

Name: _____

**PETROLEUM PROPERTIES
SELF-STUDY TRAINING SESSION
REVIEW QUESTIONS**

1. Temperature change with depth is known as the geothermal gradient.
 True
 False

2. Production of multiple petroleum compounds is an indirect consequence of the thermal degradation and cracking process.
 True
 False

3. For commercial deposits of petroleum and natural gas to accumulate, there must be which of the following (mark all that apply)?
 Source Rock
 Reservoir Rock
 Trap Rock
 Anthracite Rock
 All of the above

4. The classifications of rocks, according to their origin, are (mark all that apply):
 Igneous
 Sedimentary
 Metamorphic
 All of the above

5. Sedimentary rocks are all of secondary origin and are classified in the field based on sediment's origin as to (mark all that apply):
 Mechanical
 Chemical
 Organic
 Evaporite
 All of the above

6. Sedimentary rocks carry petroleum and natural gas because petroleum was formed in the layers.
 True
 False
7. Porosity may be primary which is the result of post-depositional factors or secondary which is a result of post-depositional or induced factors occurring as a result of deformation.
 True
 False
8. Permeability is the measure of a rock's conductivity to the flow of fluids through it.
 True
 False
9. Carbonite rocks, such as limestone and dolomites have a simple pore system since they are of chiefly chemical origin.
 True
 False
10. The typical petroleum reservoir contains petroleum, natural gas liquids and brackish water, and always has a cap of natural gas.
 True
 False
11. The petroleum's density is known as the American Petroleum Institute gravity.
 True
 False
12. The lower the API gravity, the less viscous the crude oil.
 True
 False
13. Natural gas frequently provides the pressure to drive crude oil to the surface through wells.
 True
 False

14. An uplift is a fracture in the earth along which there has been a displacement relative to the two sides.

True

False

15. The folding of rocks are called anticlines, synclines, and siliceous.

True

False

16. List three of the productive basins in California.

17. In an anticlinal trap, hydrocarbons become trapped in the nadir of the fold.

True

False

18. The types of formation pressure to force crude oil to the surface in a porous rock at depth are (mark all that apply):

Hydrostatic

Internal

Combination

None of the above

19. The amount of oil recovered depends on the efficiency of the dominant drive mechanism.

True

False

20. What factors should be considered in evaluating a petroleum property (mark all that apply)?

Porosity, permeability and interstitial and connate water saturation

The geologic structure and continuity of the producing formation and its degree of uniformity

Properties of the oil, such as viscosity, amount of gas in solution, and shrinkage

The degree to which the operator performs proper controls

Well conditions and maintenance

- Location of the wells with respect to the geology of the reservoir
 - All of the above
21. The lessor of mineral rights will usually retain a royalty interest as compensation. The lessee's interest is often called contract interest.
- True
 - False
22. The proceeds that the contract interest receives from the sale of production are called the net revenue interest, which represents profits less any royalties paid.
- True
 - False
23. For property tax purposes, the present value of the bonus and rental payments generally represents the current value of the property.
- True
 - False
24. Hedging is where companies will sell their future production at a guaranteed price.
- True
 - False
25. In the appraisal of petroleum properties, the appraiser may use the contract, hedged, or market price expectations.
- True
 - False
26. Primary drive mechanisms used to recover original oil are (mark all that apply):
- Gas-cap drive
 - Viscosity drainage
 - Water drive
 - Dissolved-gas drive
 - All of the above

27. Which of the following are principal types of recovery projects (mark all that apply)?
- Displacement
 - Pressure maintenance
 - Traditional
 - Experimental
 - All of the above
28. Which of the following are conventional methods of secondary recovery (mark all that apply):
- Traditional
 - Experimental
 - Water flooding
 - Gas-injection
 - All of the above
29. Economics plays a prime role in the use of any recovery mechanism.
- True
 - False
30. What are the basic types of thermal recovery (mark all that apply)?
- Steam flood
 - Cyclic steam flooding
 - Hot water flooding
 - Fire flooding
 - All of the above
31. The major asset of oil and gas producing properties is its reserves.
- True
 - False
32. The most important factors upon which estimates of reserves are dependent are recovery method and economics.
- True
 - False

