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(Affiliated to Andhra University)
(Accredited by NAAC with "A" Grade)

2.6.2 Attainment of POS and COS are evaluated

COs AND POs MAPPING FOR M.Sc CHEMISTRY

Course Outcome Assessment Process

The Key aspects in Outcome-Based Education (OBE) are the assessment of Course Outcomes. At the initial stage of OBE implementation, the Course Outcomes (COs) for each course are defined based on the Program Outcomes (POs) and other requirements. At the end of each course, the COs need to be assessed and evaluated to check whether they have been attained or not.

The process of attainment of Cos and POs starts from writing appropriate COs for each course of the program for two year PG courses. The course outcomes are written by the respective faculty member using action verbs of learning levels suggested by Bloom and Anderson. Then, a correlation is established between COs and POs in the scale of 1 to 3, 1 being the slight (low), 2 being moderate (medium) and 3 being substantial (high). A mapping matrix is prepared in this regard for every course in the program including the elective subjects. The course outcomes written and their mapping with POs are reviewed frequently by a committee of senior faculty members before they are finalized.

Assessment is one or more processes carried out by the department, which identify, collect and prepare data to evaluate the achievement of POs. Attainment is the action or fact of achieving a standard result towards accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed by examination results.

Course Outcomes (COs): Statements indicating what a student can do after the successful completion of a course. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 4 or 5 COs. The keywords used to define COs are based on Bloom's Taxonomy

Attainment of the COs are measured directly. Direct attainment displays the student's knowledge and skills from their performance. It can be determined from the performance of the students in all the relevant assessment instruments like internal assessments, assignments and final examinations. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.

Assessment Process for CO Attainment:

For the evaluation and assessment of CO's and PO's, rubrics are used. The rubrics considered here are given below:

Course Outcome is evaluated based on the performance of students in internal assessments and in End examination of a course. Internal assessment contributes 30% and End examinations assessment contributes 70% to the total attainment of a CO.

After measuring CO attainment for a course, CO-PO mapping table will give Program Outcome attainment levels.

The Program outcomes (PO's) are defined by NBA, New Delhi which are mandatory.

Program Outcomes (POs): Program outcomes describe what students are expected to know and would be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

PO objectives

PO1 Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry.

PO2 Solve the problem and also think methodically, independently and draw a logical conclusion.

PO3 Create an awareness of the impact of chemistry on the society, and development outside the scientific community

PO4 Become professionally trained in the area of Industry, material science, lasers and Nano-Technology

PO5 Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments.

PO6 To inculcate the scientific temperament in the students and outside the scientific community.

PO7 Apply modern methods of analysis to chemical systems in a laboratory setting

Process involved in CO-PO Mapping

- The role of CO-PO mapping will be assigned to the faculty as per hierarchy. After the course (subject) allotment from the department, the course in-charge of the course has to write appropriate COs for their corresponding course. It should be narrower and measurable statements. By using the action verbs of learning levels, CO's will be designed. CO statements should describe what the students are expected to know and able to do at the end of each course, which are related to the skills, knowledge and behaviour that students will acquire through the course.
- After writing the CO statements, CO will be mapped with PO of the department. If the department is having more than one section in a year or the same course is available for more than one program of the same institute in a semester, the subject expert will be nominated as course coordinator of the corresponding course. The role of the course coordinator is to review the CO statements and the CO-PO mapping which has been done by course in-charge. The year wise coordinator has to consolidate the CO's of the respective year and maintain the documentation of the CO attainment level of the respective year courses as well as documentation of the individual students extra-curricular and co-curricular activities. These details will hand over to the program coordinator in order to evaluate PO attainment of the individual student as well as individual course at the end of the eighth semester. The Program coordinator has to evaluate the PO attainment of individual student through direct and indirect method after the student completing their program. All these works have to be done under the guidance of Department Advisory Committee (DAC).

Evaluation and Measurement of POs for M.Sc. (Chemistry) (2020-2022 batch) through direct method:

Direct Assessment methods: In this method, COs are assessed through Sessional & Assignment Examinations and Lab records. The COs are mapped against each question and CO analysis is carried out by faculty for each course and documented. The contribution of COs are assessed in high, moderate and low levels, towards the attainment of POs/PSOs.

Semester-end Theory Examinations: The questions in semester-end examinations are tested pertaining to all COs, in varying Blooms Taxonomy Levels.

