

The logo for Sri Venkateswara University consists of several overlapping circles in blue, black, and yellow.

**Sri Venkateswara University,  
Andhra Pradesh B.E./B.Tech EEE  
Sem 2 syllabus**

## **Engineering Chemistry**

### **UNIT-I:**

**WATER TREATMENT:** Introduction - Effect of water on rocks and minerals - hardness of water - disadvantages of hard water - boiler feed water - scale and sludge formation in boilers - caustic embrittlement - boiler corrosion - priming and foaming - softening methods-lime soda, zeolite and ion exchange process-Specification of potable water and purification of Drinking water - chemical analysis of water-Hardness, acidity, alkalinity, chloride and dissolved oxygen.

### **UNIT -II:**

**ELECTRO CHEMISTRY AND CORROSION:** Electrode potential - reference electrodes - hydrogen, calomel and glass electrode - PH and its determination - batteries - fuel cells - aluminum air battery - solar battery - lead acid storage cell.-  
**Corrosion:** Types of corrosion - factors influencing corrosion - theories of corrosion - prevention of corrosion - cathodic protection - metallic coatings - hot dipping, spraying, cementation, cladding and electro plating.

### **UNIT -III:**

**FUELS AND COMBUSTION:** Introduction - classification of fuels - calorific value and its determination - bomb calorimeter - Boy's gas calorimeter - theoretical calculation of calorific value of fuel - coal - analysis of coal - metallurgical coke - petroleum

-refining of petroleum-  
synthetic petrol - octane and cetane number- combustion - mass  
analysis from volume analysis and vice versa - analysis of flue gas by  
Orsat's apparatus.

#### **UNIT -IV:**

**HIGH POLYMERS:** Nomenclature of polymers - types of  
polymerization-Plastics -  
classification of plastics - moulding constituents of plastics-  
preparation, properties and  
applications of polythene, nylon, Teflon, and bakelite - Rubbers -  
vulcanization of rubber - compounding of rubber- synthetic rubbers-  
buna-N, thiocol and silicon rubbers- Lubricants-  
classification-mechanism-properties of lubricating oils-selection of  
lubricants for engineering applications.

#### **UNIT-V:**

**BUILDING MATERIALS:** Manufacture-dry and wet processes-setting  
and hardening of  
cement-analysis of cement. Refractories-classification-properties and  
engineering applications.  
Ceramics-classification-properties and engineering applications

#### **Books Recommended:**

1. Engineering Chemistry : PC Jain & M Jain-Dhanpat rai publishing  
company, New Delhi
2. Engineering Chemistry : BK Sharma
3. Engineering Chemistry : SS Dhara
4. Physical Chemistry : Puri & Sharma-Vishal Pulishing  
Company(VPC), Jalandhar
5. Physical Chemistry : Bahl & Tuli-
- 6 Polymer Science- :Gowarikar-
- 7 Physical Chemistry by : Glasstone-

## **Engineering Graphics**

#### **UNIT-I**

Scales, plane scale, diagonal scale Practices  
Conics- construction of Ellipse, parabola and Hyperbola by

eccentricity method

Ellipse- Concentric circles and Oblong methods, Rectangular hyperbola

## **UNIT-II**

Construction of cycloidal curves- epi cycloid and hypocycloid, Involute- Circle, Polygon

## **UNIT-III**

Projection of points-Principles of Projections, First and Third angle projections, projections of points

Projection of Lines- Projection of straight Lines, lines inclined to one plane and parallel to the other, Lines inclined to both planes, True length and true inclinations, Location of traces

## **UNIT-IV**

Projection of Plane surfaces and solids-Projection of Polygonal surfaces and circular lamina inclined to both planes. Projection of right regular solids- Projection of simple solids such as Prisms, Pyramids, Cylinders and Cones with their axes perpendicular to anyone of the Principal planes and inclined to the other.

## **UNIT-V**

Section of Solids- Sections of above solids in simple vertical position resting on their base, by cutting planes inclined to one reference plane and perpendicular to the other-True shape of the sections.

