NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(Autonomous) Reaccredited by NAAC with 'A' Grade

(Affiliated to Mahatma Gandhi University)

(www.ngcnalgonda.org)

BOARD OF STUDIES 2017-18

DEPARTMENT OF INDUSTRIAL CHEMISTRY

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

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BOARD OF STUDIES MEETING 2017-18

DEPARTMENT OF INDUSTRIAL CHEMISTRY

NAGARJUNA GOVT.COLLEGE, NALGONDA.

(AUTONOMOUS)

DEPARTMENT OF INDUSTRIAL CHEMISTRY

BOARD OF STUDIES MEETING

The members of Board of Studies in Industrial Chemistry Department, N.G.College, Nalgonda, met under the chairmanship of Dr.K.Venkata Krishna on 13.09.2017 and passed the following resolutions

AGENDA

1. To consider and approve the syllabus for B.Sc I, II, III years (I, II, III, IV, V & VI semesters) for the academic year 2017-18.
2. To consider and approve the choice based credit system (CBCS) and Cumulative Grade Point Average (CGPA) system for the III year (V, VI semesters) students for the Academic year 2017-18.
3. To Consider and approve the continuation of Internal Assessment for the Students admitted in to I, II& III year Degree course during 2017-18.
4. To consider and approve the CBCS and Cumulative Grade Point Average (CGPA) system for the Ist Year Students as per the Mahatma Gandhi University new Syllabus.
5. To consider and approve to conduct year wise practical Examination for III year students and semester wise practical Examinations for the I & II Year students for the Year 2017-18.
6. To consider and approve the list of examiners for paper setting and evaluation for B.Sc I,II,III years(I,II,III,IV,V & VI semesters) for the academic year 2017-18.
7. To consider and approve the model Question papers for B.Sc I, II and III years for the academic year 2017-18.
8. Any other related academic matter.

Resolutions

1. Unitization of syllabus in to 4 units is equivalent to four credits for each paper.
2. CBCS and CGPA systems are approved.
3. To conduct two Internal Assessment Examinations for 20 marks, one student seminar for 5 marks and one assignment for 5 marks (total 30 marks) for I , II & III year students.
4. As per MGU, I &II year syllabus is approved.
5. Year wise practical examinations are approved for III years and semester wise practical exams are approved for I & II year students.
6. List of the examiners is approved.
7. Model question papers are approved.
8. Internal examinations are conducted for 30 marks. Semester end examinations are conducted for 70 marks, it is mandatory to get a minimum of 28 marks for one to get through it. On the whole for 100 marks one must get 40 marks to get through the paper.
9. To design question pattern in the following lines for I, II and III year students.

Section –A **5 X 2 = 10 Marks**

- To give five very short questions and ask them to answer all questions.

Section-B **4 X 5 = 20 Marks**

- To give Six Short questions and ask them to answer any four questions.

Section-C **4 X 10 = 40 Marks**

- To give 4 Long Questions with internal choice and ask them to answer all question.

1. To Prepare and supply of question banks and model papers to the students
2. Continuous Internal Assessment methods adopted to evaluate the progression of the Students.

K. Manjula, M.Sc. B.Ed
Assistant Professor
Department of Chemistry
Govt. Degree College for Women
NALGONDA

APPROVED THE PANEL OF EXAMINERS FOR PAPER SETTING AND EVALUATION FOR THE YEAR 2017-2018

SNO	PAPER		NAME	DISIGNATION	CELL NO
1	I	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur.	9440245965
2		2	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
3	II	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
4		2	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
5	III	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
6		2	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
7	IV	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
8		2	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
9	V	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
10		2	Dr. A. Srinivasulu	Asst. Prof. of Chemistry,KRR GDC, Kodad	9440140506
11	VI	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
12		2	Dr. A. Srinivasulu	Asst. Prof. of Chemistry,KRR GDC, Kodad	9440140506
13	VII	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
14		2	Dr. A. Srinivasulu	Asst. Prof. of Chemistry,KRR GDC, Kodad	9440140506
15	VIII	1	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
16		2	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965

K. Manjula, M.Sc. B.Ed
Assistant Professor
Department of Chemistry
Govt Degree College for Women

NAGARJUNA GOVT.COLLEGE, NALGONDA

(AUTONOMOUS)

DEPARTMENT OF INDUSTRIALCHEMISTRY

CONSTITUTEDOF BOARD OF STUDIES: 2017-2018

SNO	CATEGORY	NAME & DESIGNATION	CONTACT NOS
1	Chairman Board of studies	Dr.K.Venkata Krishna Asst.Prof.in Chemistry	9441993436
2	University Nominee	Dr.A.BhanuPrasad, Principal.GDC, Ramanapet, Nalgonda.	9848385850
3	Subject expert from outside the college	Dr. A. Srinivasulu, Asst. Prof. of Chemistry,KRR GDC, Kodad	9440140506
4	Subject expert from outside the college	Smt.K.Manjula, Asst.Prof. in Chemistry GDC(w),NLG.	8143462182
5	Members: All The Faculty members of the Dept.	1. K.Kishore Kumar, (Guest faculty). 2. S. Anil Kumar, (Guest faculty).	9642284865 7396619663
6	One representative from Industry/Corporate sector/Allied areas	Sri.K.Ravi Shastri Manager Operational Executive RA Chem Phrama Ltd.	9985185274

Submitted by

In-Charge /Chairman BOS

Proposals approved Principal/

Chairman academic council

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE : 07-09-2017**

TO
THE PRINCIPAL,
N.G.COLLEGE,
NALGONDA.

Sir,

SUB:- Nagarjuna Govt. college, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial chemistry on 13-09-2017 Intimation-Request-Reg.

I am happy to inform that you have been nominated as a Member of Board of Studies in the Department of Industrial chemistry of this college for the year 2017-18. The meeting of the Board of studies in Industrial chemistry will be held on 13.09.17 in the Dept of Industrial chemistry to consider the following agenda.

1. To approve the syllabus and model question papers for I, II, III, IV, V & VI semesters.
2. To approve the Introduction of internal assessment.
3. To approve the list of examinations for paper setting and evaluation.
4. Any other matter with permission of the chair.
5. You are requested to make it convenient to attend the meeting and extend your cooperation.

Principal

Copy to.

1. **The Chairman Board of studies In Ind.chemistry** — **Dr.K.Venkata Krishna, In-Charge Dept.Ind.chemistry, N.G.college, Nalgonda**
2. **Honorable member& university Chairman BOS in Ind.chemistry** — **Dr. A. Bhanu Prasad. Principal,GDC Ramannapet .**

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE :07-09-2017**

TO

Dr.A.BhanuPrasad,
Principal,
GDC, Ramanapet
NALGONDA.

SUB:- Nagarjuna Govt. College, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial Chemistry on 13.9.17 **Intimation-Request-Reg.**

Sir,

I am happy to inform that you have been nominated as a Member of Board of Studies in the Department of Industrial Chemistry of this college for the year 2017-18.

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6. To approve the syllabus and model question papers for I, II, III, IV, V & VI semesters.
7. To approve the Introduction of internal assessment.
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10. You are requested to make it convenient to attend the meeting and extend your cooperation.

In-Charge /Chairman BOS
DEPRTMENT OF INDUSTRIAL CHEMISTRY

Principal

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE : 7.9.17**

TO
K.Manjula,
Asst.Prof,
GDC(W) College
NALGONDA.

SUB:- Nagarjuna Govt. College, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial Chemistry on 13.9.17 Intimation-Request-Reg.

Sir,

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In-Charge /Chairman BOS
DEPRTMENT OF INDUSTRIAL CHEMISTRY

Principal

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE : 07.09.2017**

TO

Dr. A. Srinivasulu,

Asst. Prof. of Chemistry

KRR GDC Kodad.

SUB:- Nagarjuna Govt. College, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial Chemistry on 13.9.2017 Intimation-Request-Reg.

Sir,

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5. You are requested to make it convenient to attend the meeting and extend your cooperation.

