PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS)
KAKINADA - 533 001, EAST GODAVARI, A.P.

Affiliated to Adikavi Nannaya University

NAAC Accredited with "A" Grade (3.17 CGPA)

BOARD OF STUDIES OF CHEMISTRY

B.Sc. Petrochemicals Under CBCS

Meeting Minutes/Resolutions

22-23

Convened on 03 November 2022

DEPARTMENT OF PETROCHEMICALS
P. R. GOVT. COLLEGE (Autonomous)

Opp. Mc Laurin High School, Raja Ram Mohan Roy Road, Kakinada

www.prgc.ac.in; e-mail: chemistry_dept@prgc.ac.in

PROCEEDINGS OF THE PRINCIPAL,
P.R. GOVERNMENT COLLEGE(A),KAKINADA-A.P

Present: Dr. B. V. Tirupanyam, M.Sc; Ph.D.

R.C.No.12A/A.C/BOS/2022-23, Dated: 24.09.2022

SUB: P.R. Government College(A), Kakinada-UG Board of Studies (BOS). Program/Course-B.Sc,/Petrochemicals, Nomination of Members- Orders issued.

REF: 1. UGC Guidelines of for Autonomous Colleges-2018.

ORDERS:

The Principal, P.R. Government College(A), Kakinada is pleased to constitute UG Boards of Studiesin Petrochemicals for framing the syllabi in Petrochemicals Subject for all Semesters duly following the norms of the UGC Autonomous guidelines.

S.No	Name of the Nominee	Designation
1	Dr. D. Chenna Rao	Chairman& Lecturer Incharge.
2	Dr. M. Trinadh	University Nominee Lecturer in Chemistry Govt. Degree College (Autonomous), Rajahmundry. Ph: 8639551783
3	Dr. V. Narayana Rao	Subject Expert Lecturer in Chemistry Govt. Degree College ,Perumallapuram.
4	Dr. B. Ramesh Babu	Representative from Industry Founder & M.D., BogaR laboratories,Peddapuram. Ph: 9701712028.
5	V. Sanjeeva Kumar	Member
6	T.V.V.Satya Narayana	Member
7	P. Vijay Kumar	Member
8	V. Rambabu	Member
9	G. Pavani	Member
10	Dr. N. Bujji Babu	Member
11	Dr. Ch. Praveen	Member
12	V. Venkateswara Rao	Member
13	G. Sai Subrahmanyam	Member
14	Ch. Siva Rama Guru Charan	Student Alumni Member
15	K. Krupalavanya II MCPC	Student Member
16	V. Vijay Babu II MCPC	Student Member

The above members are requested to attend the BoS meeting on_____2022 and share their valuable reviews, and suggestions on the following functionaries.

- Prepare syllabi for the subject keeping in view the objectives of the college, interest of the stake holders and National requirement for consideration and approval of the IQAC and Academic Council.
- Suggested methodologies for innovative teaching and evaluation techniques.
- Suggest the panel of Names to the academic council for appointment of Examiners.
- Coordinate research, teaching, extension and other activities in the Department of the college.

PRINCIPAL
P. R. Government College(A),
Kakinada

VISION AND MISSION OF THE COLLEGE

Vision

To provide the right academic environment paving way for intellectual excellence, humane feelings and social commitment. The college believes in providing quality education for the socially disadvantaged, economically weaker sections of the society and thereby help them move up the ladder of success and social order.

Mission

- To impart holistic education with special emphasis on character, culture, updated knowledge and skill-oriented learning.
- To make the students enjoy the fruits of globalization without prejudice to their local and cultural environment.
- To impart necessary life skills so as to make them face any challenge in the bigger world – Social, ethical, psychological or professional.

Signatures of the members who attended the

Board of studies in Petrochemicals 03- 11 -2022 at 10.00 AM

S. No.	Name of the member	Designation	Signature
1	Dr. D. Chenna Rao	Chairman, Board of Studies, Lecturer in charge	
2	Dr. M. Trinadh	University Nominee Lecturer in Chemistry, Govt.College(A), Rajamahendravaram	
3	Dr. V. Narayana Rao	Subject Expert Lecturer in Chemistry, GDC, Perumallapuram	
4	Dr. B. Ramesh Babu	Representative from Industry Founder & M.D., BogaR laboratories, Peddapuram. Ph: 9701712028.	
5	Sri. V.Sanjeeva Kumar	Member Lecturer in Chemistry	
6	Sri. T.V.V. Satyanarayana	Member Lecturer in Chemistry	
7	Sri. P. Vijaya Kumar	Member Lecturer in Chemistry	
8	Sri. V. Rambabu	Member Lecturer in Chemistry	
9	Sri.G.Pavani	Member Lecturer in Chemistry	
10	Dr. N. Bujji Babu	Member Lecturer in Chemistry	
11	Dr. Ch. Praveen	Member Lecturer in Chemistry	
12	V. Venkateswara Rao	Member Lecturer in Chemistry	
13	G.Sai subrahmanyam	Member Lecturer in Chemistry	
14	Ch. Siva Rama Guru Charan	Student Almuni	
14	K. Krupa Lavanya II MCPC	Student Member	
15	V. Vijaya Babu II MCPC	Student Member	

