

Code No: 115DA

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech III Year I Semester Examinations, November - 2015

WELL LOGGING
(Petroleum Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

- 1.a) What are the kinds of well logs used in geological exploration? [2]
- b) How to well logs indicate porosity, resistivity, lithology, and permeability? [3]
- c) What are resistivity logs? And when are they used? [2]
- d) What are the basic equations used in analyzing resistivity logs? [3]
- e) Which logs are used to determine porosity? And when are they used? [2]
- f) Explain photoelectric affect and Neutron flux. [3]
- g) What are the most common combinations of well logs to run after reaching total depth? [2]
- h) Explain Image logging tools and how are lithologies determined using well logs. [3]
- i) What is the Archie Equation and why is it important? [2]
- j) How do "quick look" methods indicate to geologists where there may be the presence of hydrocarbons? [3]

PART - B (50 Marks)

- 2.a) What are accepted best practices in SP interpretation? And how does the SP log work with other logs?
- b) What are gamma ray logs? And why is it important to calculate shale volume? Explain. [5+5]

OR

- 3.a) What are the major components of Well logging unit and logging setup? Discuss.
- b) What is the principle and applications of Natural Gamma ray Spectroscopy? Describe. [5+5]

- 4.a) Explain about the 'Invasion and Resistivity Profiles'.
- b) What is the difference between Normal configuration and lateral configuration of resistivity log? Explain. [5+5]

OR

- 5.a) What is Micro resistivity log and explain its applications? Discuss.
- b) What is principles and applications of Induction logging? Explain. [5+5]

- 6.a) What is the principle and application of Neutron tool? Explain the importance.
- b) How can you determine the primary and secondary porosity by Sonic logging tool? Describe. [5+5]

OR

- 7.a) Discuss the principle of Density logging and its limitations?
b) Explain about Borehole compensated sonic tool and Array sonic tool? [5+5]
- 8.a) What is the principle and applications of Cased hole resistivity logging? Describe them.
b) What is the working principle of Spinner flow meter and give its applications? Explain it. [5+5]

OR

- 9.a) What are the principle and applications of CBL and CCL? Describe.
b) What is the principle of Gamma ray spectral log and Neutron decay time log? [5+5]
- 10.a) Determination of Resistivity of water (R_w) by using porosity – resistivity plot (Hingle plot).
b) What are cross-plots and what can water saturation tell you about a zone? [5+5]

OR

- 11.a) What is mud logging? Explain about the MWD and LWD.
b) What are the advanced tools in well logging and give its engineering applications? [5+5]

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