In-Charge /Chairman BOS

DEPRTMENT OF INDUSTRIAL CHEMISTRY

Principal

NAGARJUNA GOVERNMENT COLLEGE (AUTONOMOUS),NALGONDA
ALLOCATION OF CREDITS AT SUBJECT LEVEL

SUBJECT: INDUSTRIAL CHEMISTRY
COURSE: B. Sc SCIENCE

S.No.	SEMESTER	MODULE (PAPER)	HOURSPER WEEK	MAX. MARKS	CREDITS
1	I (core)	Chemical Engineering - Unit Operations & Material Science	4	100	3
2	II (core)	Utilities in Chemical Industry & Fuel, Fertilizer Chemistry	4	100	3
3	Practical's	simple Laboratory Techniques	3	50	2
4	III (core)	Material, Energy Balance calculations & Unit process in Chemical process	4	100	3
5	IV (core)	Process of Instrumentation & Oils, Fats, Waxes, Soaps, Paints	4	100	3
6	Practical's	Synthesis of simple organic compounds	3	50	2
7	V (core)	Advanced Polymer Chemistry	3	100	3
8	V Elective-I(Advanced)	Pharmaceutical Chemistry	3	100	2
9	V Elective-I(Advanced)	International Patent Rights	3	100	2
10	Practical's	Synthesis of advanced organic compounds	3	50	2
11	VI (core)	Drugs and Its manufacturing process	3	100	3
12	VI Elective(Skill Based)	Industrial Scientific Management	3	100	2
13	VI Elective(Skill Based)	Industrial safety and Its Measures	3	100	2
14	Practical's	Estimation of Organic compounds	3	50	02
15	Project Work				01
16	Others				

DEPARTMENT OF INDUSTRIAL CHEMISTRTY

N.G.COLLEGE, NALGONDA

K. Manjula, M.Sc. B.Ed.
Assistant Professor
Department of Chemistry
Govt Degree College for Women
NALGONDA

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B. Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2017-18**

Semester: I **Paper: I**

NAME OF THE MODULE: Chemical Engineering - Unit Operations & Material Science

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No.of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
JUNE-III	4	Distillation, Absorption	Class-room teaching	Visit to library	
JUNE-IV	4	Evaporation, Filtration	Lecture method	Assignment	
JULY-I	4	Drying, Crystallisation	Demonstration	Visit to library	
JULY-II	4	Extraction, Mixing	Demonstration	Student seminar	
JULY-III	4	Iron Orers	Lecture method	Assignment	
JULY-IV	4	Copper Ores	Demonstration	Visit to library	
AUG-I	4	Zinc Ores	Lecture method	Assignment	
AUG-II	4	Alluminium & Lead Ores	Demonstration	Student seminar	
AUG-III	4	Cement	Class-room teaching	Assignment	
AUG-IV	4	Ceramics	Class-room teaching	Student seminar	
SEPT-I	4	Refractories	Demonstration	Visit to library	
SEPT-II	4	Glass	Lecture method	Quiz program	
SEPT-III	4	Corrosion passivity	Class-room teaching	Assignment	
SEPT-IV	4	Dry & Wet Corrosion	Demonstration	Quiz program	
OCT-I	4	Theories of Wet Corrosion	Class-room teaching	Visit to library	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2017-18**

Semester: II **Paper: II**

NAME OF THE MODULE: Utilities in Chemical Industry & Fuel, Fertilizer Chemistry

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
NOV-II	4	Utilities in chemical industries	class-room teaching	Student seminar	
NOV-III	4	Water tube & Fire tube Boilers	Lecture method	Assignment	
NOV-IV	4	High Pressure Boilers	PPT	Visit to Library	
DEC-I	4	Steam Generators	Lecture method	Student seminar	
DEC-II	4	Flow measuring equipments	class-room teaching	Assignment	
DEC-III&IV	4	Flow measuring equipments	Demonstration	Visit to Library	
JAN-I&II	4	Heat transfer	Lecture method	Group Discussion	
JAN-III	4	Heat Exchangers	PPT	Student seminar	
JANIV	4	Hardness of water	class-room teaching	Visit to Library	
FEB-I	4	Removal of Temporary Hardness	Lecture method	Assignment	
FEB-II	4	Removal of Permanent Hardness	PPT	Group Discussion	
FEB-III	4	BOD & COD	class-room teaching	Student seminar	
FEB-IV	4	Fuels	Lecture method	Visit to Library	
MARCH-I	4	Fertilizers	Demonstration	Assignment	
MARCH-II	4	NPK Fertilizers	class-room teaching	Student seminar	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: III **Paper: III**

NAME OF THE MODULE: Chemical Engineering - Unit Operations & Material Science

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
JUNE-III	4	Dimensions & Units	Class-room teaching	Visit to library	
JUNE-IV	4	Dimensions & Units	Lecture method	Assignment	
JULY-I	4	Material Balance I	Demonstration	Visit to library	
JULY-II	4	Material Balance II	Demonstration	Student seminar	
JULY-III	4	Material Balance III	Lecture method	Assignment	
JULY-IV	4	Material Balance IV	Demonstration	Visit to library	
AUG-I	4	Energy Balance I	Lecture method	Assignment	
AUG-II	4	Energy Balance II	Demonstration	Student seminar	
AUG-III	4	Nitration	Class-room teaching	Assignment	
AUG-IV	4	Halogenation	Class-room teaching	Student seminar	
SEPT-I	4	Sulphonation	Demonstration	Visit to library	
SEPT-II	4	Oxidation	Lecture method	Quiz program	
SEPT-III	4	Hydrogenation	Class-room teaching	Assignment	
SEPT-IV	4	Alkylation	Demonstration	Quiz program	
OCT-I	4	Amination by Reduction	Class-room teaching	Visit to library	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: IV **Paper: IV**

NAME OF THE MODULE: Utilities in Chemical Industry & Fuel, Fertilizer Chemistry

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
NOV-II	4	Process instrumentation	Class-room teaching	Student seminar	
NOV-III	4	Concept of Measurement	Lecture method	Assignment	
NOV-IV	4	Thermometers	PPT	Visit to Library	
DEC-I	4	Thermometers	Lecture method	Student seminar	
DEC-II	4	Pressure	Class-room teaching	Assignment	
DEC-III&IV	4	Liquid Level	Demonstration	Visit to Library	
JAN-I&II	4	Viscosity Measurement	Lecture method	Group Discussion	
JAN-III	4	Oils and Fats	PPT	Student seminar	
JANIV	4	Oils and Fats	Class-room teaching	Visit to Library	
FEB-I	4	Waxes	Lecture method	Assignment	
FEB-II	4	Soap, Manufacture	PPT	Group Discussion	
FEB-III	4	Detergents	Class-room teaching	Student seminar	
FEB-IV	4	Detergents	Lecture method	Visit to Library	
MARCH-I	4	Pigments	Demonstration	Assignment	
MARCH-II	4	Paints	Class-room teaching	Student seminar	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: V **Paper: V**

NAME OF THE MODULE: Chemical Engineering - Unit Operations & Material Science

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
JUNE-III	3	Basic Polymerization I	Class-room teaching	Visit to library	
JUNE-IV	6	Basic Polymerization I	Lecture method	Assignment	
JULY-I	4	Basic Polymerization	Demonstration	Visit to library	
JULY-II	2	Basic Polymerization	Demonstration	Student seminar	
JULY-III	4	Plastics & Derivatives	Lecture method	Assignment	
JULY-IV	5	Plastics & Derivatives	Demonstration	Visit to library	
AUG-I	3	Plastics & Derivatives	Lecture method	Assignment	
AUG-II	3	Plastics & Derivatives	Demonstration	Student seminar	
AUG-III	6	Elastomer	Class-room teaching	Assignment	
AUG-IV	3	Elastomer & Fibres	Class-room teaching	Student seminar	
SEPT-I	6	Fibres	Demonstration	Visit to library	
SEPT-II	3	Dyes	Lecture method	Quiz program	
SEPT-III	4	Types of Ddyes	Class-room teaching	Assignment	
SEPT-IV	4	Classification of dyes	Demonstration	Quiz program	
OCT-I	4	Syn. Of Dyes	Class-room teaching	Visit to library	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: V **Paper: VI**

NAME OF THE MODULE: Chemical Engineering - Unit Operations & Material Science

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
JUNE-III	3	History of Pharmacy	Class-room teaching	Visit to library	
JUNE-IV	6	Pharmacopeias I	Lecture method	Assignment	
JULY-I	4	Pharmacopeias I	Demonstration	Visit to library	
JULY-II	2	Pharmacopeias II	Demonstration	Student seminar	
JULY-III	4	Formulations	Lecture method	Assignment	
JULY-IV	5	Formulations	Demonstration	Visit to library	
AUG-I	3	Drug Administration	Lecture method	Assignment	
AUG-II	3	Drug Administration	Demonstration	Student seminar	
AUG-III	6	Pharmaceutical Excipents	Class-room teaching	Assignment	
AUG-IV	3	Pharmaceutical Packing	Class-room teaching	Student seminar	
SEPT-I	6	Surgical Dressing sutures	Demonstration	Visit to library	
SEPT-II	3	Vitamins	Lecture method	Quiz program	
SEPT-III	4	Vit. Class. Vit- A 1	Class-room teaching	Assignment	
SEPT-IV	4	Vit- B1, B2,	Demonstration	Quiz program	
OCT-I	4	Vit-B6, B12	Class-room teaching	Visit to library	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: VI **Paper: VII**

