

LESSON PLAN

Name of the Faculty: Smt. Pooja Rani

Discipline: Civil Engg. & Agriculture Engg.

Semester: 1st

Subject: Applied Chemistry

Lesson Plan Duration: 16 weeks (From 30/07/2026 to 23/11/2026)

Work Load (Lecture/Practical) Per Week (In Hours): Lectures – 03, Practical's – 04

Week	Theory		Practical	
	Lect- ure Day	Topic (Including assignment/Test)	Pract- ical Day	Topic
1 st	1 st	Unit – 1 Atomic Structure, Periodic Table & Chemical Bonding - Introduction	1 st	To prepare standard solution of oxalic acid – introduction (G-1).
	2 nd	Bohr's Model of an Atom	2 nd	To prepare standard solution of oxalic acid – introduction (G-2).
	3 rd	Dual character of matter – derivation of de-Broglie's equation		
2 nd	4 th	Heisenberg's Principle of Uncertainty	3 rd	Perform the experiment & prepare a std. solution of oxalic acid (G-1).
	5 th	Modern concept of atomic structure: Definition & shape of orbitals (s, p & d)	4 th	Perform the experiment & prepare a std. solution of oxalic acid (G-2).
	6 th	Quantum numbers & their significance		
3 rd	7 th	Electronic configuration: Aufbau, Pauli Exclusion Principles & Hund's rule.	5 th	To dilute the given KMnO₄ solution – introduction (G-1).
	8 th	Electronic configuration of elements up to Z = 30.	6 th	To dilute the given KMnO ₄ solution – introduction (G-2).
	9 th	Modern Periodic Law & Table, Classification of elements s, p, d, & f-blocks Class Test		
4 th	10 th	Metals, Non-metals & Metalloids	7 th	Perform the experiment & dilute the given solution (G-1).
	11 th	Chemical Bonding: cause & types of bonding	8 th	Perform the experiment & dilute the given solution (G-2).
	12 th	Physical properties of ionic, covalent & metallic substances.		
5 th	13 th	Assignment Solution of problems	9 th	To find out the strength in g/l of an unknown solution of NaOH using a std. (N/10) oxalic acid solution – introduction (G-1)
	14 th	1st Sessional Test	10 th	To find out the strength in g/l of an unknown solution of NaOH using a std. (N/10) oxalic acid solution – introduction (G-2).
	15 th	Analysis of Sessional test Unit - 2 Metals & Alloys - introduction Metals: Mechanical properties, Impact resistance & their uses		
6 th	16 th	PTM Def. of mineral, ore, gangue, flux & slag Commercial varieties of Fe	11 th	Perform the experiment and find out the strength of given NaOH Solution (G-1).
	17 th	Metallurgy of Fe from Hematite using Blast furnance,	12 th	Perform the experiment and find out the strength of given NaOH Solution (G-2).
	18 th	Alloy: Def., necessity, composition, properties & uses of Duralumin & steel		
7 th	19 th	Heat treatment of steel -normalizing, annualizing, quenching, tempering	13 th	To find out the total alkalinity in ppm of a water sample with the help of a std. sulphuric acid solution – introduction (G-1).
	20 th	Unit – 3 Water, Solutions, Acids & Bases - introduction Solutions: Def., expression of the conc. of a solution in % (w/w, w/v, v/v), normality, molarity, molality & ppm	14 th	To find out the total alkalinity in ppm of a water sample with the help of a std. sulphuric acid solution – introduction (G-2).
	21 th	Arrhenius concept of Acids & Bases, Strong and weak acids & bases		
8 th	22 th	Ph value & its significance	15 th	Perform the experiment and find out the

