

PITHAPUR RAJAH'S GOVERNMENT COLLEGE

An Outcome Based Autonomous Institution Accredited with NAAC Grade "A" (3.17 CGPA)

Affiliated to Adikavi Nannaya University Rajamahendravaram

KAKINADA - 533 001, AP.

BOARD OF STUDIES OF CHEMISTRY

B.Sc. Hons. ANALYTICAL CHEMISTRY MAJORS

UNDER CBCS

Meeting Minutes/Resolutions



Convened on 30 April 2024AY 2024- 25

DEPARTMENT OF CHEMISTRY

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE
(AUTONOMOUS)**

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

www.prgc.edu.in;

e-mail: chemistry@prgc.edu.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.2/A.C./BOS/2024-25,

Dated: 23.04.2024

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

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

ORDERS:

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

S. No	Name of the Person	Designation
1	V. Sanjeeva Kumar	Chairman & Lecturer In charge
2	Dr. K. Jhansi Lakshmi ASD Govt. Degree College for Women (Autonomous)Kakinada	University Nominee
3	Dr. D. Chenna Rao Lecturer in Chemistry, Govt. Degree College, Yeleswaram	Subject Expert -I
4	U. Sai Krishna Lecturer in Chemistry, Govt. College, (Autonomous)Rajamahendravaram	Subject Expert - II
5	Dr. N. Ratnakar, AARKISH PHARMACEUTICALS INS NJ,NEW JERSEY	Subject Expert - III
6	Dr. P. KARUNA RAMAN MD, IDEAL ORGANICSHYDERABAD.	Representative from Industry
7	T. V. V. Satyanarayana	Member
8	P. Vijay Kumar	Member
9	V. Ram babu	Member
10	G. Pavani	Member
11	Dr. N. Bujji Babu	Member
12	Dr. Ch. Praveen	Member
13	V. Venkateswara Rao	Member
14	U.S.N. Prasad	Member
15	K.N.S. Swami	Member
16	S. Vijaya Lakshmi	Member
17	D.Bhavyasri	Member
18	K.Umamaheswari	Student Alumni Member
19	Deepthi Anusha II FBC	Student Member
20	BVNagendra Kumar, II MCCS	Student Member
21	J.Veera Durga I CHEMISTRY MAJORS	Student Member

The above members are requested to attend the BoS meeting on 30-04-2024 and share their valuable reviews, and suggestions on the following functionaries.

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


PRINCIPAL

P. R. Government College(A),
Kakinada

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (A) DEPARTMENT OF CHEMISTRY

Meeting of Board of Studies in Analytical Chemistry is convened on 30 April 2024 through offline/ online at P.R. Govt. College (A), Kakinada, at 10.00 AM.

Venue: JKC AC HALLS, Dt: 30-04-2024, Tuesday – 10.00 A.M.

The Principal Dr. B.V. Tirupanyam; Chairman V. Sanjeeva Kumar; University Nominee Dr. K. Jhansi Lakshmi, Lecturer in Chemistry, ASD Govt. Degree College for Women (Autonomous), Kakinada; Dr. P. KARUNA RAMAN MD, IDEAL ORGANICS HYDERABAD. Industrialist: Subject Experts Dr. D. Chenna Rao, Lecturer in Chemistry, Govt. Degree College, Yeleswaram and U. Sai Krishna Lecturer in Chemistry, Govt. College, (Autonomous), Rajamahendravaram all the faculty members of the Chemistry Department and student alumni attended the meeting.