NAME OF THE MODULE: Utilities in Chemical Industry & Fuel, Fertilizer Chemistry

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
NOV-II	4	Drugs, Classification of drugs	Class-room teaching	Student seminar	
NOV-III	6	Antibacterial-sulpha drugs	Lecture method	Assignment	
NOV-IV	5	Sulpha drug derivatives Antipyretics	PPT	Visit to Library	
DEC-I	4	Antibiotics-Penicillin	Lecture method	Student seminar	
DEC-II	4	Antimalarials, Anti Histamines	Class-room teaching	Assignment	
DEC-III&IV	4	Anti Inflammatory, Cardiovascular drugs	Demonstration	Visit to Library	
JAN-I&II	3	Barbituates- Pento babital	Lecture method	Group Discussion	
JAN-III	5	Evolution of Crude drug	PPT	Student seminar	
JANIV	4	Physical evolution of Crude drug	Class-room teaching	Visit to Library	
FEB-I	4	Chemical Constitution of Plants	Lecture method	Assignment	
FEB-II	2	Chemical Constitution of Plants	PPT	Group Discussion	
FEB-III	4	Pharmaceutical Quality Control	Class-room teaching	Student seminar	
FEB-IV	4	Pharmaceutical Quality Control	Lecture method	Visit to Library	
MARCH-I	4	Fermentation Process	Demonstration	Assignment	
MARCH-II	3	Fermentation Process	Class-room teaching	Student seminar	

HEAD OF DEPT

COMMISSIONERATE OF COLLEGIATE EDUCATION, T.S, HYDERABAD

BASIC CURRICULAR FORMAT UNDER MODULAR AND CBCS SYSTEM

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: VI **Paper : VIII**

NAME OF THE MODULE: Utilities in Chemical Industry & Fuel, Fertilizer Chemistry

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

MONTH& WEEK	No. of Hours	Topic	Curricular Activity	Co-Curricular Activity	Remarks
NOV-II	4	Project Cost Estimation	Class-room teaching	Student seminar	
NOV-III	6	Elements of Cost Accounting	Lecture method	Assignment	
NOV-IV	5	Capital formation Depreciation	PPT	Visit to Library	
DEC-I	4	Aspects of Marketing	Lecture method	Student seminar	
DEC-II	4	Probability Criteria	Class-room teaching	Assignment	
DEC-III&IV	4	Target Marketing	Demonstration	Visit to Library	
JAN-I&II	3	Customer relationship management	Lecture method	Group Discussion	
JAN-III	5	Functions of Management	PPT	Student seminar	
JANIV	4	Decision marking	Class-room teaching	Visit to Library	
FEB-I	4	Planning Organization	Lecture method	Assignment	
FEB-II	2	Scientific Management theory	PPT	Group Discussion	
FEB-III	4	Selection, Recruitment, Principles of HRM	Class-room teaching	Student seminar	
FEB-IV	4	Training & Development	Lecture method	Visit to Library	
MARCH-I	4	Material Management	Demonstration	Assignment	
MARCH-II	3	Incentive Welfare & Safety	Class-room teaching	Student seminar	

HEAD OF DEPT

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

Autonomous Re-accredited by NAAC with "A" Grade

Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc I Year 1st Semester 1st Paper ***60hrs***

Unit –I **15hrs**

Unit Operations

Distillation

Absorption

Evaporation

Filtration

Drying

Crystallization

Extraction

Mixing

Unit –II **15hrs**

Material Science

Metals & alloys

Iron (Fe), Copper (Cu), Zinc (Zn), Aluminum (Al), Lead (Pb).

Unit –III **15 hrs**

Cement - Ceramic- Refractories-Glass

Unit –IV **15 hrs**

Corrosion passivity

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B. Sc SUBJECT: INDUSTRIAL CHEMISTRY YEAR: 2017-18

Semester: I Paper: I

NAME OF THE MODULE: Chemical Engineering - Unit Operations & Material Science

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

Unit –I

Unit Operations 15hrs

Distillation: Introduction, Principle, Construction, Working of simple distillation.

Evaporation: Introduction, Equipment-Horizontal tube evaporator, Short tube (Vertical) evaporator, Forced circulation evaporators, Falling film evaporators, Climbing film (Upward flow) evaporators.

Crystallization: Introduction, Solubility, Crystallization theory: Super saturation, Nucleation crystal growth, Agitated Batch crystallizer.

Filtration: Introduction, Filter media and Filter aids, Equipments: Principle, Construction, Working of Rotary drum filter.

Brief idea about Absorption, Drying, Extraction, Mixing.

Unit –II 15hrs

Material Science

Metals & alloys

Iron (Fe): Ores of Iron, Occurrence of ores in India, Effect of impurities on properties of iron, Commercial forms of Iron, Extraction of Cast Iron from Haematite Ore, Alloys of Iron and their uses.

Copper (Cu): Ores of copper, Occurrence, Extraction of copper from Sulphide ore, Alloys of copper and their uses.

Zinc (Zn): Ores of Zinc, Occurrence, Extraction of Zinc from the principle ore (Zinc Blend), Alloys of Zinc and their uses.

Aluminum (Al): Ores of Aluminium, Occurrence, Purification of the Bauxite ore, Extraction of Aluminium from Bauxite, Alloys of Aluminium and their uses.

Lead (Pb): Ores of Lead, Occurrence, Extraction of Pb from the principal ores (Galina), Alloys of Pb and their uses

Unit –III

Cement - Ceramic- Refractories 15hrs

Cement: Types of Portland Cements, Raw materials for the manufacture of Cement, Manufacture of Portland cement, Dry and Wet process, ISI specifications of cement.

Ceramics: Introduction, Raw materials for the manufacture of Ceramics, Classification of Ceramic products based on reduction in porosity, White wear- manufacture of White wears.

Refractories: Introduction, Classification of refractories, Manufacture of Refractories, Use of fire clay, firebricks refractories such as Silica bricks, Magnetite bricks and Chromate bricks.

Glass: Raw materials used in the manufacture of Glass, Manufacture of Glass, Chemical and Physical properties of Glass, Characteristics of Glass, Shaping, Amending, Finishing of Glass, Special glasses, Fibre glass, Opal glass, Borosilicate glass, High silica glass.

Unit –IV

Corrosion passivity 15hrs

Introduction of Corrosion, Definition of corrosion, Various types of corrosion, Direct chemical corrosion (Dry corrosion), Electro chemical corrosion (Wet Corrosion), Types of Direct chemical corrosion- Oxidation corrosion, Corrosion by other gases, Liquid metal corrosion ,Types of Wet corrosion–General types-(Chemical corrosion ,Under –water corrosion ,Underground or Soil corrosion), Theories of Wet corrosion – (1) Acid theory (Carbonate formation theory),(2)Peroxide theory, (3)Oxidation theory (4)Electrochemical theory, Mechanism of wet corrosion, Prevention methods of corrosion a)Purification of metals b) Alloying c) Electroplating.

Practicals:-

I. Simple Laboratory Techniques In Laboratory.

A) Crystallization B) Fractional Crystallization C) Distillation D) Elevation in boiling point

II .Partition coefficient of Benzoic acid

III. Partition coefficient of Iodine between water and CCl_4

IV. Surface tension of liquid

V. Determination of Viscosity of oil

VI. Flash point of oil.

VII. % composition Determination by Refractometer.

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NAGARJUNA GOVERNMENT COLLEGE, NALGONDA
(AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc., I YEAR I SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-I

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define Drying?
2. What are the raw materials used in manufacture of glass?
3. Write various types of Iron?
4. Define the ores and Alloys?
5. What is dry corrosion?

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. Define Evaporation? Write the classification of Evaporators.
7. Explain principle, construction and working process of Forced circulation Evaporator?
8. Write the ores of Copper and Zinc.
9. Write the Alloys of Aluminum and Lead.
10. Write the ISI specifications of Portland cement?
11. Briefly explain the types of wet corrosion?

