45

<u>**Core Practical – 4**</u>   **Course Code : EL6209P**

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

<u>**Elective Practical -03**</u>   **Course Code : EL6210AP**

1. Addition and subtraction of two numbers using ADD/SUBB command
2. Interface a DAC & Generate a stair case wave form – with step duration and no. of steps as variables
3. Flash a LED connected at a specified out put port terminal
4. Interface a stepper motor – and rotate it clock wise or anti clock wise through given angle steps
5. Using Keil software write a program to pick the smallest among a given set of numbers

<u>**Elective Practical -04**</u>   **Course Code : EL6210BP**

1. Multiplication of two numbers using counter method
2. Using Keil software write a program to pick the largest among a given set of numbers

3. Using Keil software write a program to arrange a given set of numbers in ascending order

4. Using Keil software write a program to arrange a given set of numbers in descending order

5. Using Keil software write a program to generate a rectangular wave form at a specified port terminal

LIST OF EXAMINERS / PAPER SETTERS IN ELECTRONICS

2017 – 18

S.No.	Name of the examiner	Subject	Name of the College
1	Ch.Kanakarao 9848943943	Electronics	Y.N.College, Narsapur
2.	S.Venkataraju 9246678554	Electronics	D.N.R.College, Bhimavaram, W.G.Dist.
3.	Dr.Y.V.Apparao	Electronics	S.V.K.P. & Dr.K.S.Raju College of Arts & Science, Penugonda, West Godavari dist.
4.	Dr.P.L.Rambabu	Electronics	M/s A.V.N.College, visakhapatnam
5	K.Ramesh	Electronics	C.R.R. College (M) Eluru
6	K.B.S.Gopal	Electronics	C.R.R. College (M) Eluru
7	P.P.Divakar	Electronics	C.R.R. College (M) Eluru
8	V.Venkateswararao	Electronics	C.R.R. College (M) Eluru
9	A.Veerabhadra Rao	Electronics	C.R.R. College (M) Eluru
10	L.S.R.Ch.V.K.Nageswararao	Electronics	C.R.R. College (M) Eluru
11	K.S.Ch.Srinivasa Rao	Electronics	C.R.R. College (M) Eluru
12	G.Vijayalakshmi	Electronics	C.R.R. College (M) Eluru
13	K.Ravikumar	Electronics	C.R.R. College (M) Eluru
14	A.Srinivasa Rao	Electronics	K.G.R.L.College , Bhimavaram
15	S.Srinivas	Electronics	K.G.R.L.College , Bhimavaram
16	Y.Sri Devi	Electronics	C.R.R. College (W), Eluru
17	S.V.Kumara Sastry	Electronics	S.K.B.R.College, Amalapuram
18	V.Radha Krishna	Electronics	S.K.B.R.College, Amalapuram
19	Dr. K. Jyothi	Electronics	GC (A), Rajamahendravaram
20	E.Nageswara rao	Electronics	GC (A), Rajamahendravaram
21	P.V.S.S.S.N.Reddy	Electronics	GC (A), Rajamahendravaram
22	V. Ratna Sekhar	Electronics	D.N.R. College (A), Bhimavaram
23	K.H.R. Singh	Electronics	D.N.R. College (A), Bhimavaram
24	D.Ganga dharudu	Electronics	M.R. College, Peddapuram
25	A.Satya narayana Murthy	Electronics	M.R. College, Peddapuram
26	K.Venkateswarlu HOD	Electronics	Y.N.College, Narsapur

P. R . GOVERNMENT COLLEGE (A), KAKINADA
Department of Physics & Electronics
Departmental Activities Planned for 2017-2018

The department of Physics and Electronics is planning the following programmes to conduct for the academic year 2016 – 17.