Agenda:

1. To discuss the I,II,III, IV semesters of a Single major system as B.Sc. Chemistry (Hons), B.Sc. Organic Chemistry (Hons), B.Sc. Analytical Chemistry (Hons) from the academic year 2024-25. & V, VI semesters of CBCS System
2. To discuss the Semester System and revised Choice Based Credit System (CBCS) being implemented for the past 04 years, i.e., i.e. 2020-21.
3. To discuss and approve the Continuation/Modifications of the syllabus for the Odd & Even Semesters of I, II Years for 2024-25.
4. Grant of Extra credits for Online SWAYAM MOOCs, edX, Coursera etc.
5. Syllabus, Model Question Papers and Model Blue Prints, Cos, POs, & PSOs mapping for I, II, III and IV Semesters.
6. Teaching-learning methodology by 50:50 (External: Internal) ratio I & II Year Students commenced w.e.f. 2021-22.
7. Minimum attendance of 75% for both I mid-term examination, and II mid-term examination under CIA component shall be the benchmark for attendance and it shall be approved in the BOS.
8. Minimum of 50% integration of ICT into a transaction of curriculum.
9. Remedial coaching and assignments for slow learners, project works, research, Conferences, Industrial /academic tours & PG Entrance Coaching etc., for advanced learners.
10. Panel of paper setters and examiners.
11. Implementation of compulsory Community Service Project (CSP)/ Internships/ Apprenticeship and Extension activities for the benefit of the society.
12. Department action plan for 2024-25.
13. To discuss and resolve the minor modifications/refinement if any, in the I, II, III and IV, Semester.
14. Any Other Proposal with the permission of the Chairman.
15. Proposal to start new UG honors course i.e., BSc., Pharmaceutical Chemistry for the AY 2024-25.

Resolutions:

1. It is resolved to Approve the syllabus after certain additions and deletions were made during the

- BOS meeting in the existing syllabus for I,II,III, IV semesters of a Single major system as B.Sc. Chemistry (Hons), B.Sc. Organic Chemistry (Hons), B.Sc. Analytical Chemistry (Hons) from the academic year 2024-25. & V, VI semesters of CBCS System.
2. It is resolved to approve the syllabus as per the recommendations of the BOS for the Semester System and revised Choice Based Credit System (CBCS) being implemented for the past 04 years, i.e., i.e. 2020-21.
 3. It is resolved to approve the Continuation/Modifications of the syllabus for the Odd & Even Semesters of I, II Years for 2024-25. As per the recommendations of the BOS.
 4. It is resolved to approve the Extra credits for Online SWAYAM MOOCs, edX, Coursera etc. which is as per the guidelines of Autonomous examination Cell.
 5. It is resolved to approve Syllabus, Model Question Papers and Model Blue Prints, Cos, POs, & PSOs mapping for I, II, III and IV Semesters. With respect to the discussions held in the BOS.
 6. It is resolved to approve the teaching learning methodology by 50:50 (External: Internal) ratio I, II & Year Students commenced w.e.f. 2021-22.
 7. It is resolved to implement the Minimum attendance of 75% for both I mid-term examination and II mid-term examination under CIA component shall be the benchmark for attendance.
 8. It is resolved to approve Minimum of 50% integration of ICT in transaction of curriculum.
 9. It is resolved to implement Remedial coaching and assignments for slow learners, project works, research works, Conferences, Industrial /academic tours & PG Entrance Coaching etc., for advanced learners.
 10. It is resolved to propose Panel of paper setters and examiners for the academic year 2024-25.
 11. It is resolved that the mandatory Community Service Project (CSP)/ Internships/ Apprenticeship and Extension activities are mandatory for overall growth of the student and benefit to the society.
 12. It is resolved to approve Department action plan for the AY 2024-25.
 13. It is resolved to approve the minor modifications/refinement if any, in the I, II, III and IV Semester.
 14. It is resolved to send proposal to start new UG honors course i.e., B.Sc., Pharmaceutical Chemistry for the AY 2024-25.
 15. It is resolved to send proposal to start diploma course in as per the NEP-2020 norms for the academic year 2024-25.

