

Code No: **RT42272B****R13****Set No. 1****IV B.Tech II Semester Regular/Supplementary Examinations, April - 2018****HORIZONTAL WELL TECHNOLOGY****(Petroleum Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

PART -A

- 1 a) Describe vertical, deviated and horizontal wells. [3]
- b) Explain Hawkins's skin factor. [4]
- c) Explain the influence of reservoir height on well productivity. [4]
- d) Explain the formation damage in horizontal wells. [4]
- e) What are the safety factors to be considered in fracturing? Explain. [4]
- f) Write on horizontal completions with diagram. [3]

PART -B

- 2 a) Explain about effective well bore radius of a Horizontal well. [8]
- b) Compare the productivity of slant well and Horizontal well. [8]
- 3 a) Explain the drainage areas for horizontal and vertical wells by schematic diagram. [6]
- b) A 2000 ft long horizontal well is to be drilled in a reservoir where the vertical permeability is one half of the horizontal permeability. The horizontal well is drilled in 160 acre spacing. Other reservoir parameters are $k_h = 5 \text{ md}$, $h = 50 \text{ ft}$, $\mu_o = 0.3 \text{ cp}$, $B_o = 1.2 \text{ RB/STB}$, $r_w = 0.365 \text{ ft}$. Calculate the horizontal well productivity by Joshi, Renard and Dupuy methods for $K_v / K_h = 0.5$. [10]
- 4 a) Describe the types of fractures in a reservoir. [6]
- b) Compare the productivity of vertical fractured well with a horizontal well. [4]
- c) "The low permeability reservoir with 400 to 700 ft thickness with bottom water and top gas" Explain the possibility of fracturing of the stated horizontal wells. [6]
- 5 a) Distinguish between early time radial flow and time to end the early radial flow. [8]
- b) Explain the operations involved in fracturing job of a horizontal well. [8]
- 6 a) What is a Pseudo Steady state and a semi steady state? Explain with examples. [8]
- b) How does shape factor of the boundary depends in a fractured vertical well? [8]
- 7 a) What is a coning in a vertical well? Explain. [8]
- b) Explain the impacts of Coning on the production system of a developed field. [8]