S. No.	Activity	Probable date	Remarks
1	Counseling session for all classes of I year. a) About curriculum b) About semester system c) CBCS system d) About examination system e) About co curricular activities f) About extra curricular activities g) About extension activities h) About carrier guidance	June 4th week	
2	Post admission test	July 1st week	
3	Inaugural function of Physics association a) To explain aims and objectives of dept., b) To start UPKAR SCHEME c) Helping hands	July 1st week	
4	Guest Lecture	July 3rd week	
5	Local Field trip surrounding industries	August 2nd week	
	Two days work shop National level On Solid state physics	August 4th week	
6	Extension activity to local high schools	September 2nd week	
7	UPKAR scheme – disbursement of money to the students for their semester end examinations.	September 4th week	

8	Celebration of Sir C.V.Raman's Birth day	November 7th	
9	Guest lecture	November 3rd week	
10	College Quiz programme	December 2nd week	
11	Helping hands programme	January 1st week	
12	School level and college level Competitions with in the district for two days to inculcate awareness in science and technology	February 3rd week	
13	National Science day celebrations	February 28th	
14	UPKAR scheme – disbursement of money to the students for their semester end examinations.	March 1st week	

Certificate

    The syllabus and model question papers including **<u>Blue – Print</u>** in Electronics subject for 3 years B.Sc. course for the semester I, II, III, IV, V and VI for the academic   year **<u>2017-18</u>**, list of examiners and paper setters, departmental activities which contains pages **61**, is approved in the Board of Studies meeting held in the Department of Physics and Electronics on **<u>06- 04 - 2017</u>**.

	Members of Board of Studies		Signatures of members
1	Sri K.Venkateswara Rao	Chair person	
2	Dr. Y.V.V Appa Rao	University nominee	
3	Dr. K. Jyothi	Subject Expert, Lec.in charge/ phy/Govt. College, Rajamahendravaram	
4	Sri N.L.V.R.K.Prasad	Subject Expert, Lec.in charge/ phy/Govt.Degree College, Ramachandrapuram	
5	Sri B. Sudarshan	Representative from Industry,kkd	
6	Sri. P. Rambabu	Alumni	
7	Sri. U.V.B.B.Krishna Prasad	Member	
8	Sri A.Simhadri	Member	
9	Sri. K. Jaya Dev	Member	
10	Sri B.Srikanth	Member	
11	Smt.A.Prabhavathi	Member	
12	Kum. P.Divya	Member	
13	M. Manisha	Student III MECs	
14	Ram Gopal	Student III MPE (EM)	

Board of studies 2017 - 2018

Board of studies meeting in **Physics** was held in the Education Enrichment Hall of the college at 2-00 P.M. on 06-04-2017. The following agenda items were discussed and the resolutions were taken.

8. Agenda item : Departmental activities for 2017 – 18.

Discussion: The members Dr. K. Srinivasa Rao and University nominees of BOS enquired about different schemes introduced by the department such as Upakar, Helping hands . The chair person explained all the schemes and other activities planned by the department.

Resolution: It is resolved to follow the list of activities enclosed in the BOS book.

9. Agenda item : National / State level Seminars/Work shops/Conferences/training programmes with topics and other details.

Discussion: The Chair person expressed the opinion of the department i.e to conduct "Regional level two days work in Physics" in the 4th week of August 2017. All the members unanimously agreed for the same.

Regarding the national level seminar title- the members suggested the following titles

Resolution: It is resolved to conduct the "Regional level two days work shop on in Physics" in the 4th week of August 2017.

Finally the title for national seminar is " Nano Science & Technology".

10. Agenda item : Change of modules in syllabus content

Discussion: The changes made at the course level both in the Core and Electives were placed before the board of members and the members agreed the changes made in the curriculum and those are given in a separate sheet.

a. *The general elective paper at the end of 4th semester was removed according to CBCS pattern*

Resolution: It is resolved to made and follow the changes and suggestions made by the body in the curriculum from the next academic year i.e 2017-18on wards.

Agenda item : Plan for utilization of funds for autonomous/CPE/other grants available for arranging guest lectures, faculty improvement programs, study tours equipping laboratories, reference books & other necessary teaching- learning material.

Discussion: The following Plan for the utilization of funds is placed before the august body. All the members agreed the plan of expenditure.

Resolution: It is resolved to utilize the funds allotted as shown below and may be changed as per the allocation from the college administration.