DEPARTMENT OF CHEMISTRY

ACTION PLAN

ACADEMIC YEAR 2024-2025

S.No	Month	Activity planned
1	July 2024	Enrollment of 3 months MOOCS/SWAYAM/NPTL/Edex etc by staff
2	July 2024	Placement Drive through JKC
3	August 2024	Invited talk
4	August 2024	Study tour
5	August 2024	Certificate/ Diploma course
6	September 2024	National seminar/ online/offline
7	September 2024	Sep 16 Ozone Day
8	October 2024	Certificate course/Diploma course
9	November 2024	Invited talk
10	December 2024	Enrollment of 3 months MOOCS/SWAYAM/NPTL/Edex etc by students
11	December 2024	International webinar
12	December 2024	10 December National Chemistry Day
13	January 2025	Invited talk
14	January 2025	Career Guidance
15	February 2025	Community outreach program (In connection with the National Science Day)
16	March 2025	Review of Research Publications for 24-25

PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A)
KAKINADA

IMPORTANT DAYS OF OBSERVATION FOR AY 2024-25

MONTH	DATE	NAME OF DAY	DEPARTMENT/STUDENT SUPPORTING WING
JANUARY	26th	Republic Day	All Departments and student supporting wings
FEBRUARY	28th	National Science Day	All Science departments
MARCH	22nd	World Water Day	Chemistry
JUNE	5th	World Environment Day	All Science departments
JULY	11th	World Population Day	All Arts depts.
	28th	World Nature Conservation Day	Life sciences
AUGUST	15th	Independence Day	All Departments and student supporting wings
SEPTEMBER	16th	World Ozone Day	Chemistry
	21st	International Day of Peace	History
	23rd	Mole Day	Chemistry
NOVEMBER	11th	National Education Day	

Signature of the members who attended the board
of studies in B.sc Honors Chemistry and B.sc Three
major system chemistry on 30th April 2024 at 10
a.m. Mode of conduct of meeting offline / online

SL.NO	NAME	SIGNATURE	CONTACT NO.
1	V. Sanjeeva Kumar	V. S. I	984938465
2	Dr. K. Jhansi Lakshmi	K. Jhansi Lakshmi	9441256409
3	Dr. P. KARUNA RAMAN MD, IDEAL ORGANICS, HYDERABAD.	Dr. P. Karuna Raman	9398249493
4	Dr. D. Chenna Rao	D. Chenna Rao	9560740108
5	U. Sai Krishna	U. Sai Krishna	9347334707
6	T. V. V. Satyanarayana	T. V. V. Satyanarayana	9490876913
7	P. Vijay Kumar	P. Vijay Kumar	9652023082
8	V. Ram babu	V. Ram babu	9948485537
9	G. Pavani	G. Pavani	9912526493
10	Dr. N. Bujji Babu	Dr. N. Bujji Babu	9441394792
11	Dr. Ch. Praveen	Dr. Ch. Praveen	9491185518
12	V. Venkateswara Rao	V. Venkateswara Rao	9885165588
13	U.S.N. Prasad	U.S.N. Prasad	6300882584
14	K.N.S. Swamy	K.N.S. Swamy	9908900962
15	S. Vijaya Lakshmi	S. Vijaya Lakshmi	9133941966
16	D.Bhavyasri	D. Bhavyasri	
17	Ch. Veni	Ch Veni	
18	Deepthi Anusha II FBC	P. Deepthi Anusha	7382468869
19	Syamala, II MCCS	A. Syamala	6300192780
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B. SC ANALYTICAL CHEMISTRY MAJOR COURSE STRUCTURE
SEMESTER-III ACADEMIC YEAR 2024-25

YEAR	SEMESTER	PAPER	TITLE	MARKS	CREDITS
II	III	V	Quantitative Methods of Analysis	50	3
			Practical-V	50	1
		VI	Separation Methods – I	50	3
			Practical-VI	50	1
		VII	Physical Chemistry-I	50	3
			Practical-VII	50	1
		VIII	General Chemistry and Inorganic Chemistry	50	3
			Practical-VIII	50	1

CIA structure for Single Major system

- Out of 50 marks for CIA, 25 marks are allocated for Mid examinations. In each semester two mid examinations will be conducted and the average of the two is considered.
- I mid examination is to be conducted in offline mode at college level and II mid examination is to be conducted in online mode at department level.
- I mid examination to be conducted in offline mode in which the student should attempt **one essay** question for ten marks out of two questions, **two short** answer questions with five marks each out of four questions and five objective questions with one mark each for each paper.
- Question paper is to be given as per the following structure for the courses with **4 units**