		Ph scale Numerical problems on ph		total alkalinity (G-1).
	23 th	Class Test Types of water & causes of hardness of water, Types of hardness Disadvantages of hard water	16 th	Perform the experiment and find out the total alkalinity (G-2).
	24 th	Expression of hardness of water – ppm unit of hardness, Removal of Temporary hardness – boiling & Clark’s method		
9 th	25 th	Removal of Permanent hardness – Ion-exchange method	17 th	To determine the total hardness of given water sample by EDTA method (G-1).
	26 th	Boiler problems caused by hard water – scale & sludge formation, Priming & foaming	18 th	To determine the total hardness of given water sample by EDTA method (G-2).
	27 th	Caustic embrittlement, Water sterilization by Cl, UV radiation and RO		
10 th	28 th	Assignment Solution of problems	19 th	To determine the TDS in ppm in a given sample of water gravimetrically (G-1).
	29 th	2nd Sessional Test	20 th	To determine the TDS in ppm in a given sample of water gravimetrically (G-2).
	30 th	Analysis of Sessional test		
11 th	31 th	PTM Unit – 4 Fuels & Lubricants - introduction Fuels: def., Calorific value – def., types & units Characteristics of an ideal fuel	21 th	To determine the pH of different solutions using a digital pH meter (G-1).
	32 th	Petroleum: composition & refining Gaseous fuels: Composition, properties & uses of CNG, PNG, LNG, LPG	22 th	To determine the pH of different solutions using a digital pH meter (G-2).
	33 th	Relative advantages of liquid & gaseous fuels over solid fuels Scope of Hydrogen as future fuel		
12 th	34 th	Lubricants: classification, functions & Qualities of lubricants	23 th	To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter (G-1).
	35 th	Mechanism of Lubrication Physical properties of Lubricant	24 th	To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter (G-2).
	36 th	Class Test Unit – 5 Polymer & Electrochemistry - introduction		
13 th	37 th	Polymers: Def., classification	25 th	To determine the viscosity of lubricating oil using a Redwood viscometer – introduction (G-1).
	38 th	Preparation properties & uses of polythene, PVC, Nylon-66, Bakelite	26 th	To determine the viscosity of lubricating oil using a Redwood viscometer – introduction (G-2).
	39 th	Plastic: Def. & types Natural rubber, neoprene & other synthetic rubber		
14 th	40 th	Corrosion: Def., types & factors affecting rate of corrosion	27 th	Perform the experiment and find out the viscosity of given lubricant oil (G-1).
	41 th	Methods of prevention of corrosion – Hot dipping, metal cladding, cementation	28 th	Perform the experiment and find out the viscosity of given lubricant oil (G-2).
	42 th	Quenching & cathodic protection Nanotechnology: intro & applications Nano-materials & their classification		
15 th	43 th	Applications of nanotechnology in various engineering applications. Assignment Solution of problems	29 th	To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab (G-1).
	44 th	3rd Sessional Test	30 th	To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab (G-2).
	45 th	Analysis of Sessional test		
16 th	46 th	Taking Problems & solve them PTM	31 th	Revision
	47 th	Practice of sample papers	32 th	Revision
	48 th	Revision		

LESSON PLAN

Name of the Faculty: Ritu

Discipline: Agriculture Engg.

Semester: 3rd

Subject: Farm Irrigation Engg.

Lesson plan Duration: 16 weeks

WEEK	THEORY TOPIC (INCLUDING ASSIGNMENT/TEST)	LECTURE DAY ,	PRACTICAL DAY	PRACTICAL
1 ST	Source of surface water	1	1 st week	Study of constructional feature of sprinkler irrigation system
	Necessity of irrigation	2		
	Advantages and disadvantages of irrigation	3		
	Sources and quality of irrigation water	4		
2 nd	Evaporation, transpiration, transpiration rate ,evapotranspiration(definition and explanation)	5	2 nd week	Operation and maintenance of sprinkler irrigation system
	Consumptive use, sessional Consumptive use , peak period Consumptive use	6		
	Factor affecting Consumptive use of water	7		
	Water infiltration in filtration rate	8		
3 rd	Crop water requirement net and gross irrigation requirement	9	3 rd week	Study of constructional feature of drip irrigation system
	Irrigation frequency and irrigation scheduling	10		
	Duty and delta :- factor affecting duty and method of improving duty	11		
	Irrigation efficiencies :- water	12		