S.No.	Fund	Utilization	Amount
1.	UGC Autonomous	BOS	10,000
2.		Invited Lectures	10,000
3.	UGC- General development assistance	Lab equipment	2,50,000
4.		Reference books	50,000
5.		Teaching-learning material	20,000
6.	Spl. Fee funds	Minor repairs, stationery	25,000
7		Out reach programme	10,000
		Total	3,75,000

11. Agenda item : Plan for organizing subject oriented community outreach programmes & allocation of necessary funds.

Discussion: The plan of the department "orient our students to give the training to the S.S.C.students of near by rural high school students in their Physical science subject" was placed before members. The members appreciated the initiative taken by our department and encouraged to proceed

Resolution: It is resolved to orient our students to give the training to the S.S.C students of near by rural high school students in their physical science subject.

12. <u>Agenda item</u>: Institution of new medals/incentives/prizes etc., from alumni, philanthropists, parents, faculty etc.

   Discussion: The department recommended Incentive to best project work or paper publication.

   The members suggested to approach the philanthropists for financial assistance to institute the new medals/ prizes/ incentives.

   Resolution: It is resolved to approach the philanthropists for financial assistance to institute the new medals/ prizes/ incentives.

13. <u>Agenda item</u>: Introduction of new programmes - PG/UG/Diploma and certificates courses.

   Discussion: The Department wants to commence a new P.G. Program M.Sc (Physics) in our College from this academic year i.e. from 2017 – 18. It is resolved to run the P.G. Course in our college with the help of adhoc or part time lecturers as there is severe shortage of faculty in the department. It is resolved to continue an add – on course " Solar Power design & System Integration". For this , representative from Industry Sri. A.V.V.V. Prasad, Solar systems, Kakinada expressed his willingness to give his support to run the course

   As per the orders of the Commissioner , Collegiate Education, the department wants to commence a new restructured course with Maths , Physics , and Renewable Energy Management as group subjects.

   Resolutions: It is resolved to commence a new P.G.Course M.Sc(Physics) in the college and is also resolved to continue the add – on course " Solar Power design & System Integration".

   It is resolved to commence a new restructured course as per the directions of commissioner of Collegiate Education in the college from this academic year 2017 – 18 , provided sufficient financial assistance and teaching staff are available.

14. <u>Agenda item</u>: Any other programme that enhances the learning capacity of students and their employable & knowledge skills.

Discussion: From this academic year onwards the department wants to introduce a new paper" "Basic measurements in Meteorology "as one of the Skill based Elective in the 6th semester. Dr. K. Nanda Gopal , Scientific assistant , India Meteorology took the initiative of introduction of "Basic measurements in Meteorology ". This elective was very much impressed by the Commissioner of Collegiate Education. On the suggestion of our Commissioner , the department wants to introduce the above mentioned paper as Skill based Elective.

Resolution: It is resolved to introduce "Basic measurements in Meteorology "as one of the Skill based Elective in the 6th semester.

15. Change in internal assessment exams for conducting II mid semester by way of Group Discussions (or) Quiz / Assignment/Seminar.

    From the academic year 2017 – 2018 the department will change the pattern of internal assessment exams by the advice of the college administration. The external and internal marks ratio is 60 : 40.

    Two internals are conducted each for 30 marks. The total is reduced to 15 marks.

    The remaining 15 marks internal is further divided in to (05+ 05 + 05). 05 marks for the seminar in the concern course, 05 marks for assignments and 05 marks for group discussion/quiz..

    From now on wards the Ist year students have Two internal exams each for 40 marks. The total is reduced to 20 marks and the remaining 20 marks to be distributed as 10 marks for Assignments, 5 marks for Student seminar and 5 marks for Quiz (or) Group discussion.

    Resolution: It is resolved to conduct internal examination for 40 marks and the model paper is as 6Q x 4 M= 24 M and 2Q x 8M= 16M by giving choice in 8marks question.

16. Agenda item: Suggest panel of examiners/ paper setter & other expert nominees for BOS deliberations.

    Discussion: The Prepared list of Panel of examiners/ paper setter is placed before the board of members. Subject experts Dr. K. Srinivasa Rao & Sri S.S.R. Murthy suggested some names to add and some names to delete in the list.

__Resolution__: It is resolved to submit the revised list of Panel of examiners/ paper setter to the __C__ontroller __O__f __E__xaminations and to __A__cademic __C__ell.