Program Outcomes for M.Sc. (Chemistry) are explained here under:

Number	PO objective
PO1	Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry.
PO2	Solve the problem and also think methodically, independently and draw a logical conclusion.
PO3	Create an awareness of the impact of chemistry on the society, and development outside the scientific community
PO4	Become professionally trained in the area of Industry, material science, lasers and Nano-Technology
PO5	Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments.
PO6	To inculcate the scientific temperament in the students and outside the scientific community.
PO7	Apply modern methods of analysis to chemical systems in a laboratory setting

The PO attainment levels for each subject and for each semester of M.Sc. (Chemistry) are shown below:

SEMESTER 1

PAPER-1: GENERAL CHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No. of students attended	24	22
No. of students obtained TV	18	14
% of students with TV	75	63
Attainment Level	03(0.6)	02(1.6)

Final CO attainment value: 2.2

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg. of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	-	-	3	-	3
CO2	3	3	-	-	3	-	3
CO3	3	2	-	3	3	-	3
CO4	3	2	-	3	3	-	3
Total (Avg)	3	2.5	-	3	3	-	3
PO Attainment level	2.2	1.83	-	2.2	2.2	-	2.2

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: INORGANIC CHEMISTRY**CO attainment level:**

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	12
% of students with TV	100	54.5
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	-	-	2	1	-
CO2	2	1	2	-	1	1	-
CO3	3	2	-	1	2	2	-
CO4	3	3	-	-	1	1	-
Total (Avg)	2.75	1.75	2	1	1.5	1.5	-
PO Attainment level	1.28	0.81	0.93	0.46	0.7	0.7	-

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3 ORGANIC CHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	11
% of students with TV	100	50
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	2	3	3	3	3	3
CO2	3	3	2	1	2	2	2
CO3	2	2	1	2	3	1	2
CO4	3	3	2	2	1	1	3
Total (Avg)	2.5	2.5	2	2	2.25	1.75	2.5
PO Attainment level	1.16	1.16	0.93	0.93	1.05	0.81	1.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4 PHYSICAL CHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	14
% of students with TV	100	63
Attainment Level	3(0.6)	2(1.6)

Final attainment value: 2.2

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	3	2	-	3
CO2	2	-	3	3	-	3	3
CO3	3	3	2	3	2	-	3
CO4	3	-	-	1	3	-	2
Total (Avg)	2.75	3	1.75	2.5	1.75	3	2.75
PO Attainment level	2.01	2.2	1.28	1.83	1.8	2.2	2.01

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

SEMESTER 2 M.Sc ORGANIC CHEMISTRY(2020- 2022 BATCH)

PAPER-1: GENERAL CHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	13
% of students with TV	100	59
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	-	-	3	-	3
CO2	3	3	-	-	3	-	3
CO3	3	3	-	-	3	-	3
CO4	2	2	-	2	3	2	2
Total (Avg)	2.75	2.75	-	2	3	2	2.75
PO Attainment level	1.28	1.28	-	0.93	1.4	0.93	1.28

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: INORGANIC CHEMISTRY**CO attainment level:**

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No. of students attended	24	22
No. of students obtained TV	22	4
% of students with TV	92	18
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	1	1	2	1	-
CO2	3	2	1	2	2	2	-
CO3	2	3	-	2	2	3	-
CO4	3	3	1	-	3	1	1
Total (Avg)	2.75	2.50	1	1.25	2.25	1.75	1
PO Attainment level	1.28	1.16	0.46	0.53	1.05	0.81	0.46

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3: ORGANIC CHEMISTRY
CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	9
% of students with TV	100	40.9
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
 (Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	3	3	3	3
CO2	3	3	2	3	2	2	2
CO3	2	3	3	2	2	3	3
CO4	1	2	3	3	2	3	2
Total (Avg)	2.25	2.50	2.75	2.75	2.25	2.75	2.50
PO Attainment level	1.05	1.16	1.8	1.8	1.03	1.8	1.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4: PHYSICAL CHEMISTRY**CO attainment level:**

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	24	22
No. of students obtained TV	24	11
% of students with TV	100	50
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	3	3	3	-	3
CO2	3	1	3	3	3	-	3
CO3	3	1	-	3	2	-	3
CO4	3	1	-	3	2	-	3
Total (Avg)	3	1	3	3	2.50	-	3
PO Attainment level	1.4	0.46	1.4	1.4	1.16	-	1.4

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

SEMESTER 3
ORGANIC CHEMISTRY (2019- 2021 BATCH)