	conveyence application and storage			
4 th	Irrigation efficiencies :-distribution , water use project	13	4 th week	Operation and maintenance of drip irrigation system
	Operational economic efficiency	14		
	Revision of chapter 1 st	15		
	Introduction to surface, subsurface , sprinkler and drip irrigation system	16		
5 th	Surface method of irrigation viz. border , check basin and furrow irrigation their basic detail	17	5 th week	Checking of practical
	Characterstic ,types an their adaptability	18		
	Sprinkler irrigation adaptability and limitation	19		
	Sprinkler irrigation:- types ,components , operation and maintenance	20		
6 th	Drip irrigation adaptability and limitation	21	6 th week	Study of constructional feature of centrifugal pump
	:- types ,components , operation and maintenance of drip irrigation system	22		
	Revision of chapter 2 nd	23		
	Problem discussion of chapter 1 st	24		
7 th	Introduction to various pumps used for irrigation	25	7 th week	Operation and maintenance of centrifugal pump
	Classification of pump :- positive displacement and variable displacement	26		
	Pump and technology ,centrifugal pumps	27		
	Types of impellers of centrifugal pumps	28		
8 th	Installation, operation and maintenance of centrifugal pumps	29	8 th week	Identifying the fault and remedies of centrifugal pump
	Submersible pump and vertical turbine pumps their common trouble and remedies	30		
	Criteria and procedure for selection of	31		

	irrigation pumps			
	Revision of chapter 3 rd	32		
9 th	Types of water bearing formation aquifer characteristics influencing yield of wells	33	9 th week	Checking of practical
	Determination aquifer constant , specific capacity of wells	34		
	Deferent term related to well hydraulic such as water table , isobaths, isobar line ,draw down ,recharge of ground water	35		
	Types of wells and tube wells , open wells	36		
10 th	Well development and its methods	37	10 th week	Installation, operation and maintenance of submersible pump
	Revision of 4 th chapter	38		
	Canal and their classification , seepage from canal and field channels	39		
	Canal lining various types and their advantages and disadvantages	40		
11 th	Introduction various water conveyance structure and their function	41	11 th week	Identifying the fault and remedies of submersible pump
	Open channel their types , layout and design parameter	42		
	Subsurface system water conveyance their components	43		
	Unit of water measurement direct and indirect method of water measurement	44		
12 th	Measurement of water in pipes and open channels	45	12 th week	Measurement of water flow using par shall flume
	Revision of chapter 5 th	46		
	Problem discussion of chapter 4 th	47		
	Problem discussion of chapter 6 th	48		
13 th	Pollution with poor irrigation water	49	13 th week	To survey market and field for the availability, adaptability and selection of various types of

				pumps and irrigation system in region .
	Pollution by excessive use fertilizer and agrochemical	50		
	Revision of chapter 6 th	51		
	Revision of chapter 1 st and 2 nd	52		
14 th	Revision of chapter 3 rd and 4 th	53	14 th week	Exposure visit of irrigation equipment industries: pumps, sprinkler, and drip irrigation etc.
	Revision of chapter 5 th and 6 th	54		
	Revision of chapter 7 th	55		
	Test of chapter 1 st and 2 nd	56		
15 th	Test of chapter 3 rd and 4 th	57	15 th week	Checking of practical files
	Test of chapter 5 th ,6 th and 7 th	58		
	Problem discussion related to subject	59		
	Problem discussion related to subject	60		

LESSON PLAN

Name of the Faculty: RITU

Discipline: Agriculture Engg.

