KAZAKH-BRITISH TECHNICAL UNIVERSITY

Discipline: Introduction to Petroleum Engineering

0 variant Final Exam

1) How oil is formed?
   a. zooplankton and algae are subjected to intense heat and pressure underneath sedimentary rock
   b. as a result of the reaction of water entering rock faults and meeting with iron carbides
   c. the ingress of inorganic components from space to earth
   d. rainwater contains carbon in the form of bicarbonate, it enters the ground and takes shape for the further formation of oil

2) What are the stages of remedial cementation?
   a. squeeze cementing, plug cementing, cement placement
   b. primary cementing, squeeze cementing, cement placement
   c. plug cementing, cement placement, izonal cementing

3) What is the hydrostatic pressure?
   a. pressure exerted by a vertical column of water
   b. pressure due to the sum of all overlying rocks and fluids
   c. pressure acting on the fluids in the pore space of a formation

4) Properties of natural gas
   a. all the answers are correct
   b. specific gravity
   c. gas formation volume factor
   d. compressibility factor

5) What does Np mean?
   a. Cumulative oil produced, STB
   b. Cumulative water injected, STB
   c. Initial oil in place, STB
   d. Gas formation volume factor, bbl/scf

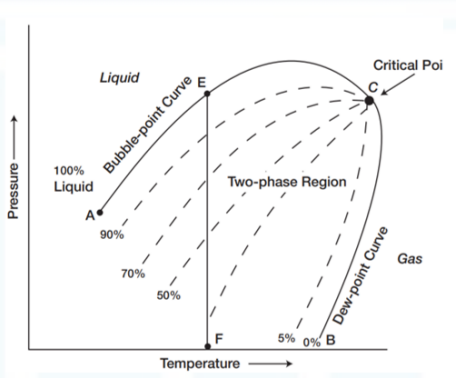
6) Primary mechanisms include:
   a. all the answers are correct
   b. Gas cap drive
   c. Depletion drive
   d. Gravity drainage drive

7) Productivity Index formula:
   a. $Q_o/\Delta p$
   b. K_o/μ
   c. B_{oi}/S_{wi}
   d. P_{wf}/P_r

8) $\frac{141.5}{\gamma o}$ – 131.5 is this the formula for what?

a. Density and API gravity
b. Crude oil viscosity
c. Apparent molecular weight
d. Pore volume

9) What is the name of line AC?



a. Dew-point curve
b. Bubble-point curve
c. Critical point
d. Phase envelope

10) How is the total pore volume measured (Vφ)?

a. Bbl
b. STB
c. Psia
d. RB/scf

11) Select the data necessary for the application of the techniques of material balance (multiple choice)

a. geometry of the reservoir ;
b. petrophysical characterization of the reservoir ;
c. production history ;
d. values of the average pressure of the reservoir
e. definition of wells (location , geometry , type , etc ..)
f. PVT properties of fluids

12) What is the process used to produce heavy oil reservoir conditions in non-mobile ?

a. Hot water injection
b. CSS
c. SAGD
d. Steamflooding

13) As defined heavy oils , the " Tar Sands " and that bitumen viscosity at reservoir conditions have?

a. 10-100 cp
b. 100-1000 cp
c. 1000-10000 cp

d. > 10000 cp

14) By what standard does the process of surfactant injection?
   a. mobility ratio between the injected fluid and the fluid displaced
   b. volumetric displacement efficiency
   c. On both previous parameters
   d. residual oil saturation

15) The injection of gas is defined miscible ?
   a. When the oil reservoir is rather light .
   b. When the pressure of the reservoir is still next to the initial value .
   c. When a certain volume of gas is soluble in the oil.
   d. When the interfacial tension gas / oil is zero .

16) What is injected into reservoir in order to increase water viscosity?
   a. Steam
   b. Polymers
   c. Surfactant
   d. Alkaline
   e. CO_2

17) Which of the following does the concept of material balance based upon?
   a. Conservation of mass
   b. Conservation of energy
   c. Conservation of momentum
   d. Conservation of Volume
   e. None

18) What is the boundary water called that moves in a water drive reservoir?
   a. bound water
   b. interstitial water
   c. connate water
   d. water encroachment
   e. none of the above

19) Name the type of reservoir drive that has a constant oil/gas ratio most of the producing time increasing near the end of production?
   a. solution gas drive
   b. gas cap drive
   c. free gas cap
   d. water drive
   e. Gravity drainage

20) Which of the following is the least likely source for water which encroaches into a reservoir as pressure declines?
   a. artesian flow
   b. compressibility of the rock in the aquifer
   c. expansion of the water in the aquifer

d. water coming out of solution from the oil as the pressure drops
e. None

21) The method of thermal EOR called "steam flooding" or "steam drive" is used mainly when the oil in reservoir conditions has a viscosity:
a. < 10000 cP
b. > 10000 cP
c. > 100,000 cP

22) Provide the equipment / material required to achieve a completion sand control:
a. Chisel
b. Cement
c. Pumping unit dedicated
d. Coiled Tubing
e. Materials for the control of fluid loss
f. Centralizers

23) An oil reservoir has average porosity =0.23 in an area of 3200 acres with a net thickness of 80 ft, an initial oil saturation of 70%, and an initial oil formation volume factor of 1.4 RB/STB. Use the volumetric OIP equation to estimate OOIP.
a. 430 million STB
b. 29 440 STB
c. 228 million STB
d. 100 000 STB

24) The specific gravity of an oil sample is 0.65. What is its API gravity?
a. 0.8619 API
b. 86.19 API
c. 217.69 API
d. 131.5 API

25) Fluid production from a well passes through a separator at the rate of 1200 MSCF gas per day and 1000 STB oil per day. What is the separator GOR in MSCF/STB?
a. 1.2
b. 12
c. 0.83
d. 8.3