33. The significant difference between the Property Tax Rule 468 definition of proved reserves and the Society of Petroleum Engineers definition is that the rule allows inclusion of reserves derived from future expectations for product prices and operating costs.
- True
- False
34. What are the subclasses within the SPE/SPEE classification of proved reserves (mark all that apply)?
- Proved developed reserves
- Strategic reserves
- Proved developed nonproducing reserves
- Proved undeveloped reserves
- All of the above
35. What are the general methods of predicting future recovery from a reservoir include (mark all that apply)?
- Analogy
- Volumetric
- Material Balance
- Decline Curves
- Reservoir recovery
- All of the above
36. Reserve estimation by analogy is the most accurate of the methods presented.
- True
- False
37. The volumetric method estimates the available pore space in the reservoir, the portion containing hydrocarbons, and how much of the resource can be removed.
- True
- False

38. Performance analysis methods of reserve estimation include (mark all that apply):
- Material balance calculations
 - Strategic reserves estimates
 - Decline or performance curve analysis
 - Reservoir simulation models
 - None of the above
39. The material balance approach to estimate reserves is based on the principle of the conservation of mass.
- True
 - False
40. Decline curves are useful for obtaining an estimate of future production.
- True
 - False
41. What are some common types of production curves (mark all that apply)?
- Production rate versus time
 - Production rate versus cumulative production
 - Cumulative gas produced versus cumulative production
 - Pressure versus cumulative production
 - All of the above
42. Types of decline curves most commonly used by petroleum appraisers include which of the following (mark all that apply)?
- Production rate versus time
 - Production rate versus cumulative production
 - Strategic reserves production estimates
 - All of the above
43. Most royalty expenses are not included in the property appraisers' calculation for economic limit because assessment for ad valorem taxes is made as if the property were held in fee.
- True
 - False

44. Revenue per barrel should include all revenue attributable to production, including minerals, gas, and natural gas liquids.
- True
- False
45. What are the special cases of hyperbolic decline curves (mark all that apply)?
- Regression curve
- Exponential curve
- Harmonic curve
- All of the above
46. Harmonic decline curves are the easiest to analyze and the most commonly used.
- True
- False
47. The appraiser should examine why a reservoir simulation was constructed and whether the simulation's assumptions are appropriate.
- True
- False
48. A realistic approach when forecasting production properly accounts for downtime due to which of the following (mark all that apply)?
- Equipment failure
- Maintenance
- Harmonic disturbance
- All of the above
49. The definition of "full cash value" can be found in Revenue and Taxation Code sections 110, 110.1, and Property Tax Rule 8.
- True
- False
50. Reconciliation is the arithmetic averaging of the various value indicators.
- True
- False

51. Which approaches to value is the most commonly used for petroleum property appraisals (mark all that apply)?
- Comparative sales approach
 - Stock and debt approach
 - Replacement/reproduction cost approach
 - Historical cost approach
 - Income approach
 - All of the above
52. Income multipliers must be derived from sales of very similar properties.
- True
 - False
53. Functional obsolescence is a loss in value of a structure or equipment due to which of the following (mark all that apply)?
- Decline in capacity to perform intended function
 - Poor initial design
 - Changing market tastes
 - Change in construction techniques
 - All of the above
54. The income approach is any method of converting an income stream into a value estimate.
- True
 - False
55. The validity of the income approach depends on whether the subject property meets which of the following conditions (mark all that apply)?
- Value is a function of income
 - Value depends on the quality and quantity of the income stream
 - Future income is less valuable than present income
 - All of the above
56. The "net return" is the difference between gross return and gross outgo.
- True
 - False

57. Property taxes, corporate net income taxes, and corporate franchise taxes are legitimate deductions from gross outgo.

True

False

58. Discounted cash flow analysis is the analysis of a cash flow projection for a period of time that the property produces income in order to compute the current market value of property at the market rate of return or to compute the internal rate of return indicated by the present cash flow.

True

False

NOTE: This version of Assessors' Handbook Section 566 was published in 1996. Since then, several Property Tax Rules have been amended, have been adopted, or have been repealed. On page 6-3, Rule 21 is relevant. Rules 23 and 24 were repealed in 2002. On page 6-4, Rule 27 was amended in 2005. Rule 29, which is not listed, is relevant and was effective February 9, 2002.