PAPER-1: ORGANIC REACTION MECHANISM and PHOTOCHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	33
No. of students obtained TV	27	10
% of students with TV	73	30
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	2	3	3	1	2
CO2	2	3	2	3	2	2	1
CO3	2	3	3	2	3	3	3
CO4	3	2	3	2	3	2	1
Total (Avg)	2.50	2.50	2.50	2.50	2.75	2	1.75
PO Attainment level	1.16	1.16	1.16	1.16	1.28	0.93	0.81

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: ORGANIC SPECTROSCOPY**CO attainment level:**

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No. of students attended	34	33
No. of students obtained TV	22	2
% of students with TV	66	6
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	3	1	2	2.5	1	3
CO2	1	3	1.5	2.5	3	1.5	3
CO3	1	3	2	2.5	2.5	2.5	3
CO4	1	3	1.5	2.5	2.5	2.5	3
Total (Avg)	1	3	2.25	2.37	2.62	1.87	3
PO Attainment level	0.46	1.4	1.05	1.106	1.12	0.87	1.4

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3: ORGANIC SYNTHESIS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	36	36
No. of students obtained TV	29	6
% of students with TV	8.53	16.6
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	-	2	3	-	3
CO2	1	2	1	-	-	-	2
CO3	-	-	-	3	-	-	1
CO4	3	2	2	2	3	2	2
Total (Avg)	2.33	2	1.5	2.33	3	2	2
PO Attainment level	1.08	0.93	0.7	1.08	1.4	0.93	0.93

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4: CHEMISTRY OF NATURAL PRODUCTS**CO attainment level:**

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No. of students attended	34	34
No. of students obtained TV	23	8
% of students with TV	94	24
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	-	-	3	-	-	2	3
CO2	-	-	3	-	2	2	3
CO3	-	-	2	-	3	2	3
CO4	-	-	1	-	1	1	2
Total (Avg)	-	-	2.25	-	2	1.75	2.75
PO Attainment level	-	-	1.05	-	0.93	0.81	1.28

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

SEMESTER 4
ORGANIC CHEMISTRY(2019- 2021 BATCH)

PAPER-1: MODERN SYNTHETIC METHODOLOGY IN ORGANIC CHEMISTRY
CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	35	34
No. of students obtained TV	35	19
% of students with TV	100	55
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	3	3	2	1	3	1
CO2	3	2	3	2	3	2	1
CO3	3	2	3	2	2	1	2
CO4	3	2	3	2	3	3	3
Total (Avg)	2.75	2.25	3	2.25	2.25	2.25	1.75
PO Attainment level	1.28	1.05	1.4	1.05	1.05	1.05	0.81

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: ORGANIC SPECTROSCOPY and STRUCTURE DETERMINATION OF NATURAL PRODUCTS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	35	34
No. of students obtained TV	35	25
% of students with TV	100	70
Attainment Level	3(0.6)	1(08)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	3	2	2.5	2	2	3
CO2	1	3	1	2	2	2	3
CO3	1	3	1	2	1.5	2.5	3
CO4	1	3	1	2	2.5	2.5	3
Total (Avg)	1	3	1.25	1.6	2	2.25	3
PO Attainment level	0.46	1.4	0.58	0.76	0.93	1.05	1.4

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3: DESIGNING ORGANIC SYNTHESIS and ITS APPLICATIONS
CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No. of students attended	36	36
No. of students obtained TV	36	14
% of students with TV	100	38.8
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
 (Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	1	3	2	2	1
CO2	2	3	2	3	3	1	2
CO3	2	1	2	1	-	1	-
CO4	2	1	-	1	-	1	-
Total (Avg)	2.25	1.75	1.66	2	2.5	1.25	1.5
PO Attainment level	1.05	0.81	0.77	0.93	1.16	0.58	0.70

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4: DRUG DESIGN and DRUG CHEMISTRY

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	36	35
No. of students obtained TV	32	6
% of students with TV	91	17
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	-	-	3	3	3	3	3
CO2	-	-	3	3	3	3	3
CO3	-	-	3	3	3	3	3
CO4	-	-	3	3	3	3	3
Total (Avg)	-	-	3	3	3	3	3
PO Attainment level	-	-	1.4	1.4	1.4	1.4	1.4

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

SEMESTER 3: ANALYTICAL CHEMISTRY (2019- 2021 BATCH)