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Explain principle construction and working process of simple Distillation.
    (B) Define crystallization? Explain Agitated batch Crystallizer?
    (Or)
    (C)What are the differences between Horizontal and Vertical tube Evaporators.
    (D) What is Filtration? Explain working process of Rotary drum filter.
13. (A) Describe methods of extracting cost iron from Hematite.
    (B)Describe methods of extracting Zinc from Zinc blend.
    (Or)
    (C)Explain the Bayer's, Hall's Serpeck's process of Aluminum extraction.
    (D)Describe methods of extracting Lead from principle Ore.
14. (A) What is Cement? Explain its classification.
    (B)What are the Raw materials used in Ceramics? Explain classification of ceramics.
    (Or)
    (C)How Portland cement can be manufactured from its raw materials?
    (D)Explain classification of Refractories.
15. (A) Define corrosion? Explain oxidation corrosion with mechanism.
    (B)Briefly explain Acid theory, Peroxide theory and Oxygen theory?
    (Or)
    (C)What is wet theory? Explain the Electro chemical theory with mechanism.
    (D)Write any three prevention methods of corrosion.

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NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

Autonomous Re-accredited by NAAC with "A" Grade

Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc I Year 1st Semester 2nd Paper ***60hrs***

Unit –I **15hrs**

Utilities in Chemical industries

Boilers -Steam

Unit –II **15hrs**

Flow –Heat Transfer

Unit –III **15hrs**

Water Treatment

Unit –IV **15hrs**

Fuels – Fertilizers

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2017-18**

Semester: II **Paper: II**

NAME OF THE MODULE: Utilities in Chemical Industry & Fuel, Fertilizer Chemistry

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

Unit –I

Utilities in Chemical industries 15hrs

Boilers –Steam

Boilers: Introduction, Selection of boilers, Classification of boilers, Differences between Water tube Boilers and Fire tube boilers, Construction and Working process of various boilers like Short (fire)tube Boiler, Cochran boiler, Cornish boiler, Lancashire boiler, Babcock and Wilcox boiler Pressure boilers: Unique features and advantages of high pressure boilers.

Steam: Brief introduction about Steam generators, Generator and uses, Air specifications for Industrial use.

Unit –II

Flow –Heat Transfer 15hrs

Flow: Principle, Construction and Working process of Fans, Blowers, Compressors, Vacuum pumps, Jet ejectors, Reciprocating pumps and Centrifugal pumps

Heat Transfer: Introduction, Types of Heat Transfer.

Heat Exchangers: Introduction, Types of heat exchangers-Shell and Tube heat exchangers

Unit –III

Water Treatment 15hrs

Water: Hard water, Temporary and Permanent hardness of water, Units of hardness of water, Removal of permanent hardness of water (Cold lime soda process, Hot lime soda process, Permutite process (Zeolite process), Ion–Exchange method, Treatment of water for Municipal purposes-Chemical and Physical methods of Sterilization, Treatment of water used in boilers (Phosphate treatment, Treatment with Complexing agents) Water pollution-Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD).

Unit –IV

Fuels – Fertilizers 15hrs

Fuels: Definition of fuels, Classification of fuels-Solid, Liquid and Gaseous fuels, Calorific value of fuels and Determination of calorific value, **Solid fuels**- Natural and Artificial solid fuels, Industrial solid fuels, Proximate analysis of Coal, **Liquid fuels**-Petroleum, Characteristics of Liquid fuel, Distillation of Crude petroleum, Octane number, Knocking and Anti-Knocking, **Gaseous fuels**-Preparation and uses of Producer gas, Semi gas water, Blue water gas, Nature gas.

Fertilizers: Introduction, Definition, Requirements of Fertilizer, Classification of Fertilizers based on Composition and Origin, **Nitrogenous fertilizers**-Manufacture and Uses of Ammonium nitrate, Ammonium Sulphate, Manufacture of Urea, Raw material required for the manufacture of Urea as a fertilizer, Action of urea as fertilizer, **Phosphate fertilizers**-Manufacture of Normal super phosphate and Triple super phosphate, NPK fertilizers, and Manufacture of NPK fertilizers.

Practical:-

1. **To prepare and Standerzation of HCl and NaoH**
2. **Determination of H_2so_4 and phosphoric acid in mixer**
3. **Determination of total hardness of water**
4. **Estimation of Halides**
5. **Analysis of dolomite**
6. **Analysis of lime stone**
7. **Analysis of Cupronical**

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NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE :07-09-2017**

TO

Dr.A.BhanuPrasad,

Principal,

GDC, Ramanapet

NALGONDA.

SUB:- Nagarjuna Govt. College, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial Chemistry on _____ Intimation-Request-Reg.

Sir,

I am happy to inform that you have been nominated as a Member of Board of Studies in the Department of Industrial Chemistry of this college for the year 2017-18.

The meeting of the Board of studies in Industrial Chemistry will be held on **13-09-2017**in the Dept of Industrial Chemistry to consider the following agenda.

6. To approve the syllabus and model question papers for I, II, III, IV, V & VI semesters.
7. To approve the Introduction of internal assessment.
8. To approve the list of examinations for paper setting and evaluation.
9. Any other matter with permission of the chair.
10. You are requested to make it convenient to attend the meeting and extend your cooperation.

In-Charge /Chairman BOS

DEPRTMENT OF INDUSTRIAL CHEMISTRY

Principal

APPROVED THE PANEL OF EXAMINERS FOR PAPER SETTING AND EVALUATION FOR THE YEAR 2017-2018

SNO	PAPER		NAME	DISIGNATION	CELL NO
1	I	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur.	9440245965
2		2	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
3	II	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
4		2	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
5	III	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
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7	IV	1	Dr.T. Bala Narsaiah	Prof.of Chemical Engineering, JNTUA College of Anantapur	9440245965
8		2	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
9	V	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
10		2	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
11	VI	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
12		2	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
13	VII	1	Sri P. Venkatanarsaiah	Lect. In Chemistry (Rtd), Principal, Kakatiya P.G. College, Nalgonda.	9396623040
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15	VIII	1	Smt.V.Anuradha	Asst.prof, MBA, Dept. of Management, MGU	
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K. Manjula, M.Sc. B.Ed
Assistant Professor
Department of Chemistry

Resolutions

1. Unitization of syllabus in to 4 units for each paper.
2. CBCS and CGPA systems are approved.
3. To conduct two Internal Assessment Examinations for 20 marks, one student seminar for 5 marks and one assignment for 5 marks (total 30 marks) for I , II & III year students.
4. As per MGU, I &II year syllabus is approved.
5. Year wise practical examinations are approved for III years and semester wise practical exams are approved for I & II year students.
6. List of the examiners is approved.
7. Model question papers are approved.
8. Internal examinations are conducted for 30 marks. Semester end examinations are conducted for 70 marks, it is mandatory to get a minimum of 28 marks for one to get through it. On the whole for 100 marks one must get 40 marks to get through the paper.
9. To design question pattern in the following lines for I, II and III year students.

Section –A **5 X 2 = 10 Marks**

- To give five very short questions and ask them to answer all questions.

Section-B **4 X 5 = 20 Marks**

- To give Six Short questions and ask them to answer any four questions.

Section-C **4 X 10 = 40 Marks**

- To give 4 Long Questions with internal choice and ask them to answer all question.

1. To Prepare and supply of question banks and model papers to the students
2. Continuous Internal Assessment methods adopted to evaluate the progression of the Students.

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NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

(AUTONOMOUS)

NO: / BOS/Ind chem/acad/2017-18 **DATE :07-09-2017**

TO

Dr.A.BhanuPrasad,
Principal,
GDC, Ramanapet
NALGONDA.

SUB:- Nagarjuna Govt. College, Nalgonda(Autonomous)-convening the meeting of Board of studies Industrial Chemistry on 13.09.2017 Intimation-Request-Reg.

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In-Charge /Chairman BOS
DEPRTMENT OF INDUSTRIAL CHEMISTRY

Principal

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA
(AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc., I YEAR II SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-II

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1 What are the advantages of High pressure boilers?
2. Write about steam generator.
3. Define the Hardness of water and write their units?
4. Define the Calorific value of Fuels?
5. Write the requirements of Fertilizer?

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. Explain construction and working process of Babcock and Wilcox boilers?
7. What are the modes of Heat transfers? Explain Shell and Tube type Heat Exchanger.
8. Explain the Physical Sterilization used in municipal purposes.
9. Briefly explain about BOD and COD.
10. Explain Liquid Fuels with examples?
11. Write the classification of Fertilizers?