Unit No	Long Answer Question(10M)	Short Answer Question (5 M)	Objective Questions(1M)
I	1	0	1
II	1	0	1
III	0	2	1
IV	0	2	1+ one question from any unit with more syllabus weightage

- For I mid examination to be conducted in offline mode, Question paper is to be given as per the following structure for the courses with **5 units**

S.No	Unit No	Long Answer Question(10M)	Short Answer Question (5 M)	Objective Questions (1M)
1	I	1	0	1
2	II	1	0	1
3	III	0	1	1
4	IV	0	1	1
5	V	0	1+ one question from any unit(III or IV or V) with more syllabus weightage	1

- The remaining 25 marks for CIA are allocated as per the following structure.

Study Project- 10M	Viva on theory- 3M	Assignment- 5M	Seminar- 5M	Clean & green and Attendance- 2M
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SEMESTER-I

I-SEMESTER

COURSE 1: ESSENTIALS AND APPLICATIONS OF MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

Hours: 5hrs/week

Credits: 4

Course Objective:

The objective of this course is to provide students with a comprehensive understanding of the essential concepts and applications of mathematical, physical, and chemical sciences. The course aims to develop students' critical thinking, problem-solving, and analytical skills in these areas, enabling them to apply scientific principles to real-world situations.

Learning outcomes:

1. Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures.
2. To Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations
3. To Explain the basic principles and concepts underlying a broad range of fundamental areas of chemistry and to Connect their knowledge of chemistry to daily life.
4. Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts.
- 5 To explore the history and evolution of the Internet and to gain an understanding of network security concepts, including threats, vulnerabilities, and countermeasures.

	PITHAPUR RAJAH'S GOVERNMENT COLEGE (A) Kakinada DEPARTMENT OF CHEMISTRY	Program & Semester I B.Sc. (I Semester)			
Course CodeCHE-1	TITLE OF THE COURSE ESSENTIALS AND APPLICATIONS OF MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES (MATHS STREAM)				
Teaching	Hours Allocated: 9 (Theory)	L	T	P	C
Pre-requisites	Fundamentals	9	9	0	3/5

UNIT III: ESSENTIALS OF CHEMISTRY: : 9hrs

Definition and Scope of Chemistry- Importance of Chemistry in daily life -Branches of chemistry and significance- Periodic Table- Electronic Configuration, chemical changes, classification of matter, Biomolecules- carbohydrates, proteins, fats and vitamins.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (A), KAKINADA

DEPARTMENT OF CHEMISTRY

I SEMESTER (Admitted batch 2023-24)

Course -I

Essentials and Applications of Mathematical, Physical and Chemical Sciences

Question Bank

Unit - III

Essay Questions 10M

- 1) Discuss about the various branches of chemistry? BT-2
- 2) Write a note on classification of carbohydrates? BT-1
- 3) Write an essay on classification of Amino acids? BT-1

Short questions 5M

- 1) Explain the classification of lipids? BT-1
- 2) Distinguish anomers and epimers with suitable examples? BT-3
- 3) What are essential and non essential amino acids? Give examples. BT-2
- 4) Explain fat soluble vitamins? BT-1
- 5) Explain scope of chemistry? BT-1

PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A) KAKINADA

I SEMESTER (Admitted batch 2023-24)

COURSE 1-ESSENTIALS AND APPLICATIONS OF MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

MODEL QUESTION PAPER

Time: 2 Hours

Max Marks: 50M

Section -I

Answer any three of the following questions. Must attempt at least one question from each part. Each question carries 10 Marks.

3 X 10 = 30M

Part – A

1. Change the complex number $-4 + i4\sqrt{3}$ in polar form. (BT-2)
2. Explain Newtonian mechanics and Relativistic mechanics. (BT2)
3. Discuss about the various branches of chemistry? BT-2

Part – B

4. Spring has a natural length of 1m. A force of 24 N Stretches the spring to a length of 1.8m
 - a) Find the force constant k
 - b) How much work will be taken to stretch the spring 2 m beyond its natural length?
 - c) How far will a 45-N force stretch the spring.
5. Categorize various types of Networks? [BT2]
6. Summarize the various applications of Physics in Environmental Monitoring and Sustainable Technologies. (BT3)

Section-II

Answer any three of the following questions.