PAPER-1: SEPARATION METHODS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	28	10
% of students with TV	75.6	27
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	3	3	2	2
CO2	1	2	1	2	1	2	1
CO3	2	1	1	1	1	1	2
CO4	1	1	2	1	2	1	2
Total (Avg)	1.75	1.75	1.5	1.75	1.75	1.50	1.75
PO Attainment level	0.81	0.81	0.7	0.81	0.81	0.7	0.81

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: QCTMA

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	25	23
% of students with TV	67.5	62.1
Attainment Level	2(1)	2(1.6)

Final attainment value: 2.6

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	1	2	1	3	2
CO2	2	1	3	1	2	1	3
CO3	3	2	3	3	2	1	3
CO4	2	1	3	2	3	3	2
Total (Avg)	2	1.5	2.5	2	2	2	2.5
PO Attainment level	1.73	1.3	2.16	1.73	1.73	1.73	2.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3: APPLIED ANALYSIS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	26	20
% of students with TV	70.2	54
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	3	3	2	3	3	2
CO2	2	3	3	1	3	2	3
CO3	3	3	2	2	3	2	2
CO4	3	3	2	1	3	2	3
Total (Avg)	2.5	3	2.5	1.5	3	2.25	2.5
PO Attainment level	1.16	1.4	1.16	0.7	1.4	1.05	1.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4: INSTRUMENTAL METHODS OF ANALYSIS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	22	18
% of students with TV	59.45	48.6
Attainment Level	1(0.2)	1(0.8)

Final attainment value: 1

Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	3	2	3	2	2	3
CO2	3	2	3	2	2	2	2
CO3	2	3	2	2	3	2	3
CO4	2	2	3	2	3	3	2
Total (Avg)	2.25	2.5	2.5	2.25	2.5	1.25	2.5
PO Attainment level	0.75	0.83	0.83	0.75	0.83	0.41	0.83

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

SEMESTER 4: ANALYTICAL CHEMISTRY (2019- 2021 BATCH)

PAPER-1: SEPARATION METHODS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	37	20
% of students with TV	100	54
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg. of CO's of a PO / 3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	3	3	2	2
CO2	1	2	1	2	2	2	1
CO3	2	1	1	1	2	2	2
CO4	1.5	1	3	1	2	1	2
Total (Avg)	1.87	1.75	1.75	1.75	2.25	1.75	1.75
PO Attainment level	0.87	0.81	0.81	0.81	1.05	0.81	0.81

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-2: QCTMA

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	37	19
% of students with TV	100	51
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	1	2	1	3	2
CO2	2	1	3	1	2	1	3
CO3	3	2	3	3	2	1	3
CO4	2	1	3	2	3	3	2
Total (Avg)	2.5	1.5	2.5	2	2	2	2.5
PO Attainment level	1.16	0.7	1.16	0.93	0.93	0.93	1.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-3: APPLIED ANALYSIS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	37	29
% of students with TV	100	78.3
Attainment Level	3(0.6)	3(2.4)

Final attainment value: 3

Calculating PO attainment for direct method on a scale of three

(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	2	2	3	3	2	2
CO2	3	2	3	3	3	2	3
CO3	3	2	3	2	3	3	2
CO4	2	3	2	2	3	2	3
Total (Avg)	2.5	2.25	2.5	2.5	3	2.25	2.5
PO Attainment level	2.5	2.25	2.5	2.5	3	2.25	2.5

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)

PAPER-4: INSTRUMENTAL METHODS OF ANALYSIS

CO attainment level:

	MID EXAM (20%)	EXTERNAL EXAM(80%)
No.of students attended	37	37
No. of students obtained TV	37	13
% of students with TV	100	35
Attainment Level	3(0.6)	1(0.8)

Final attainment value: 1.4

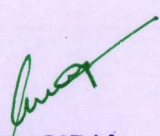
Calculating PO attainment for direct method on a scale of three
(Where 1 – Low, 2 – Medium, 3 - High).

PO attainment = Avg, of CO's of a PO /3 X Final CO attainment for the subject

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	2	2	3	2
CO2	2	3	2	3	3	2	3
CO3	3	2	3	2	3	3	2
CO4	2	3	3	3	2	2	3
Total (Avg)	2.5	2.5	2.75	2.5	2.5	2.5	2.5
PO Attainment level	1.16	1.16	1.28	1.16	1.16	1.16	1.16

Note: PO attainment for PO1 = (Avg. of CO's for PO1 / 3) X (CO value)




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