20PEB302					Petroleum Production Engineering - I					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
2	0	0	2	2	25	50	25	--	--	100

COURSE OBJECTIVES

1. To provide the concepts of well completion, surface and sub-surface equipment used in oil and gas production operations.
2. To provide the concepts of different well problems and well interventions methods used
3. To provide an understanding of well control procedure and well performance evaluation

7 Hrs.

UNIT 1 Petroleum Production System (Surface & Subsurface Equipment)

Role of Production Engineer/activities performed at various levels of field development and its exploitation. Petroleum Production System-Well Head Equipment, Charismas tree, valves, hangers, flow control devices, packers, tubular and flow lines.

UNIT 2 Well Completion &Testing **6 Hrs.**

Introduction, Well Completion Methods and string components, Different types/designs of well completion, Conventional and unconventional tubular configurations, Conventional & periodic production testing, Perforating oil& gas wells-conventional and unconventional techniques viz, through tubing and tubing conveyed underbalanced perforation techniques, type size and orientation of perforation holes. Well activation, use of compressed air and liquid Nitrogen. Smart wells-intelligent completion.

UNIT 3 Workover **6 Hrs.**

Principle and application of workover methods/Recompletion, Workover fluids,- Well Perforations instruments and techniques,

7 Hrs.

UNIT 4 Well Performance analysis and Optimization

Reservoir considerations, Introduction to inflow performance, Productivity index. Formation damage diagnosis, Skin effect, IPR in case of different drive mechanism. Vogel IPR equation. Pressure loss in tubing, multiphase flow regimes. Choke performance, types of chokes. Overall production system pressure losses, Nodal system Analysis.

Max. 30 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1: Regulate formation damage and find alternative methods to bring the well into production again.
CO2: Analyze the fundamentals of productivity index and future IPR and understand the principles of production optimization.
CO3: Explain properly the principles of sucker rod pump, gas lift system, progressive cavity pump & electrical submersible pump.
CO4: Determine the bottom-hole pressure, well head pressure, and handling oil and gas flow rates of hte reservoir.
CO5: control in case of any calamity during installations at drilling or production.
CO6: Evaluate the understanding of water control and sand control.

TEXT/REFERENCE BOOKS

1. Dr. GuoBoyun , Computer Aided Petroleum Production Engineering
2. H Dale Begg , Production Optimization , OGCI Publication,tulsa.
3. Kermit Brown, Technology of artificial lift method –. Vol2a ,2b. Penwell publishing company, Tulsa.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs**

Part A/Question: <Short Notes, Problems, Numerical> <5-7 > Marks (each)

Part B/Question: <Justification, Criticism, Long answers, Interpretation > <8-10> Marks (each)