



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Teaching and Examination Scheme I Semester: B. Tech Common to all branches of UG Engineering & Technology

SN	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
1	BSC	1FY2-01	Engineering Mathematics-I	3	1	-	30	70	100	4
2	BSC	1FY2-02/ 1FY2-03	Engineering Physics/ Engineering Chemistry	3	1	-	30	70	100	4
3	HSMC	1FY1-04/ 1FY1-05	Communication Skills/ Human Values	2	-	-	30	70	100	2
4	ESC	1FY3-06/ 1FY3-07	Programming for Problem Solving/ Basic Mechanical Engineering	2	-	-	30	70	100	2
5	ESC	1FY3-08/ 1FY3-09	Basic Electrical Engineering/ Basic Civil Engineering	2	-	-	30	70	100	2
6	BSC	1FY2-20/ 1FY2-21	Engineering Physics Lab/ Engineering Chemistry Lab	-	-	2	60	40	100	1
7	HSMC	1FY1-22/ 1FY1-23	Language Lab/ Human Values Activities and Sports	-	-	2	60	40	100	1
8	ESC	1FY3-24/ 1FY3-25	Computer Programming Lab/ Manufacturing Practices Workshop	-	-	3	60	40	100	1.5
9	ESC	1FY3-26/ 1FY3-27	Basic Electrical Engineering Lab/ Basic Civil Engineering Lab	-	-	2	60	40	100	1
10	ESC	1FY3-28/ 1FY3-29	Computer Aided Engineering Graphics/ Computer Aided Machine Drawing	-	-	3	60	40	100	1.5
11	Foundation Course	1FY8-0X	NCC/NSS/Sports			1			100	0.5
<b>Total</b>									<b>20.5</b>	

**L** : Lecture, **T** : Tutorial,

**P** : Practical, **IA** : Internal Assessment

**ETE**: End Term Exam, **Cr**: Credits



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Teaching and Examination Scheme II Semester: B.Tech.

### Common to all branches of UG Engineering & Technology

SN	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
1	BSC	2FY2-01	Engineering Mathematics-II	3	1	-	30	70	100	4
2	BSC	2FY2-03/ 2FY2-02	Engineering Chemistry/ Engineering Physics	3	1	-	30	70	100	4
3	HSMC	2FY1-05/ 2FY1-04	Human Values/ Communication Skills	2	-	-	30	70	100	2
4	ESC	2FY3-07/ 2FY3-06	Basic Mechanical Engineering/ Programming for Problem Solving	2	-	-	30	70	100	2
5	ESC	2FY3-09/ 2FY3-08	Basic Civil Engineering/ Basic Electrical Engineering	2	-	-	30	70	100	2
6	BSC	2FY2-21/ 2FY2-20	Engineering Chemistry Lab/ Engineering Physics Lab	-	-	2	60	40	100	1
7	HSMC	2FY1-23/ 2FY1-22	Human Values Activities and Sports/ Language Lab	-	-	2	60	40	100	1
8	ESC	2FY3-25/ 2FY3-24	Manufacturing Practices Workshop/ Computer Programming Lab	-	-	3	60	40	100	1.5
9	ESC	2FY3-27/ 2FY3-26	Basic Civil Engineering Lab/ Basic Electrical Engineering Lab	-	-	2	60	40	100	1
10	ESC	2FY3-29/ 2FY3-28	Computer Aided Machine Drawing/ Computer Aided Engineering Graphics	-	-	3	60	40	100	1.5
11	Foundation Course	1FY8-0X	NCC/NSS/Sports						100	0.5
									<b>Total</b>	<b>20.5</b>

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# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## I & II Semester

### Common to all branches of UG Engineering & Technology

#### 1FY2-03/ 2FY2-03: Engineering Chemistry

SN	CONTENTS
1	<b>Water:</b> Common impurities, hardness, determination of hardness by complexometric (EDTA method), Degree of hardness, Units of hardness Municipal water supply: Requisite of drinking water, Purification of water; sedimentation, filtration, disinfection, breakpoint chlorination. Boiler troubles: Scale and Sludge formation, Internal treatment methods, Priming and Foaming, Boiler corrosion and Caustic embrittlement Water softening; Lime-Soda process, Zeolite (Permutit) process, Demineralization process. Numerical problems based on Hardness, EDTA, Lime-Soda and Zeolite process.
2	<b>Organic Fuels:</b> Solid fuels: Coal, Classification of Coal, Proximate and Ultimate analyses of coal and its significance, Gross and Net Calorific value, Determination of Calorific value of coal by Bomb Calorimeter. Metallurgical coke, Carbonization processes; Otto-Hoffmann by-product oven method. Liquid fuels: Advantages of liquid fuels, Mining, Refining and Composition of petroleum, Cracking, Synthetic petrol, Reforming, Knocking, Octane number, Anti-knocking agents, Cetane number Gaseous fuels; Advantages, manufacturing, composition and Calorific value of coal gas and oil gas, Determination of calorific value of gaseous fuels by Junker's calorimeter Numerical problems based on determination of calorific value (bomb calorimeter/Junkers calorimeter/Dulong's formula, proximate analysis & ultimate and combustion of fuel.
3	<b>Corrosion and its control:</b> Definition and significance of corrosion, Mechanism of chemical (dry) and electrochemical (wet) corrosion, galvanic corrosion, concentration corrosion and pitting corrosion. Protection from corrosion; protective coatings-galvanization and tinning, cathodic protection, sacrificial anode and modifications in design.
4	<b>Engineering Materials:</b> Portland Cement; Definition, Manufacturing by Rotary kiln. Chemistry of setting and hardening of cement. Role of Gypsum. Glass: Definition, Manufacturing by tank furnace, significance of annealing, Types and properties of soft glass, hard glass, borosilicate glass, glass wool, safety glass Lubricants: Classification, Mechanism, Properties; Viscosity and viscosity index, flash and fire point, cloud and pour point. Emulsification and steam emulsion number.
5	<b>Organic reaction mechanism and introduction of drugs:</b> Organic reaction mechanism: Substitution; SN1, SN2, Electrophilic aromatic substitution in benzene, free radical halogenations of alkanes, Elimination; elimination in alkyl halides, dehydration of alcohols, Addition: electrophilic and free radical addition in alkenes, nucleophilic addition in aldehyde and ketones, Rearrangement; Carbocation and free radical rearrangements Drugs: Introduction, Synthesis, properties and uses of Aspirin, Paracetamol