



**Topics for presentation for  
Recruitment of Assistant Professor (on contract)  
under TEQIP-III**

**Chemical Engineering**

- 1) Fuels and Combustion
- 2) Flow through pipes
- 3) Compressible and Incompressible Fluid Flow
- 4) Sedimentation
- 5) Membrane Filtration
- 6) Crystallization
- 7) Adsorption
- 8) Reactor Design
- 9) Boundary layer
- 10) Evaporators

**Mathematics**

- 1) Differential and Integral calculus
- 2) Ordinary and partial differential equations
- 3) Laplace and Fourier Transforms
- 4) Numerical Analysis
- 5) Matrix theory
- 6) Probability and statistics
- 7) Fourier series
- 8) Sequence and series
- 9) Optimization Technique
- 10) Vector calculus

## **Electronics and Telecommunication / Electronics Engineering**

- 1) Electronics Devices and Analog Circuits
- 2) Digital electronics and Microprocessors/Microcontrollers
- 3) Analog and Digital Communication
- 4) Broadband and Wireless communication
- 5) Signals and Systems,
- 6) Digital Signal and Image/video processing including biomedical.
- 7) Electronic Instrumentation
- 8) RF communication/ Optical Communication
- 9) Electromagnetic and Antennas
- 10) Computer/wireless networks

## **English**

- 1) Grammar
- 2) Letter writing
- 3) Report writing
- 4) How to teach Vocabulary
- 5) How to develop listening skill
- 6) Note taking
- 7) Paragraph writing
- 8) How to develop reading Skill
- 9) Oral skill
- 10) Group Discussion

## **Metallurgy**

- 1) Classes / classification of materials
- 2) Metals v/s Polymers
- 3) Mechanical Testing Methods
- 4) Stress – Strain Curves
- 5) Phase diagrams in Metallurgy
- 6) Extraction of Metals
- 7) Concepts of welding metallurgy
- 8) Important Heat Treatments
- 9) Foundry Practices
- 10) Characterization techniques

## **Bio Medical Engineering**

- 1) Biosafety cabinet & inverted microscope
- 2) Use of CT scan in biomedical Engineering
- 3) Class-I Medical devices
- 4) Medical Imaging
- 5) Robotic navigational surgery
- 6) Study of human bone joints & biomechanics
- 7) Study of simple bone implant
- 8) Primary study of tissue engineering
- 9) Difference between implant & scaffold.
- 10) Prosthesis development.

## **Electronics and Instrumentation Engineering / Electronics Instrumentations and Control Engineering / Instrumentation Engineering**

- 1) Low level measurement in Instrumentation.
- 2) Biomedical signal sensors
- 3) Sensors and techniques for Measurement of the mechanical quantities
- 4) Errors and error handling in instruments.
- 5) Various types of Noise handling schemes in Instrumentation.
- 6) Signal processing and it's implementation in analytical instruments
- 7) Optical / photonics measurements.
- 8) Radio frequency measurements.
- 9) Statistical sensor signal analysis methods
- 10) Virtual Instrumentation.

## **Physics**

- 1) Quantum Mechanics
- 2) Classical Mechanics
- 3) Optics
- 4) Mathematical Physics
- 5) Electrodynamics
- 6) Semiconductor Physics
- 7) Electron Ballistic
- 8) Electronics
- 9) Nuclear Physics
- 10) Solid State Physics

## Chemistry

- 1) Chemistry and Technology Water
- 2) Catalysis and surface chemistry
- 3) Mass spectroscopy and NMR
- 4) Chemical Bonding
- 5) analytical /electro analytical chemistry
- 6) Molecular orbital theory for octahedral complexes
- 7) Photochemistry / Pericyclic reaction
- 8) Partition function 2) Gibbs Duhem Law
- 9) Semiconductors - Extrinsic and intrinsic, Hall effect
- 10) Group Theory

## Civil Engineering

- 1) Stress and strains
- 2) Design of RCC members for flexure
- 3) Design of weld
- 4) Application of Bernoulli's theorem
- 5) Fly leveling and rise & fall method for calculation of levels
- 6) Workability of concrete
- 7) Project planning and network analysis
- 8) Earth Pressure on retaining walls
- 9) Unit hydrographs
- 10) Domestic wastewater treatment

## **Electrical Engineering / Electrical and Electronics Engineering**

- 1) Induction Machines (Electrical Machines)
- 2) Power System Stability
- 3) Stability of closed loop control systems
- 4) Performance of Transmission Lines(Power Systems)
- 5) Inverters (Power Electronics)
- 6) Power Electronic
- 7) 8085 Microprocessor(Digital Electronics)
- 8) Electric Traction (Electric Drives)
- 9) Electrical Measurements
- 10) Transformer

## **Mechanical Engineering**

- 1) Engineering Thermodynamics
- 2) Heat Transfer
- 3) Fluid Mechanics
- 4) Renewable energy systems
- 5) Kinematics of Machines
- 6) Dynamics of Machines
- 7) Mechanical Design of components
- 8) Machine tools
- 9) Foundry Technology
- 10) Welding technology

## **Production Engineering**

- 1) Machine tools
- 2) Foundry Technology
- 3) Welding technology
- 4) CNC Machines
- 5) Additive manufacturing
- 6) CAD
- 7) CAM
- 8) Digital Manufacturing
- 9) IoT in manufacturing
- 10) Forces on cutting tools

## **Computer Science & Engineering / Information Technology**

- 1) Programming Languages
- 2) Data Structures
- 3) Operating Systems
- 4) Compilers
- 5) Theory of Computation
- 6) Analysis of Algorithm
- 7) Discrete Mathematics
- 8) Computer Organization
- 9) Database Management Systems
- 10) Computer Networks

## Food Technology

- 1) Functional and Nutraceutical Foods.
- 2) Edible and intelligent food packaging system.
- 3) Green Food Processing.
- 4) Novel encapsulation techniques' as delivery system.
- 5) Modeling and Simulation of Food Processing Technologies
- 6) Thermal Processing of Foods.
- 7) Biodegradable Packaging
- 8) Biosensors
- 9) Ready to Eat Food Products
- 10) Foods Laws