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Explain working process of Cochran boiler
    (B) What are the differences between Water tube and Fire tube boilers?
    (Or)
    (C) Define Boiler? Write classification of Boilers.
    (D) Write an essay on Lancashire Boilers
13. (A) Write an essay about Fans and Blowers.
    (B) Write working process of Reciprocating Pumps
    (Or)
    (C). Draw the net diagram of Shell and tube type Heat exchangers.
    (D) Give short note about Centrifugal pump
14. (A) What is Lime-Soda process? Explain the Hot Lime-Soda process.
    (B) Write any five chemical Sterilization methods used in municipal purposes.
    (Or)
    (C) Explain about purification of hard water by Ion-Exchange method?
    (D) How do use Phosphate treatment method for water used in Boilers?
15. (A) Write the preparation and uses of Producer Gas
    (B) Briefly explain about knocking and Anti knocking?
    (Or)
    (C) Explain the manufacturing process and properties of Urea?
    (D) Write the manufacturing of NPK fertilizers

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NAGARJUNA GOVERNMENT COLLEGE, NALGONDA

Autonomous Re-accredited by NAAC with "A" Grade

Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc II Year 3rd Semester 3rd Paper ***60hrs***

Unit –I **15hrs**

Material Balance and Energy Balance

Dimension & Units

Material Balance without involving reaction

Unit –II **15hrs**

Material Balance involving chemical reaction

Energy balance

Unit-III **15hrs**

Unit processes in Chemical Manufacture.

Nitration

Halogenation

Sulphonation

Unit-IV **15hrs**

Unit processes in Chemical Manufacture

Hydrogenation

Alkylation

Amination

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc SUBJECT: INDUSTRIAL CHEMISTRY YEAR: 2016-17

Semester: III Paper: III

NAME OF THE MODULE: Material Balance and Energy Balance & Unit processes in Chemical Manufacture

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

Unit –I

Material Balance and Energy Balance 15hrs

Dimension & Units: Basic chemical calculations- Atomic weight, Molecular weight, Equivalent weight, Mole.

Material Balance without involving reaction: Steps involved in material calculation without involving Chemical reaction, Flow diagram for material balance, Simple material balance with or without Recycle or By pass for chemical engineering operations such as Distillation, Absorption, Crystallization, Drying, Mixing, Evaporation, Extraction.

Unit –II 15hrs

Material Balance involving chemical reaction: Steps involved in material calculation with involving Chemical reaction, Concept of limiting reactant conversion, Gas phase reaction with or without recycle or bypass.

Energy balance: Heat capacity ,Molar heat capacity, Specific heat capacity of Pure gases at Constant pressure, Derivation of Cp-Cv=R, Concept of Enthalpy.

Unit-III 15hrs

Unit processes in Chemical Manufacture.

Nitration: Introduction, Nitrating agents, Kinetics and Mechanism of nitration- Nitration of paraffin hydrocarbons, Benzene to Nitrobenzene, Nitrobenzene to m-dinitrobenzene, Chlorobenzene to Ortho and Para-nitro Chlorobenzene.

Halogenations: Introduction, Reagents of halogenations, Kinetics of Halogenation reactions, Nuclear halogenations, Halogenation of Aromatic side chain, Commercial manufacture of Chlorobenzene, Chloral, Mono Chloroacetic acid, Dichlorodifluoromethane.

Suphonation: Introducation, Suphonating agents, Kinetics of Sulphonation, Mechanism of Suphonation(Benzene to Benzene sulphonic acid), Commercial sulphonation of Benzene, Alkyl benzene(Dodecyl Benzene).

Unit -IV

Oxidation –Hydrogenation- Alkylation – Ammunition 15hrs

Oxidation: Introduction, Types of Oxidation reaction, Oxidizing agents, Kinetics of Oxidation Mechanism of Oxidation, Liquid phase Oxidation-Manufacture of Acetic acid, Vapor phase Oxidation –Commercial manufacture of Benzoic acid from Toluene.

Hydrogenation : Introduction, Kinetics of Hydrogenation, Catalysts for Hydrogenation reaction, Hydrogenation of Vegetable Oil, Manufacture of Methanol from Carbon Monoxide and Hydrogen, Hydrogenation of Acids to Alcohols and Esters.

Alkylation: Introduction, Types of Alkylation, Alkylating agents, Kinetics of Alkylation, Mechanism of Alkylation reaction (Friedal Craft Alkylation), Manufacture of Alkyl benzene, Manufacture of di-methyl Aniline.

Amination : Introduction, Methods of Reduction, Metal and Acid catalytic, Sulphide, Electrolytic, Metal and Alkali Sulphites, Manufacture of Aniline, m-Nitro aniline and p- Aminophenol.

Practical's for III semester

1. **Nitration:- Preparation of meta di- nitro benzene**
2. **Hydrolysis: - Preparation of Para bromo aniline**
3. **Preparation of par nitro aniline**
4. **Oxidation: - Preparation of p nitro benzoic acid**
5. **Preparation of benzyl.**
6. **Reaction of Diazonim salt: Preparation of di azo benzene.**

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NALGONDA

NAGARJUNA GOVERNMENT COLLEGE, NALGONDA
(AUTONOMOUS)
FACULTY OF SCIENCE
B.Sc., II YEAR III SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-III

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define Atomic Weight and Molecular weight?
2. Define Heat capacity gases?
3. Write a short note on kinetics of Sulphonation?
4. Write the various types of Oxidizing agents?
5. What is Amination give example?

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What are the various dimensions and their units by which a liquid mixture can be expressed?
7. Discuss Material balance equation in Recycle operation with flow diagram.
8. Write a note on Energy balance.
9. Write the reaction and mechanism of Nitrobenzene.
10. What is Hydrogenation? Explain the Hydrogenation process of Vegetable Oils.
11. Briefly explain the manufacturing of Di methyl aniline.

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Explain what are the steps involved in material balance calculations without involving chemical reactions.
    (B) Write the material balance equation for distillation with block diagram
    (Or)
    (C) Write the material balance equation for Extraction with block diagram.
    (D) Write a short note on Recycle and Bypass operation
13. (A) Define Heat capacity of gases at constant pressure and constant volume.
    (B) Derive the equation Cp-Cv=R.
    (Or)
    (C) Write a note on Enthalpy.
    (D) Define Recycle Ratio and Purge Ratio.
14. (A) Write the manufacturing process of O and P nitro chlorobenzenes.
    (B) Explain reaction mechanism of Chlorobenzene?
    (Or)
    (C) Explain the kinetics of halogenations and halogenating agent with examples?
    (D) What is Sulphonation? How commercial sulphonation of benzene manufactured.
15. (A) Explain the manufacturing process of acetic acid by liquid phase Oxidation?
    (B) Write Hydrogenating agent and kinetics fo hydrogenation?
    (Or)
    (C) Explain the types of alkylations with examples?
    (D) Write manufacture of Aniline from Nitrobenzene?

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Autonomous Re-accredited by NAAC with "A" Grade

Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B. Sc II Year 4th Semester 4thPaper ***60hrs***

Unit – I **15hrs**

Process instrumentation

Thermometers

Unit II **15hrs**

Pressure

Liquid level

Viscosity measurements

Unit III **15hrs**

Oils-Fats

Waxes

Soaps

Unit – IV **15hrs**

Detergents

Pigments

Paints

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2016-17**

Semester: IV **Paper: IV**

NAME OF THE MODULE: Process instrumentation, Thermometers Oils, fats, waxes paints, pigment

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

Unit – I

Process instrumentation – Thermometers 15hrs

Process instrumentation: Static and Dynamic characteristics of Instruments, Concept of Measurement elements of Instruments, Principle-Construction and working of the following Measuring Instruments.

Thermometers (Temperature): Bimetallic thermometers, Pressure Spring thermometers, Liquid - Filled thermometers, Gass-Filled thermometers, Vapour Actuated thermometer, Resistance thermometers, Pyrometers.

Unit II

Pressure – Liquid level- Viscosity measurements 15hrs

Pressure: Construction and functioning of Manometers, Bourdon Pressure gauze, Bellow type Diaphragm type, Pirani gauzes.

Liquid Level: Direct and Indirect liquid level Measurements, Flat type liquid level gauzes, Ultrasonic level gauzes and Bubbler System.

Viscosity Measurements: Flow measurement, Orifice meter, Rota meter.