Orthographic Projections- Conversion of Pictorial views into orthographic views of simple objects.

### **Text Books:**

1. Bhatt N.D. and V.M. Panchal, Engineering Drawing Revised Edition, Charotar Publications, 2001.
2. Dhananjaya A Jolhe, Engineering Drawing with an introduction to Auto CAD, Tata McGrawhill - 2009
3. K.L.Narayana and P. Kannaih, A text Book of Engineering Drawing, Scitech Publications - 1999.
4. Venugopal,K., Engineering Drawing and Graphics, New Age

## **Engineering Mathematics - II**

### **Unit - 1**

Matrices: rank of a matrix-solution of system of linear equations-eigen values,vectors-cayley-hamilton theorem-quadratic forms-diagonalization.

### **Unit - 2**

Vector Calculus: Gradient, Divergence, Curl of a vector and related properties - line, surface, volume integrals - Green's, Stokes's and Gauss Divergence theorems and its applications.

### **Unit - 3**

Fourier Series: Fourier series-even and odd functions, periodic functions-half range sine and cosine series-harmonic analysis.

### **Unit - 4**

Special Functions I: Gamma and Beta functions-series solutions of differential equations-ordinary points.

### **Unit - 5**

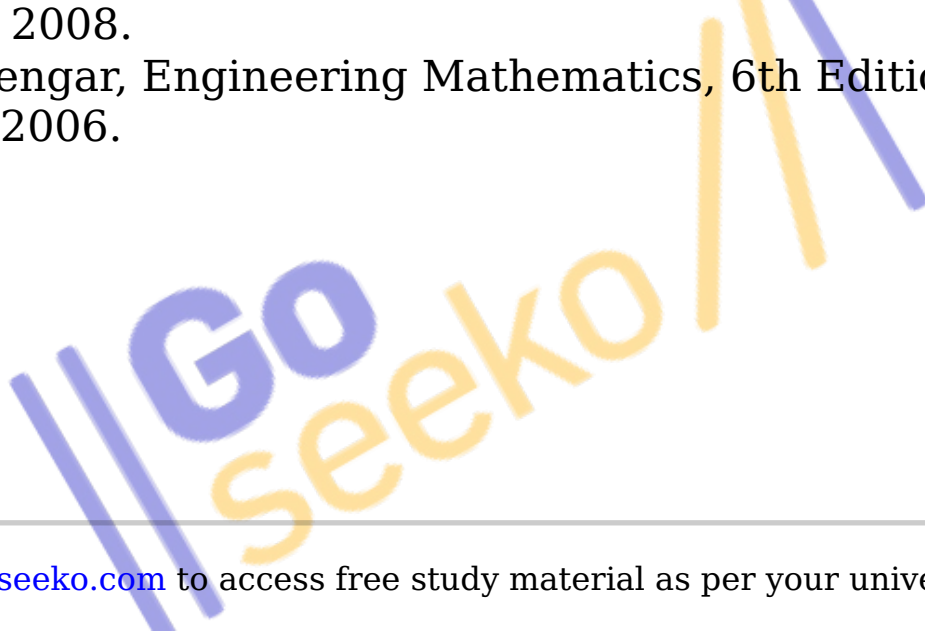
Special Functions II: Bessel function - recurrence formulae - generating function for  $J_n(X)$ - Legendre polynomials - recurrence formulae - generating function for  $P_n(X)$  - Rodrigue's formula - orthogonality of Legendre polynomials.

### **Text Books:**

1. B S Grewal, Higher Engineering Mathematics, 40th Edition, Khanna Publications, 2007.
2. M K Venkataraman, Engineering Mathematics, National Publishing Company, Chennai.
3. B V Ramana, Higher Engineering Mathematics, 6th Reprint, Tata

McGraw-Hill, 2008.

4. Bali and Iyengar, Engineering Mathematics, 6th Edition, Laxmi Publications, 2006.



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