17. <u>Agenda item</u>: Changes if any, in the eligibility conditions for admitting the students to Degree programmes, so as to increase quality in take during admissions.

   __Discussion__: Most of the members expressed their view that being a Government institution it is not possible to fix our own eligibility conditions for admitting the students in degree programme even though it enhances the quality of intake.

   __Resolution__: It is resolved to follow the government eligibility conditions.

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Department of Physics

Changes made in BOS 2017 – 18

S.No	Semester	Additions to modules	Deletions from modules
1	Sem I	5. Geo Stationery Satellite, Motion of a Satellite	2. Concept of Impact Parameter, Scattering Cross Section, Ruther ford scattering angle, 3. Precession of a Top, 4. Simple supported beam carrying concentrated load at mid span, Expression for couple
	Sem II	4. Comparison between longitudinal and transverse vibrations in a bar	1 Compound Pendulum, Measurement of 'g' 2. Energy Considerations, comparison with un damped harmonic oscillator 4. Transverse vibrations in a bar, wave equation and its general solution. Boundary conditions, clamped free bar, free – free bar, bar supported at both ends.
2	Sem III	NIL	1 Position of image planes & magnification of optical system, Unit planes and unit points , nodal planes& nodal points , their location 2. Temporal Coherence and Spatial Coherence, Change of Phase on reflection 3. Interference by a plane parallel film illuminated by a point source, Interference by a film with two non-parallel reflecting surfaces, types of fringes, thickness of a thin transparent plate 4. Circular aperture, Limit of resolution 5. Scattering of light, refraction of plane wave incident on negative and positive crystals, Babinets compensator
	Sem IV	3. Stephen – Boltzmann law-Derivation	1.Experimental verification , toothed wheel experiment 2. Thermodynamic scale of temperature, Change of entropy of a perfect gas, change of entropy when ice changes into steam 3. Joule Kelvin effect, expression for Joule Kelvin coefficient for perfect and Vanderwaal's gas

			5. distribution of energy in the spectrum of Black body, Wein's displacement law
3.	Sem V(Core)	2. Difference between LCR Series & Parallel resonance	1.Critical damping 2. AC & DC motors, single phase, three phase 3.Fermi level , continuity equation 6. realization of these gates using discrete components, Parallel adder circuits
	Sem V (adv. Ele 1)	NIL	NIL
	Sem V (adv. Ele 2)		1.Compton effect experimental verification
4.	Sem VI(Core)	1.Fine structure of H_α line, Application of Zeeman effect 2. Quantum theory of Raman effect	1. Paschen back effect, stark effect 2. Classical theory of Raman effect
	Sem VI (skill based Ele 3)	NIL	NIL
	Sem VI (skill based Ele 4)	NIL	NIL

Certificate

The syllabus and model question papers including **Blue – Print** in Electronics subject for 3 years B.Sc. course for the semester I, II, III, IV, V and VI for the academic year **2017-18**, list of examiners and paper setters, departmental activities which contains pages **61**, is approved in the Board of Studies meeting held in the Department of Physics and Electronics on **06- 04 - 2017**.

	Members of Board of Studies		Signatures of members
1	Sri K.Venkateswara Rao	Chair person	K.uecueb 6/4/17
2	Dr. Y.V.V Appa Rao	University nominee	6.4.17
3	Dr. K. Jyothi	Subject Expert, Lec.in charge/ phy/Govt. College, Rajamahendravaram	Jyothi.k 6/4/17
4	Sri N.L.V.R.K.Prasad	Subject Expert, Lec.in charge/ phy/Govt.Degree College, Ramachandrapuram	6/4/7
5	Sri B. Sudarshan	Representative from Industry,kkd	6.4.17
6	Sri. P. Rambabu	Alumni	P.
7	Sri. U.V.B.B.Krishna Prasad	Member	
8	Sri A.Simhadri	Member	
9	Sri. K. Jaya Dev	Member	
10	Sri B.Srikanth	Member	B.
11	Smt.A.Prabhavathi	Member	A Prabhavathi
12	Kum. P.Divya	Member	P.
13	M. Manisha	Student III MECs	M.Manisha
14	Ram Gopal	Student III MPE (EM)	ramgopl