Unit III

Oils-Fats-Waxes Soaps 15hrs

Oil-Fats: Introduction, Distinction between Oils and Fats, Properties, Classification, Vegetable Oils-Manufacture of Cotton Seed oil by Expression and Solvent Extraction method, Refining of crude Vegetables Oil, Animal fats and oils.

Waxes: Classification of Waxes, Common Waxes, Determination of Acid Value, Saponification Value, Iodine Value, Elaiden test, Hydrogenation of oils- Dry process and Wet process.

Soaps: Introduction, Raw Materials required for manufacture of Soap, Manufacture of A) Laundry Soap B) Toilet Soap C) Transparent Soaps, Cleaning action Soaps.

Unit – IV

Detergents –Pigments- Paints

15hrs

Detergents: Introduction, Difference between Soaps and Detergents, Principle groups of Synthetic detergents Reagents a) Anionic b) Cationic c) Non- Ionic detergents, Manufacture of Alky Hydrogen Sulphate Alkyl Benzene Sulphonates, Cleaning action of detergent.

Pigments: Introduction, Manufacture and uses of the following pigments a) White lead b) Zinc white c) Ultramarine blue d) Carbon black e) Lithopone f) Read Lead g) Chrome green.

Paints: Introduction, Manufacture of paints, Varnishes –Raw materials, Spirit varnishes, Solvents and Thinners paints and Varnish industries in India.

PRACTICAL FOR IV SEMESTER;

I. Sulphonation

II. Preparation of Sulphanic anilic acid

III. Reduction: Preparation of m- Nitro aniline.

IV. Determination of Acidity.

V. Determination of Alkalinity.

VI. Analysis of Brass.

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FACULTY OF SCIENCE
B.Sc., II YEAR IV SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-IV

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. What are the Elements of Instrumentation?
2. Define Pressure and their units?
3. Write differences between Oil an Fat?
4. Define the Iodine value?
5. Explain the cleaning action of Detergent?

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What are the static and dynamic characteristics of Instruments?
7. Write a note on Resistance Thermometer.
8. What is viscosity? Write a note on Orifice meter.
9. What are Waxes? Write classification of Waxes with examples.
10. What is Hydrogenation? Explain the Dry process of vegetable Oils.
11. Write the differences in between Soaps and Detergents?

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Explain Construction and working process of Bi-Metallic Thermometer?
    (B) Write a note on pressure spring Thermometer?
    (Or)
    (C) Explain construction and working process of Mercury in glass Thermometer?
    (D) Write an essay about Pyrometers?
13. (A) What is Manometer? Explain about U-tube manometer.
    (B) Write an essay about Pirani guage?
    (Or)
    (C) Write an essay about liquid level measuring equipments?
    (D) Explain construction and working process of Rotameter?
14. (A) Explain the manufacturing process of Cotton seed oil by Expression method.
    (B) Write a short note on Saponification and Acid values?
    (Or)
    (C) What are step involved in refining of crude Vegetable Oil?
    (D) Explain the manufacturing process of Soap by Kettle process?
15. (A) Write a note on Anionic, Cationic, and Non-ionic Detergents?
    (B) Write the manufacture and uses of White Lead pigment?
    (Or)
    (C) Write the manufacturing process of Lithophone pigment?
    (D) What are the stages involved in the manufacture of paints?

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Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc II Year 5th Semester 5thPaper ***60hrs***

Unit I **15hrs**

Polymers

Basic polymerization

Unit –II **15hrs**

Plastics – Manufacturing Process

Unit III **15hrs**

Elastomers- Fibres

Unit IV **15hrs**

Dyes – Manufacturing Methods

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2015-16**

Semester: V **Paper: V**

NAME OF THE MODULE: Polymers, Plastics, Elastomers- Fibres, Dyes

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

Unit I

Polymers 15hrs

Basic polymerization: Introduction, Classification of polymers- By source–Natural Polymers, Synthetic polymers, By Polymerization reaction- Addition polymerization or Chain growth polymerization, Condensation polymerization or Step growth polymerization, By Composition – Homo polymers, Co-Polymers, By Skeletal Structure (Linear, Cyclic, Branched, Dendrite, Network or Cross linked), Types of polymerization reactions a) Addition polymerization – Free Radical addition polymerization, Cationic addition polymerization, Anionic addition polymerization, b) Condensation polymerization c) Co-Ordination Polymerization (Ziegler – Natta Catalyst), Stereo Chemistry Polymers – Isotactic, Syndiotactic, Atactictic polymers, Degree of Polymerization, Determination of Molecular weight of polymers by Number Average molecular weight, Weight Average molecular weight.

Unit –II

Plastics – Manufacturing Process 15hrs

Plastic: Introduction, Classification-Thermoset and Thermoplasties, Properties and Uses.

Manufacture of Thermoplastic polymers-Manufacture of Poly ethylene (1.High Pressure method or Low Density Poly Ethylene 2.Low Pressure method or High Density Poly Ethylene), Properties and Uses. Manufacture of Poly Propylene, Manufacture of Poly Vinyl Chloride.

Manufacture of Thermosetting polymers- Manufacture Phenol-Formaldehyde Resins, Manufacture Urea-Formaldehyde Resins.

Unit III

Elastomers- Fibres 15hrs

Elastomers : Introduction, Natural and Synthetic rubber, structure, Manufacture, Vulcanization of rubber, Vulcanization Agents, Buna Rubber-Buna –S, Buna-N, Neoprin Rubber

Fibres : Introduction, Rayon or Artificial Silk, Distinction between Artificial and Natural Silk, Manufacture of Cuprammonium Rayon, Acetate Rayon, Viscose Rayon, Polyamide Fibers-Manufacture of Nylon -6 and Nylon -66, Teflon.

Unit IV

Dyes – Manufacturing Methods 15hrs

Dyes : Introduction, Colors and Constitution- Chromophores, Auxochromes, Types of Chromphores, Types of Auxochromes (Bathochromic group, Hypsochromic group), Classification of Dyes -- According to their mode of application – Acid dyes, Basic Dyes, Direct or Substantive Dyes, Mordant or Adjective Dyes, Vat dyes, Ingrain dyes or Developed dyes, Suphur Dyes, Pigment Dyes, Spirit Soluble Dyes or Solvent, Food Dyes, Classification of dyes based on Chemical Constitution- Nitro Dyes, Nitroso dyes Azo dyes, Structure and Synthesis of Methyl Orange, Malachite Green, Phenolphalein, Alizarin.

PRACTICALS:

Analysis of common raw material

I. Estimation of phenol

II. Estimation of Ketone

III. Determination of Acid value

IV. Saponification of Oil

V. Adulteration of Rhodamine B in Chili powder

VI. Adulteration of $PbCro_4$ in turmeric

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B.Sc., III YEAR V SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-V

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define the degree of Polymerization.
2. Write any three uses of Poly Ethylene.
3. Write a short note on Vulcanization agents.
4. Write the preparation reaction of Teflon.
5. Define the Chromophore and Auxochrome.

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What are polymers? Briefly explain the classification of polymers.
7. Write the difference between Thermo plastics and Thermo setting plastics.
8. Explain the manufacturing process of Viscous Rayon.
9. Write a short note on Azo dyes with examples.
10. Define the Isotactic, Syndiotactic, Atactic polymers.
11. Write the structure and synthesis of Phenolphthalein.

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Define the polymerization? Explain the free radical Addition polymerization.
    (B) Explain the Condensation Polymerization reaction with example.
    (Or)
    (C) Explain about $\overline{Mn}$ and $\overline{Mw}$.
    (D) What is Ziegler-Natta Catalyst? Write the mechanism with example.
13. (A) Explain the manufacturing process poly ethylene by high pressure method.
    (B) Explain the manufacturing process of Poly vinyl chloride.
    (Or)
    (C) What are Thermo Setting plastics? Write the preparation of Phenol Formaldehyde Resin
    (D) Explain the manufacturing process of Urea Formaldehyde Resin.
14. (A) What are Rubbers? Explain the synthesis Buna-S rubber.
    (B) Write the reaction, properties and uses of Neoprene Rubber.
    (Or)
    (C)Write the manufacturing process of Nylon-66.
    (D) Distinguish between Natural and Synthetic Fibers.
15. (A) Write a short note on Acid, Basic, Mordent Dyes.
    (B) Write the structure and synthesis of Methyl Orange.
    (Or)
    (C) Write a short on Nitraso, Nitro Dyes.
    (D) Write the structural synthesis of Malachite Green.

