Printed Pages: 01 **Sub Code: NPE603**

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B. TECH
(SEM VI) THEORY EXAMINATION 2017-18
PETROLEUM PRODUCTION & RESERVOIR ENGINEERING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x10 = 20

a. What is tortuosity?
b. Define oversaturated reservoir.
c. What are artificial lifts?
d. What is critical rate of oil production?
e. What are reservoir fluids?
f. In what condition an IPR plot will not be in straight line?
g. Write down some methods to minimize the depth of formation damage.
h. Define retrograde condensation.
i. Explain the Darcy law with mathematical expression.
j. Show the relationship between porosity and permeability.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Write and explain the four principal mechanisms governing the separation process inside a two or three phase separator.
b. Draw various regimes or phases which are seen on a DST.
c. What are the types of reservoir rocks? Explain them with their composition.
d. Describe in detail about the saturated and unsaturated reservoirs.
e. Discuss in detail about the artificial methods of engineering in the reservoir for enhanced oil recovery.

SECTION C

3. Attempt any *one* part of the following: 10 x 1= 10

(a) Compare effective and relative permeability with mathematical terms.

(b) Enumerate the flow concept and phase of the fluid under saturated and unsaturated reservoir.

4. Attempt any *one* part of the following: 10 x 1= 10

(a) Draw pressure diagnostic plots for 5 types of reservoir conditions commonly encountered.

(b) Derive diffusive equation in Cartesian co-ordinates.

5. Attempt any *one* part of the following: 10 x 1= 10

(a) Explain a well completion technique for a multilateral well trajectory by a neat schematic diagram.

(b) Explain in detail about diagnostic plot for a horizontal well.

6. Attempt any one part of the following: 10x 1=10

(a) Explain Udden-Wentworth grain size scale for boulders and clay size particles.

(b) Enumerate about the isochronal well test.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Write in detail about petro-physical properties of a rock.

(b) Discuss in brief the role of solvents and dispersants in removing paraffin from the wells.