Semester: 3rd

Subject: IC Engine

Lesson Plan Duration: 16 weeks

WEEK	LECTURE DAY	THEORY (including assignment/test)	PRACTICAL DAY	Practical
1 st	1	Introduction and classification of IC engine	1 st week	Study of two stroke engine using cut section model, note the function and material of each part
	2	Various parts of IC engine and their location		
	3	Location and material used for various parts of IC engine		
2 nd	1	Working principle of four stroke cycle	2 nd week	Study of four stroke engine using cut section model
	2	Working principle of two stroke cycle		
	3	Petrol and diesel engine their comparison		
3 rd	1	Concept of IC engine terms ,bore stroke dead center, piston displacement, piston speed	3 rd week	Checking of practical file
	2	Concept of IC engine terms: crank throw ,comparison ratio ,clearance volume		
	3	Working principle of rotary engine		
4 th	1	Otto or constant volume cycle and its thermal efficiency	4 th week	Identification of various tools used for dismantling and assembling IC engine
	2	Diesel or constant pressure cycle and it's thermal efficiency		
	3	Dual cycle and its thermal efficiency		
5 th	1	Revision of chapter 1 st	5 th week	Checking of practical file
	2	Components of air intake system viz. pre-air cleaner, inlet manifold, exhaust manifold,		
	3	Types of air cleaners: wet, dry		
6 th	1	Components of fuel system, description and working of fuel feed pump	6 th week	Performing pre-starting checks on engine
	2	Working of fuel injection pump,		

		injector, fuel filters		
	3	Complete detail and working of micro fuel injection system for a multi cylinder engine		
7 th	1	Use of alternate fuels in IC engines i.e. biogas, gasoline, biomass fuel	7 th week	Study of fuel injection system of multi cylinder engine, dismantling and reassembling
	2	Revision of chapter 2 nd		
	3	Necessity of engine cooling ,types of cooling system(Air cooled and water cooled)		
8 th	1	Component of cooling system	8 th week	Checking of practical file
	2	Defects in cooling system and their rectification		
	3	Thermostat valve and its function		
9 th	1	Function of lubrication ,types and properties of engine lubricants	9 th week	Study of cooling system of IC engine
	2	Additives for improving the property of lubricants		
	3	Lubrication system of IC engine and its types		
10 th	1	Explanation of oil pumps, oil filters, pressure relief valve, positive crank case ventilation	10 th week	Checking of practical file
	2	Revision of chapter 3 rd		
	3	Engine power ,indicated and brake power		
11 th	1	Mechanical, thermal, relative and volumetric efficiencies	11 th week	Study of lubrication system of IC engine
	2	Method of finding indicated and brake horse power		
	3	Morse test and balance sheet performance		
12 th	1	Endurance test of IC engine	12 th week	Trouble shooting of IC engine
	2	Revision of chapter 4 th		
	3	Concept of pollutants in CI engine		
13 th	1	Exhaust smoke analysis and pollution control	13 th week	Checking of practical file
	2	Bharat stage emission standards		
	3	Method of reducing pollution in IC engine		
14 th	1	Preventive maintenance of engine	14 th week	Visit of IC engine repairing shops
	2	Repair and overhaul of engine		
	3	Revision of chapter 5 th		
15 th	1	Revision of chapter 6 th	15 th week	Checking of practical file
	2	Revision of chapter 1 st and 2 nd		
	3	Revision of chapter 3 rd and 4 th		

LESSON PLAN

Name of the Faculty: RITU

Discipline: Agriculture Engg.