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Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc II Year 5th Semester 6th Paper ***60hrs***

UNIT-I **15hrs**

Historical background and development of Pharmaceutical Industry in India

Pharmaceutical industry in India

Pharmacopeias

UNIT – II **15hrs**

Formulation and Routes of Administration

Routes of Drug Administration

Pharmaceutical Excipients

Unit III **15hrs**

Surgical Dressings Sutures, ligatures – Pharmaceutical packing

Wound and surgical dressings

Sutures and ligatures

Unit-IV **15hrs**

Vitamins

Vitamin A (A1-retinol)

Vitamin B1: (Thiamine)

Vitamin B2: (Riboflavin)

Vitamin B6: (Pyridoxine)

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc SUBJECT: INDUSTRIAL CHEMISTRY YEAR: 2015-16

Semester: V Paper: VI

NAME OF THE MODULE: Pharmaceutical Industry, Formulation and Routes of Administration, Pharmaceutical packing, Vitamins

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

UNIT-I

Historical background and development of Pharmaceutical Industry in India 15hrs

Pharmaceutical industry in India – Pharmaceutical Enquiry Committee, and the Hathi-Committee, Specific Terms of reference of this Committees, Past Performance, Present Performance – Bulk Drug production, Formulations production, Imports and Exports, Research and Developments Drug prices.

Pharmacopeias: Introduction to various Pharmacopeias, History of Indian Pharmacopoeia, History of B.P.(British Pharmacopoeia) and U.S.P. (United States Pharmacopoeia) History of International Pharmacopoeia, European Pharmacopoeia Role of Pharmacopoeia, Contents of Pharmacopoeia.

UNIT – II

Formulation and Routes of Administration 15hrs

Introduction to various Formulations needs for dosage Forms, Reasons for Safe and Convenient delivery of accurate Dosage and Dosage forms, some important Criteria and Efficacy.

Routes of Drug Administration: Introduction, Oral Route, Rectal Route, Parental Route – Subcutaneous injection, Intramuscular injection, Intravenous injections, Intra dermal injection, Epicutaneous Routes – Ocular, oral, and Nasal Routes, Other Routes.

Pharmaceutical Excipients: Definition of Excipients, classification of Excipients based on nature of the dosage, Route of Administration, Possible level microbial contamination, Types of pharmaceutical Excipients, Their non proprietary names BP, USPNF, Synonyms, Chemical name structural formula, Functional category applications in pharmaceutical formulation, Description, Typical properties incompatibilities, Methods of Manufacture, Safety, Handling precautions. Related substances, Comments of binders, Antioxidant, Viscosity builders, Coating agents, Diluents, Sweeteners

(Mannitol) Preservatives, Emulsifying agents, Sweeteners (Sorbitol), Lubricants glidant, Flavoring agent (Vanillin), Coloring agents, Gelatin (Coating agent)

Unit III

Surgical Dressings Sutures, ligatures – Pharmaceutical packing **15hrs**

Wound and surgical dressings: Introduction, Would repair, Features of an ideal dressing, Types of Surgical dressing and their Uses i) Fibres ii) Fabrics iii) Bandages, iv) Self-adhesive plasters v) Compound dressings.

Sutures and ligatures: Introduction, Classification – Absorbable non-absorbable Pharmaceutical packaging – introduction, Selection of Packaging materials and characteristics of materials, Packaging materials – Glass, Plastics thermoplastics, Thermo sets, Package Evaluation.

Unit-IV

Vitamins **15hrs**

Introduction, Nomenclature and Classification, Metabolic, Physiological or Biological function of Vitamins.

Vitamin A (A1-retinol) Occurrence, Isolation, Diseases caused by its deficiency, Physiological functions, Structures.

Vitamin B1: (Thiamine) Occurrence, Isolation, Diseases caused by its deficiency, Requirement, Structure.

Vitamin B2: (Riboflavin) Occurrence, Isolation, Diseases caused by its deficiency, Requirement, Structure.

Vitamin B6: (Pyridoxine) Occurrence, Isolation, Diseases caused by its deficiently, Requirements, Structure.

PRACTICALS:

Analysis of common raw material

I. Estimation of Anilline

II. Estimation of benzoic acid

III. Determination of iodine value

IV. Adulteration of food stuffs. Adulteration of Vanaspathi in pure ghee

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B.Sc., III YEAR V SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-VI

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define Pharmacopoeia.
2. What is drug?
3. What are pharmaceutical Expecients?
4. Write a note on Fibers.
5. Give the structure of vitamin-A.

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What is role of pharmacopoeia?
7. Write need for dosage forms of drug.
8. What are the characteristics of an ideal dressing?
9. What are sources and biological functions of vitamin-B_1?
10. Explain the following. i)Acacia ii) Vanillin
11. Write a brief note on contents of pharmacopoeia.

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Write an essay on past performance of pharmaceutical industry in India.
    (B) What the recommendation of PEC and Hathi committee.
    Or
    (C) Give a brief history of Indian pharmacopoeia.
    (D) Write an essay on USP and EPH.
13. (A) what are the various routes of drug administration. Explain Oral Route of drug administration.
    (B) Write a note on parenteral route of drug administration.
    Or
    (C) What are Excipients? Write a note on excipients used in tablets.
    (D) Explain following i) Mannitol ii) Sorbitol
14. (A) What are different types of surgical dressings. Write a note on Fabrics.
    (B) Write a note on self adhesive plasters.
    Or
    (C) What are packaging materials? Explain glass.
    (D) Write an essay about plastics.
15. (A) Explain sources and function of vitamin-B_2
    (B) Explain sources and function of vitamin-B_6
    Or
    (C) What are the diseases caused by deficiency of vitamin- A?
    (D) What are the diseases caused by deficiency of vitamin- $B_1$and vitamin-B_{27}

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Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc II Year 6th Semester 7thPaper **60hrs**

Unit I **15hrs**

Drugs & Manufacturing Process

Purification of raw material for the manufacturing of drugs

Sulpha drugs-Antipyretics and Analgesics

Unit – II **15hrs**

Process for the Manufacture of Drugs

Antibiotics- penicillin

Antimalarial drug- Paludrin,chloroquine

Antihistamine- chloropheniramine maleate

Antimicrobes- chlorophenicol, furazolidien

Anti inflammatory drugs- Salicylic acid and its derivatives

Cardiovascular drugs- methyl dopa (L-dopa)

Barbiturates- phento barbital

Unit III **15hrs**

Physical Evaluation of Crude Drug

Evaluation of crude drugs

Chemical constitution of plant

Unit-IV **15hrs**

Pharmaceutical Quality Control –Fermentation

Pyrogenic Testing; Glass Testing; Densities of Powders

Products based on Fermentation process

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2015-16**

Semester: VI **Paper: VII**

NAME OF THE MODULE: Drugs manufacture, Pharmaceutical Q.C –Fermentation

NATURE OF THE MODULE: CORE

MODE OF THE LEARING: REGULAR

Unit I

Drugs & Manufacturing Process 15hrs

Introduction – Drug diseases (definition) Historical evaluation, Source – plant, Animal and Synthetic biotechnology and Human gene therapy.

Classification–Classification of Drugs based on structure and therapeutic activity with examples each.

Antibacterials-Sulphadrugs (or) Sulphonamides, Discovery of Sulphanilamide, Synthesis and Mechanism, Important derivatives of Sulphanilamide, Synthesis and Mechanism of sulphapyridine, sulphathiazole, sulphadiazine, sulphaguanidine, mechanism of action of sulpha drugs.

Antipyretics and Analgesics –Definition, Structure, Synthesis of Aspirin, Phenacetin (p-ethoxy acetanilide), Melubrin and Novalign.

Unit - II

Process For the Manufacture of Drugs 15hrs

Antibiotics: Definition, Discovery of Penicillin, Structure, Types of Penicillin, Synthesis, Production of Penicillin i) Surface Culture Method, ii) Bran Method, iii) Submerged Culture Method, Isolation, Drug action of Penicillin.

Antimalarial drug: Structure, Synthesis and therapeutic action of Paludrine, Chloroquine.

Antihistamine: Introduction, Structure, Synthesis and therapeutic action of chlorophenirаminemaleate.

Antimicrobes: Defination, Structure, Synthesis and therapeutic action of chlorophenicol, furazolidien.

Anti inflammatory drugs: Salicylic acid and its derivatives- Structure, Synthesis, Uses of Aspirin, Salol, Salsalate, Sodium salicylate, Salicylamide, Benorilate, Choline salicy late, Flufenisal.