P.R. GOVT.COLLEGE (A), KAKINADA

DEPARTMENT OF PETRO CHEMICALS

Minutes of board of studies (BOS) meeting

2022-23 on _____2022

Meeting of Board of Studies in Petro Chemicals is convened on _____ through offline at P.R. Govt. College (A), Kakinada.

Venue:

Conference Hall, Dt: ------.

The Principal Dr. B.V. Tirupanyam,

Chairman: Dr. D. Chenna Rao

Chairman and lecturer in charge,

Department of Chemistry

University Nominee: Dr. M. Trinadh,

Lecturer in Chemistry,

Govt. College (Autonomous), Rajamahendravaram,

Industrialist: Dr. B. Ramesh Babu,

Founder & M.D., BogaR laboratories, Peddapuram,

Subject Expert Dr.V.NarayanaRao,

Lecturer in Chemistry,

Government Degree College Perumallapuram,

All the faculty members of Chemistry Department and student alumni attended the meeting.

Agenda:

- To discuss the Semester System and Choice Based Credit System (CBCS) being implemented for the past 06 years, i.e., w.e.f. 2015-16.
- To discuss and approve the Continuation/Modifications of the syllabus for the Odd & Even Semesters of I, III & V Years for 2022-23.
- Grant of Extra credits for Online SWAYAM MOOCs etc.
- Syllabus, Model Question Papers and Model Blue Prints for I, II, III, IV, Vand VI Semesters.
- Teaching learning methodology by 60:40 (External: Internal) ratio for the present II- and III-Year Students and 50:50 (External: Internal) ratio I Year Students w.e.f. 2022-23.
- Panel of paper setters and examiners.
- Proposals for Community Service Projects/Extension activities for the benefit of the society.
- Department action plan for 2022-23.

To discuss and resolve the minor modifications/refinement if any, in the Chemistry cluster electives CI, CII & CIII as majority of the students opting this cluster as their choice. Any Other Proposal with the Permission of the Chairman.

Resolutions:

The following agenda items are discussed and resolutions are made.

- It is resolved to continue choice based credit system in the chemistry combination programmes as per the directions of the CCE, Vijayawada to the first year and second year and final year student's w.e.f. 2018-19.
- It is resolved to approve the Continuation/Modifications of the syllabus for the Odd & Even Semesters of I, II & III Years for 2021-22.
- It is resolved to encourage students to active participation in various activities and give extra credits for students after successful completion of a particular activity such as SWAYAM, MOOCS etc., (Annexure –II)
- It is Resolved to follow 60%-40% external and internal w.e.f. 2017-2018 admitted batches and it continued in present second and third year students.
- It is resolved to follow 50%-50% external and internal for first year w.e.f 2021-22 admitted batch.
- It is resolved that every student should maintain 75% attendance for both theory and practicals inorder to attend the Mid and Semester examination.
- It is resolved to conduct departmental activities such as OZONE DAY, CHEM FEST, CHEMISTRY DAY and SCIENCE DAY. (Annexure-I)

- It is resolved to implement the recommended andragogy for the first semester 2022-23 9.Resolved to conduct practical examinations semester wise.
- It is resolved to organize guest lectures by eminent professors.
  Resolved to implement pass minimum for internal assessment for CBSE pattern students as the pattern is learner oriented.
- It is resolved to maintain status quo for same question paper pattern in II, III years. The following paper setters are recommended

1. Sri. U. Sai Krishna, Govt. College(A), Rajamahendravaram.
2. Dr. M. Trinadh, Govt. College(A), Rajamahendravaram
3. Dr. V. Narayana Rao, GDC, Perumallpuram.
4. Sri. M. Sudhakar, Govt. College(A), Rajamahendravaram.
5. Sri. K. Anand, GDC, Pithapuram.
6. Dr. CH. Vijay Vardhan, GDC, Perumallpuram.
7. Sri B. Surendra, GDC, Tadepaliigudem.