Semester: 3rd

Subject: Post-Harvest Technology

Duration: 16 Weeks

WEEK	Lecture Day	THEORY Topic(including assignment/tests)	Practical Day	PRACTICAL
1 st	1	Introduction to post harvest technology of agricultural produce	1 st	Study of construction features, working and adjustment of mould board plough
	2	Need scope and importance of post-harvest technology		
	3	Brief description and introduction to various post-harvest operation its, function and use :cleaning ,grading, sorting, drying, washing		
	4	Introduction to various post-harvest technology and its function and use :storage, milling, size reduction, expelling, extraction		
2 nd	1	Introduction to various post-harvest technology and its function and use :blending, heat treatment, separation, material handling	2 nd	Checking of practical
	2	Introduction to engineering properties of agricultural materials affecting post-harvest technology		
	3	Physical properties :shape, size, density and specific gravity		
	4	Aero and hydronic properties :drag coefficient and terminal velocity		
3 rd	1	Frictional properties :static friction, kinetic friction ,rolling resistance, elasticity and angle of repose	3 rd	Study of constructional feature ,working and adjustment of disc plough
	2	Mechanical properties :hardness ,compressive, strength, impact and shear resistance		
	3	Thermal properties :specific heat, thermal conductivity, thermal diffusivity		

	4	Revision of chapter 1 st		
4 th	1	Introduction and importance of drying	4 th	Checking of practical
	2	Principles of drying and factor affecting drying		
	3	Types of drying method :sun drying and artificial drying by mechanical means		
	4	Moisture content representation ,equilibrium moisture content		
5 th	1	Determination of moisture content by direct or indirect method	5 th	Study of constructional feature and working of disc harrow
	2	Introduction to various drying system :solar drying system, batch drying system		
	3	Drying system :continuous drying system		
	4	Principle and operation of deep bed dryer, thin layer dryer, continuous flow dryer		
6 th	1	Principle and operation of L.S.U dryer, fluidized, rotary dryer, tray and tunnel dryer	6 th	Demonstration of constructional features, working and adjustment of seed cum fertilizer drill
	2	Problem discussion		
	3	Introduction and need of general principle of storage		
	4	Importance of general principle of storage		
7 th	1	Temperature and moisture changes during storage i.e. influence of moisture, relative humidity, temperature etc. On stored product	7 th	Checking of practical
	2	Insect and other organism associated with stored grain		
	3	Familiarization with the traditional and modern storage structure		
	4	Management of storage structure		
8 th	1	Comparison of bag and bulk storage	8 th	Study of constructional feature ,working and adjustment of zero till drill
	2	Losses during storage and their control		
	3	Space requirement of bag storage structure		
	4	Revision of chapter 2 nd		
9 th	1	Revision of chapter 3 rd	9 th	Demonstration of constructional

				features,working and adjustment of potato planter
	2	Post harvest losses		
	3	Factors affecting storage of fruits and vegetables		
	4	Need and importance of storage		
10 th	1	Principle of storage of fruit and vegetables	10 th	Checking of practical
	2	Cold storage and controlled storage		
	3	Modified atmosphere storage		
	4	Problem discussion		
11 th	1	Introduction to packaging of fruits and vegetables	11 th	Study of constructional features ,working and adjustments of paddy planter
	2	Types of packaging		
	3	Post-harvest treatment to increase shelf life :freezing		
	4	Post-harvest treatment to increase shelf life :chilling and canning		
12 th	1	Problem discussion of chapter 1 st	12 th	Tractor driving practice
	2	Problem discussion of chapter 2 nd		
	3	Problem discussion of chapter 3 rd		
	4	Problem discussion of chapter 4 th		
13 th	1	Introduction to cool chain for handling fruits and vegetables	13 th	Checking of practical
	2	Storage and marketing of fresh fruit and vegetables		
	3	Revision of chapter 1 st		
	4	Revision of chapter 2 nd		
14 th	1	Revision of chapter 3 rd	14 th	Hitching and de hitching of different implements with the tractor
	2	Revision of chapter 4 th		
	3	Revision chapter 5 th		
	4	Problem discussion of unit 5 th		
15 th	1	Problem discussion of unit 4 th	15 th	Checking of practical
	2	Problem discussion of unit 3 rd		
	3	Problem discussion of unit 2 nd		
	4	Problem discussion of unit 1 st		