Cardiovascular drugs: Structure, synthesis therapeutic action of methyl dopa (L-dopa)

Barbiturates: Sedatives, hypnotics, drugs action of barbiturates, structure, synthesis of phento barbital.

Unit III

Physical Evaluation of Crude Drug 15hrs

Evaluation of crude drugs : i) Moisture content, ii) Extractive value iii) Volatile content iv) Foreign organic matter v) Micro Scopical evaluation vi) Starch vii) Leaf content (Palisade ratio, Stomatal number and Stomatal index, Vein – islet number and Vein termination number viii) Chromatographic techniques.

Chemical constitution of plant: Introduction i)Carbohydrates (Monosaccharide, Disaccharides, Polysaccharide) ii)Proteins iii)Lipids iv)Waxes v)Volatileoils vi)Steroids vii)Saponis viii)Flavanoides ix) Tannins x) Glycosides xi) Alkaloids.

Unit-IV

Pharmaceutical Quality Control –Fermentation 15hrs

Pyrogenic Testing: Introduction, Methods for Pyrogen testing, Rabbit pyrogen test, Apparatus and diluents, Test animal's temperature recording, Test interpretation, Interferences of the Rabbit Pyrogen test.

Glass Testing: Introduction, USP & NF Glass, Classification Powdered glass test, Procedure, Water attack at 121^0C procedure.

Densities of Powders: Introduction, Determination of True density, Granule density and Bulk density.

Products based on Fermentation process: Brief idea of Micro organisms, Their structure, Growth and usefulness of Bacteria, Algae, Fungi, Protozoa and Viruses, Factors affecting growth of bacteria – Nutrition, Moisture, Air, Temperature, Ph, Light, Osmotic pressure, Enzyme systems.

Fermentation: General principle of Fermentation processes and product processing.

PRACTICALS:

Synthesis of common industrial compounds

I. m-Nitro aniline from nitro benzene

II.4-amino benzoic acid from 4-nitrotoluene

III. Preparation of soap

IV. Thin layer chromatography

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B.Sc., III YEAR VI SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-VII

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define the Drug and Disease.
2. What are Antibiotics? Give examples.
3. Define Leaf Content.
4. Write any three general principles of Fermentation process?
5. Define Sedatives and Hypnotics. Give examples.

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What are anti Pyretics and Analgesics? Write the synthesis of Phenacetin.
7. Write any three syntheses of Salicylic acid derivatives.
8. Explain the microscopic evolution of Crude Drug.
9. What are the factors effecting the growth of bacteria?
10. Write the structure synthesis Therapeutic action of Methyl dopa.
11. What are Anti Malarials? Write the structural synthesis of Paludrine.

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Explain the classification of drugs based on Therapeutic activity with examples.
    (B) Explain the mechanism and action of Sulpha Drugs.
    (Or)
    (C) Explain the Historical evolution of Drugs.
    (D) Write the synthesis and mechanism of Sulpha pyridine, Sulpha thiazole.
13. (A) Write the production of penicillin by submerged culture method.
    (B) Write the structure, synthesis and therapeutic action of Chloroquine.
    (Or)
    (C) Write the structure and synthesis of Phento barbital.
    (D) Define the anti Microbes? Write the synthesis and therapeutic action of Furazolidien.
14. (A) Briefly explain Moisture content, Extractive value and Volatile content.
    (B) How do you evaluate the Crude drug using Foreign organic matter, Chromatographic technique
    (Or)
    (C) Write the importance of Carbohydrates and Proteins.
    (D) Explain briefly Steroids, Glycosides and Alkaloids.
15. (A) Explain the structure growth and usefulness of Bacteria, Algae, Protozoa and Viruses.
    (B) What is Pyrogen? Which methods are used to identify Pyrogen test?
    (Or)
    (C)Explain the Powder density test in Pharmaceutical quality control.
    (D) Explain the Bio transformation process in steroids.

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Revised Syllabus for Department of **INDUSTRIAL CHEMISTRY**

B.Sc II Year 6th Semester 8thPaper ***60hrs***

Unit-I **15hrs**

FACTORS INVOLVED IN PROJECT COST ESTIMATION-DEPRECIATION

Unit-II **15hrs**

ASPECTS OF MARKETING PROBABILITY CRITERIA

Unit-III **15hrs**

CONCEPT OF SCIENTIFIC MANAGEMENT IN INDUSTRY – FUNCTIONS OF MANAGEMENT IN INDUSTRY

Unit – IV **15hrs**

MANAGEMENT OF HUMAN RESOURCES

COLLEGE: NAGARJUNA GOVT.COLLEGE, NALGONDA

COURSE; B.Sc **SUBJECT: INDUSTRIAL CHEMISTRY** **YEAR: 2015-16**

Semester: VI **Paper:VIII**

NAME OF THE MODULE: Cost estimation, Probability Criteria, Management, Human resource

NATURE OF THE MODULE: CORE
MODE OF THE LEARING: REGULAR

Unit-I

FACTORS INVOLVED IN PROJECT COST ESTIMATION-DEPRECIATION 15hrs

Factors involved in Project Cost estimate methods, Employed for the estimate of Capital investment, Capital formation, Elements of Cost accounting, Types of costs, Time value of Money, Equivalence. Depreciation, Methods employed -- Capital formation depreciation.

Unit-II

ASPECTS OF MARKETING PROBABILITY CRITERIA 15hrs

Some aspects of Marketing, Pricing policy, Probability criteria – Economics of selecting alternatives – Target marketing, Market mix, Advertising, Sales promotion, Customer relationship management.

Unit-III

CONCEPT OF SCIENTIFIC MANAGEMENT IN INDUSTRY – FUNCTIONS OF MANAGEMENT IN INDUSTRY 15hrs

Functions of Management, Decision making, Planning organizing, Directing, Controlling, Scientific Management Theory, Perception, Process of Perception.

Unit – IV

MANAGEMENT OF HUMAN RESOURCES 15hrs

Selection, Recruitment, Principles of HRM, Training and Development, Techniques of Training, Motivation Theory, Material Management, Location of industry, Incentives Welfare & Safety.

PRACTICALS: Synthesis of common industrial compounds

I.4-bromo aniline from acetanilide

II.Preparation of phenol formaldehyde resin

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B.Sc., III YEAR VI SEMESTER EXAMINATION
INDUSTRIAL CHEMISTRY PAPER-VIII

Time: $2_{1/2}$ hours **Max. Marks: 70 marks**

PART-A
(Very Short Questions)

Answer all the following questions **5*2=10M**

1. Define cost.
2. What are the functions of Management?
3. Explain briefly Welfare of employees
4. What are the uses of Customer relationship Management?
5. What are the sources of Recruitment?

PART-B
(Short Questions)

Answer any four of the following questions **4*5=20M**

6. What is Depreciation? Explain.
7. What are the factors useful to prepare Project cost estimation?
8. Define Break event point? How to calculate Break-even point by using graphical methods.
9. Write a note on Material management with respect to any chemical industry.
10. Write a note on management of Human resource.
11. What are the sources of Recruitment? Explain.

PART-C
(Essay type Questions)

Answer the following questions **4*10=40M**

12. (A) Write an essay on Time value of Money.
    (B) What are the sources of Finance? Explain

    Or

    (C) Write an essay on Working capital.
    (D) Explain the methods for calculating the Depreciation
13. (A) Write an essay on customer relationship Management
    (B) What is Advertising? Explain.

    Or

    (C) Write brief note on Target marketing.
    (D) Write a note on Margin safety.
14. (A) Explain Aims and objectives of Scientific Management.
    (B) Write a note on following I) Decision making II) Directing.

    Or

    (C) Explain I) Organizing II) Controlling.
    (D) Write an essay on Advertisement.
15. (A) Write an essay on Location for Industry.
    (B) What is Training? Explain functions and uses of good training.

    Or

    (C) Write a note on Industrial Accidents.
    (D) What are the factors effecting Wages structure.

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Received an amount of Rs. ..800/-.....

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from the Principal Nagarjuna Government College, (Atonomous) Nalgonda towards honorarium for attending BOS Meeting in Industrial Chemistry conducted by Department of Chemistry on 13-09-2017.

Signature

Dr. A. BHANU PRASAD

Principal

GDC, Ramannapeta.

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(Dr. A. Sreenivasulu)

Asst. Professor

KRR GDC Kodad.

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(K. Nagaraju)

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