Semester wise/ Paper wise Marks / Credits allotted.

YEAR	SEMESTER	PAPER	TITLE	MARKS	CREDITS
I	I	I	Fundamentals of Petroleum Production	100 (50:50)	04
			Practical – I	50	02
	II	II	Modern Petroleum Refining Processes	100 (50:50)	04
			Practical – II	50	02
II	III	III	Introduction to Chemical Engineering	100 (50:50)	04
			Practical – III	50	02
	IV	IV	Heat Transfer and Polymers	100 (50:50)	04
			Practical – IV	50	02
III		V	Mass Transfer operations	100 (50:50)	04
			Practical – V	50	02
	V	VI	Petrochemicals-I	100 60:40	04
			Practical – VI	50	02
		VII	Petrochemicals II	100 60:40	04
			Practical - VII	50	02

	Pithapur Rajah's Government College(Autonomous) Kakinada	Program &Semester I B.Sc. Mathematics, Chemistry, Petrochemicals & Semester-II			
CourseCode	Fundamentals of Petroleum Production				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites:	Modern petroleum refining process	60	10	30	4+1

Course Objectives:

To gains basic knowledge on crude oil refining.

Course Outcomes:

On Completion of the course, the students will be able to-	
CO1	Gains knowledge crude oils processing
CO2	Understands the crude oils distillation
CO3	Gains knowledge on crude oils cracking
CO4	Gains knowledge on catalytic ocnversions on crude oil
CO5	Gains knowledge on petroleum fractions

Course with focus on employability / entrepreneurship / Skill Development modules

Skill Development		Employability		Entrepreneurship	

Syllabus:

Unit – 1: Petroleum Processing Data

Classification of Crude Oils, API Gravity, Characterization factors and correlation Index.

ASTM & TBP distillation of crude petroleum, Average boiling points, thermal properties of petroleum fractions.

Unit –2:Crude oil Distillation:

Impurities in crude oils, Need for desalting of Crude oils, - electrical desalting of crude oils, Heating of crude in pipe still Heaters, Atmospheric distillation of crude oil, vacuum distillation of reduced crude oil,

Unit -3:Cracking processes:

Thermal cracking Reactions – Thermal cracking process – Dubbs two coil Cracking, Visbreaking

Catalytic cracking: mechanism of catalytic cracking

Moving Bed Air – lift thermofor catalytic cracker,

Hydro Cracking – Isomax hydro cracking process

Unit – 4: Catalytic Conversions, and Finishing processes.
Catalytic Reforming: - Reforming reactions – catalytic reforming process. Alkylation: Alkylation Reactions, Sulphuric Acid alkylation and HF alkylation. Isomerization: Aluminium chloride isomerization process,

Unit – 5: Petroleum Fractions: (Gasoline and Kerosene)
Gasoline: – ASTM distillation, Reid – vapour pressure, Octane number,Types of additives used in gasoline.

Kerosene: – Flash & Fire Points, Smoke point, Aniline point – Experimental determinations, Hydro treating process for smoke point improvement.

SEMESTER -II

PRACTICAL II(AT THE END OF SECOND SEMESTER)

1. Determination of specific gravity of Petroleum fractions by Hydrometers.
2. ASTM Distillation of Gasoline
3. Determination of Specific gravity by Specific gravity bottle.
4. Determination of Specific gravity by Pyknometer.

SCHEME OF EVALUATION **Max. Marks: 50**

1. Procedure to be written in the first 15 minutes **15 Marks**
2. Recording of data and reporting the value...
   - Up to 2% error **25 Marks**
   - Error up to 5% **15 Marks**
   - Error greater than 5% **10 Marks**
3. Viva – Voice **5 Marks**
4. Record **5 Marks**

I B.Sc., - Petroleum & Petrochemicals

Paper –II: SEMESTER -II

Modern Petroleum Refining Processes

QUESTION BANK

Essay Questions: 10 Marks

UNIT –I:

1. Explain about the experimental details of ASTM distillation of crude oil
2. Write the experimental details of TBP Analysis
3. Explain about thermal properties of petroleum and petroleum fractions
4. Write about various average boiling points.
5. Explain about the Characterization factor and correlation Index.
6. Write about the Classification of Crude Oils and API Gravity

UNIT –II:

1. Explain about the heating of crude oils in pipe still heaters
2. Write about the atmospheric distillation of crude oil
3. Write about the vacuum distillation of reduced crude oil
4. Explain about the electrical desalting of crude oils.
5. Write about the atmospheric distillation of crude oil

UNIT –III:

1. Write about different types of cracking processes and thermal crackingreactions.
2. Explain about the moving bed air lift thermofor catalytic cracking
3. With a neat flow diagram, describe the process of fluid catalytic cracking
4. With a neat flow diagram describe Isomax - Hydrocracking process

UNIT –IV:

1. With a neat flow diagram describe the process of catalytic reforming
2. With a neat flow diagram describe the process of cascade sulphuric acidalkylation.
3. With a neat flow diagram describe the process of hydro fluoric acidalkylation
4. With a neat flow diagram describe the process of Aluminum chlorideisomerization.

