

20PEB223					Reservoir Engineering					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25	--	--	100

**COURSE OBJECTIVES**

- Explain the basic concepts of reservoir media, fluid flow and its behaviour
- To provide the difference between single and multiphase flow for reservoir flow system
- How to acquire and analyse the data of reservoir
- To develop the reservoir performance evaluation

**UNIT 1****09 Hrs.**

Introduction to reservoir media –porous and fracture medium, concept of porosity fluid saturation, wettability, capillary pressure and relative permeability for understanding multiphase flow behavior in reservoir system, Salient features of Gas-Oil and Water-Oil relative permeability Curves, Factors affecting relative permeability, Three phase relative permeability, basic laboratory core data analysis for understanding petrophysical parameters.

**UNIT 2****10 Hrs.**

Fundamentals of flow in porous media, Classification of flow system in porous media, Single phase and multiphase fluid flow in different state (steady and unsteady) and different systems (linear, radial, turbulent, spherical) considering compressible, slightly compressible and incompressible fluid, Diffusivity equation and its application for reservoir flow system

**UNIT 3****10 Hrs.**

Reservoir Field operation data acquisition, Basic data of reservoir engineering; PVT data, Core data, Well logging and transient well testing information. Reservoir Drive Mechanism, Application of reservoir engineering principles: volumetrics, material balance and decline curve analysis.

**UNIT 4****10 Hrs.**

Reservoir Engineering activities and management, Reservoir performance analysis, Preparation of development schemes, IOR/EOR and workover jobs for reservoir management, Concept of Reservoir simulation.

**Total 39 Hrs.****COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1 - Know the basics of fluid properties and petrophysical parameters of the petroleum reservoir system;
- CO2 - Assess the importance of various petrophysical parameters for flow behaviour of fluids in multiphase petroleum reservoir system;
- CO3 - Understand the different types of flow system existing in a petroleum system in terms of rock, fluid and drive system;
- CO4 - Analyse the importance of reservoir data acquisition activities in different stages of reservoir life;
- CO5 - Conceptualize sequential reservoir engineering activities;
- CO6 - Perform reservoir performance analysis in conjunction with reservoir management concepts

**TEXT/REFERENCE BOOKS**

1. Fundamentals of Reservoir Engineering – L. P. Dake – Elsevier, 17th Edition, 1998
2. Applied Petroleum Reservoir Engineering (Second Edition)- B. C. Craft and M. F. Hawkins Revised by Ronald E. Terry – Prentice Hall.
3. Worldwide Practical Petroleum Reservoir Engineering Methods – H. C. “Slip” Slider – Pennwell Publishing Company.
4. Advance Reservoir Engineering- Tarek Ahmed and Paul D. McKinney - Gulf Professional Publishing- Elsevier - 2005
5. Applied Reservoir Engineering (Vol – I & II)– C. R. Smith, G. W. Tracy, R. L. Farrar – OGCI Publications -1992.
6. Petroleum Reservoir Rock and Fluid Properties – Abhijit Y. Dandekar- Taylor and Francis-2006.

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN****Max. Marks: 100****PART A:** <Question: <Short Notes, Problems, Numerical>**PART B:**<Justification, Criticism, Long answers, Interpretation >**Exam Duration: 3 Hrs****20 Marks****80 Marks**