

TPG4145 IN-CLASS QUIZ #1

Name: _____

Grades for those who take this quiz will be from A-C (highest to lowest), regardless of how many questions you answer correctly. The quiz is mainly for you to know the information that is important from the two sections of Ch. 6 & 7 (laboratory PVT tests and black-oil PVT models). **Just do your best.**

Write your answer to the left of the Question number, in the box.

1. **Which experiment is used to measure saturation pressure?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

2. **Which experiment is traditionally used to perform a depletion test on lower-GOR oils?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

3. **Which two experiments are used to obtain “traditional” black-oil PVT properties of lower-GOR oil systems?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

4. **Which test does not measure changing oil volume versus pressure at reservoir temperature?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

5. **Which test is the most commonly used for gas condensate depletion?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

6. **Which test measures oil density at surface conditions (1 atm & 60°F)?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

7. **Which test never measures gas composition of gases removed?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

8. **If measured compositions of removed gases are available, together with final oil composition, which tests would allow one to calculate the initial composition using a “backward” component material balance?**
 - a. Constant Volume Depletion (CVD).
 - b. Constant Composition Expansion (CCE).
 - c. Multi-stage Separator Test (SEP).
 - d. Differential Liberation Test (DLE).

9. Which saturation type is measured using visual measurement of oil volume?

- a. Dewpoint.
- b. Bubblepoint of higher-GOR oils.
- c. Both (a) and (b).
- d. Neither (a) or (b).

10. Which saturation type is measured using measurement of total volume only?

- a. Bubblepoint of higher-GOR oils.
- b. Bubblepoint of lower-GOR oils.
- c. Both (a) and (b).
- d. Neither (a) or (b).

11. How is reservoir composition measured for a bottomhole sample?

- a. Direct injection into a gas chromatograph (GC).
- b. Flash to standard conditions, GC analysis of flashed oil and gas, mathematical recombination.
- c. Molecular mass determination of each component.
- d. Molecular mass and liquid density determination of each component.

12. How is molecular mass measured of a flashed (atmospheric) oil sample?

- a. Ultra-accurate weighing on a scale.
- b. Mass spectroscopy.
- c. Cryogenic freezing point depression of benzene.
- d. Densimeter.

13. During a constant volume depletion test, will the maximum liquid volume increase as:

- a. Decreasing temperature.
- b. Increasing temperature.
- c. Increasing C_{7+} content in gas condensate reservoir fluid.
- d. Both (a) and (c).

14. Will separator gas plant products ("oil" extracted from gas streams) in gallons/Mscf *increase* as:

- a. Decreasing gas specific gravity.
- b. Increasing gas specific gravity.
- c. Decreasing separator pressure from which the separator gas evolves.
- d. Both (b) and (c).

15. Why might a laboratory conduct several multi-stage separator tests?

- a. To make more money.
- b. Because the oil company tells them to do several tests.
- c. To help identify separator conditions that maximize stock-tank oil volumes produced.
- d. Both (b) and (c).

BLACK-OIL PVT

16. Which black-oil properties apply to the oil phase?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

17. Which black-oil properties apply to the gas phase?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

18. Which black-oil property defines the ratio of reservoir oil volume to the surface oil volume resulting from processing of a reservoir oil?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

19. Which black-oil property defines the ratio of reservoir gas volume to the surface gas volume resulting from processing of a reservoir gas?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

20. Which black-oil property defines the surface volume ratio resulting from the processing of a reservoir oil phase?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

21. Which black-oil property defines the surface volume ratio resulting from the processing of a reservoir gas phase?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

22. Which two black-oil properties result (dividing one by the other) in the volume of surface oil volume resulting from the processing of a reservoir gas volume?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

23. Which black-oil property, when taken as an inverse, defines the shrinkage of reservoir oil volume when processed down to a surface oil volume?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

24. Using a more efficient surface process (e.g. 4-stage versus 1-stage), leads to more surface oil when processing either reservoir gas or reservoir oil. Which black-oil properties would decrease due to the more-efficient process?

- a. Solution gas-oil ratio, R_s .
- b. Solution oil-gas ratio, r_s .
- c. Oil formation volume factor, B_o .
- d. Gas formation volume factor, B_{gd} .

Your feedback about this quiz is welcome, because it is the first time I've used a quiz in this form (multiple choice). Please write any comments you have on the back of this page, and they will be taken into consideration when forming the next quiz. Thanks.