UNIT –V:

1. Explain about the experimental details of ASTM distillation of Gasoline
2. Write about the experimental details of determination of Reid vapour pressureof the Gasoline
3. Write about the experimental details of the determination of Flash point andFire point by Pensky marten apparatus.
4. Explain about the experimental determination of smoke point of kerosene oil

Short Questions: 5Marks

UNIT - I:

1. Write about the classification of crude oils
2. Explain about API Gravity
3. Write about Characterization factor
4. Write about Correlation index
5. Write about thermal properties of petroleum fractions

UNIT - II:

1. Write about the impurities in crude oils
2. Write a short note on desalting of crude oils
3. Explain briefly about crude oil distillation
4. Explain briefly about Vacuum distillation

UNIT - III:

1. Write a short note on thermal cracking
2. Explain about thermal cracking reactions
3. Explain briefly the process of hydro cracking
4. Write a note on catalytic cracking

UNIT - IV:

1. Write briefly about the reactions during catalytic reforming
2. Write about the catalysts used for alkylation process
3. Explain briefly about isomerization process

UNIT - V:

1. Write a short note on Octane number
2. Write briefly about the additives used in gasoline
3. Write briefly about the Aniline point determination

P.R.GOVT. COLLEGE(A), KAKINADA.

I B.SC.- PETROLEUM & PETROCHEMICALS

MODEL QUESTIONPAPER

PAPER – II – MODERN PETROLEUM REFINING PROCESS

Time: 2 Hrs. **Max. Marks 50**

PART-I

Answer any THREE questions by attempting at least ONE question from each section

Each Question carries **TEN** marks. 3X10=30M

SECTION – A

1. Question from Unit –I
2. Question from Unit –II
3. Question from Unit –III

SECTION-B

4. Question from Unit - IV
5. Question from Unit – V
6. Question from unit-II

PART-II

Answer any **FOUR** Questions from the following.
Each Question carries **FIVE** marks. 4 x 5 =20M

7. Question from unit -I
8. Question from unit -II
9. Question from unit -III
10. Question from unit -IV
11. Question from unit -V
12. Question from unit -I
13. Question from unit -III

Note to Paper Setter: -

In section I one essay question is to be set from each of the five units.
Similarly in Section II, one short answer question is to be set from each of the 5 units.

Referencebooks:

1) Modern Petroleum Refining processes by Dr. B.K. Bhaskara Rao. Oxford I B H.
2) Petroleum Refining Technology – by Dr. Ram Prasad, Khanna Publishers, Delhi.

WebLinks:

1.https://youtu.be/PdStB9z37eA

2.https://youtu.be/OQF-GZnQ6Dk

3. https://www.youtube.com/watch?v=nrx413rX-3g&list=PLwdnzlV3ogoXXQcErZna6qDw5P-qPMvWQ

Activities & Benchmarks Proposed (Table)

1.Assignments
2.Seminars
3.Group Discussion
4. Quiz

CO-PO Mapping:

(1:Slight [Low]; 2:Moderate[Medium]; 3:Substantial[High], '-':No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO 1	3	2	3	1	3	2	3	2	2	2	3	3	2
CO 2	3	3	2	3	2	2	1	2	2	2	3	3	2
CO 3	3	3	3	3	3	2	2	2	2	2	3	3	2
CO 4	3	3	3	3	3	2	2	2	2	2	3	2	3
Avg	3	2.8	2.8	2.5	2.8	2	2	2	2	2	3	2.8	2.3

Weightage to content
Semester -II
Paper-II

S.No	Course Content	Long Answer	Short Answer	Total marks	As per Blooms Taxonomy
1	Petroleum processing data	1	2	20	Understanding, Application
2	Crude oil distillation	2	1	20	Remembering, Understanding
3	Cracking process	1	2	20	Application & Creation
4	Catalytic conversions	1	1	15	Remembering, Understanding
5	Petroleum fractions	1	1	15	Application & Creation
	TOTAL	6	7	90	