4 X 5 = 20M

7. Evaluate $\sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ$ (BT-3)
8. Evaluate the angle between the vectors $\vec{a} = i\hat{e}_1 - j\hat{e}_2 + k\hat{e}_3$ and $\vec{b} = i\hat{e}_1 + j\hat{e}_2 - k\hat{e}_3$ (BT-3)
9. Explain Laws of Thermodynamics and Physical significance. (BT1)
10. Distinguish anomers and epimers with suitable examples? BT-3
11. What are essential and non essential amino acids? Give examples. BT-2
12. Explain the applications of chemistry in materials science? BT-1
13. What is cryptography? What are its fundamental types? [BT1]



	PITHAPUR RAJAH'S GOVERNMENT COLEGE (A) Kakinada DEPARTMENT OF CHEMISTRY	Program & Semester			
Course CodeCHE-2	TITLE OF THE COURSE ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES (MATHS STREAM)	I B.Sc. (I Semester)			
Teaching	Hours Allocated: 9 (Theory)	L	T	P	C
Pre-requisites		9	9	0	3/5

UNIT III: ADVANCES IN CHEMISTRY: 9hrs

Computer aided drug design and delivery, nano sensors, Chemical Biology, impact of chemical pollutants on ecosystems and human health, Dye removal - Catalysis method

UNIT IV: ADVANCED APPLICATIONS OF MATHEMATICS, PHYSICS & CHEMISTRY 9hrs

Solid waste management, Environmental remediation- Green Technology, Water treatment.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (A), KAKINADA

DEPARTMENT OF CHEMISTRY

I SEMESTER (Admitted batch 2023-24) Course -2

Advances in Mathematical, Physical and Chemical Sciences Question Bank

Unit – III

Essay Questions 10M

1. What is Computer Aided Drug Design? Write briefly about Structure based drug design and Ligand based drug design? BT1
2. Explain the impact of Chemical pollutants on human health? BT2

Short answer Questions 5M

1. What are nano sensors? Write the applications of nano sensors? BT1
2. Explain dye degradation by photocatalysis method? BT3
3. Write about green house effect? BT1
4. Write the applications of chemical biology? BT2

Unit – IV

Short answer Questions 5M

1. Write briefly about the solid waste management? BT1
2. Analyse various methods of water treatment? BT3



PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A) KAKINADA
I SEMESTER (Admitted batch 2023-24)
COURSE 2- ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

MODEL QUESTION PAPER

Time: 2 Hours Max Marks: 50M

Section -I

Answer any three of the following questions. Must attempt at least one question from each part. Each question carries 10 Marks. $3 \times 10 = 30M$

Part – A

1. If $A = \begin{bmatrix} 2 & 3 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 & 2 \end{bmatrix}$ from the product AB and BA and show that $AB \neq BA$. (BT-2)
2. Write in detail write about the storage of renewable energy (BT1)
3. What is Computer Aided Drug Design? Write briefly about Structure based drug design and Ligand based drug design? BT-1

Part – B

4. The half-life of radioactive cobalt is 5.27 years. Suppose that a nuclear accident has left the level of cobalt radiation in a certain region at 100 times the level acceptable for human habitation. How long will it be until the region is again habitable? (BT-4)
5. Define Network? Explain various networking devices. [BT1]
6. Describe the recent advances in medical physics (BT2)

Section-II

Answer any three of the following questions. $4 \times 5 = 20M$

7. Find the equation of a line, which passes through the points $(-1, 1)$ and $(2, -4)$. (BT-1)
8. Find the derivative of $x \cos x$. (BT-2)
9. Explain dye degradation by photocatalysis method? BT3
10. Write about green house effect? BT1
11. Write briefly about the solid waste management? BT1
12. Describe about Shape Memory Materials (BT2)
13. Explain various types of number systems in computer. [BT1]