59. Oil and water wells are classified as land in Rule 124.

True

False

60. The right to remove petroleum, natural gas and minerals from the earth is a taxable real property interest.

True

False

61. The base year value for proved reserves must be adjusted as needed to account for production and other changes to proved reserves numbers, and new construction and equipment removal.

True

False

62. The current base year value for the reserves is the sum of the value of the prior year's reserves less depletion factored for inflation and subtracted from the value of the changed reserves.

True

False

63. New discoveries of previously unknown oil and gas reserves are to be treated as new construction, and are subject to supplemental assessment.
- True
- False
64. Construction of an improvement or fixture performed for the purpose of normal maintenance and repair constitutes replacement rather than new construction.
- True
- False
65. Appraisal judgment that must be exercised to determine whether the construction or rebuilding of an improvement or fixture includes which of the following (mark all that apply)?
- Taxable as new construction
- Partially assessable as new construction
- Non reappraisable as restoration or replacement
- All of the above
66. When a well is abandoned because of a calamity, the replacement well to recover the same petroleum is considered new construction.
- True
- False
67. Rule 122.5 allows production equipment items to be classified as fixtures, since they are physically annexed to real property with the intent to remain so indefinitely.
- True
- False
68. Because surface facilities have a positive residual or salvage value at the end of the life of the well or field, then they are not fixtures.
- True
- False
69. Common practice for the appraisal of well and production equipment is to tie the value directly to its estimated utility to extract petroleum.
- True
- False

70. Decreases in productivity as a field ages can affect portions of the original equipment and is due to which of the following (mark all that apply)?
- Functional obsolescence
 - Physical depreciation
 - Economic obsolescence
 - None of the above
71. The primary reason for making an adjustment for superadequacy or other forms of obsolescence is for determining the property value.
- True
 - False
72. Determining the cost to correct superadequacy requires consideration of which of the following (mark all that apply)?
- The correction is economically feasible
 - Reproduction cost of the current installation
 - Depreciation charge
 - Oil and gas reserve estimate
 - Cost to install additional equipment
 - All of the above
73. The oil and gas reserve estimate is the most important part of any petroleum property appraisal.
- True
 - False
74. Although a new gas well is closed at the well head, the value of the proven reserves can be estimated and assessable.
- True
 - False

75. For traditional petroleum properties, the typical revenue stream to be addressed in the cash flow is (mark all that apply):
- Oil sales
 - Gas sales
 - Natural gas liquid sales
 - None of the above
76. Revenues are calculated by multiplying the net production times the product price for each year.
- True
 - False
77. Production rates for components of the production stream may be scheduled or may be based on gas/oil and NGL/gas ratios.
- True
 - False
78. What are some of the general expense classifications for petroleum properties (mark all that apply)?
- Capital expenses
 - Operating expenses
 - Periodically recurring expenses
 - Random expenses
 - Organizational expenses
 - None of the above
79. Property taxes, amortization, depreciation, depletion charges, and rents and royalties for use of the property cannot be considered for property tax valuations.
- True
 - False
80. To determine if an expense is a variable cost, the appraiser should determine if the cost is dependent on oil production or the number of wells.
- True
 - False

81. Abandonment expenses occur only at the end of the productive life of a well or field and they are costs associated with just the removal of equipment from the well site.
- True
- False
82. Abandonment costs and environmental cleanup expenses are often accounted for with the establishment of a sinking fund.
- True
- False
83. The operator's income is dependent on the economic life of the property. The economic life is the point where net operating income becomes negative without any potential to return to positive.
- True
- False
84. Discounting for petroleum properties annual income is generally done at the end of the year.
- True
- False
85. Most discounted cash flow spreadsheet programs use which of the following (mark all that apply)?
- End of period discounting
- Beginning of the period discounting
- Continuous discounting
- All of the above
86. Objective uncertainty represents most of the risk associated with petroleum properties.
- True
- False
87. The quantification of subjectivity uncertainty requires a personal or appraisal judgment.
- True
- False

88. What are the types of uncertainty related to petroleum operations (mark all that apply)?
- Exploratory
 - Product Price
 - Expense
 - Mechanical
 - Technical
 - Political
 - All of the above
89. The ways risk can be accounted for in the cash flow analysis include which of the following (mark all that apply)?
- Monte Carlo Simulation
 - Modern Portfolio Theory
 - Capital Asset Pricing Model
 - API Petroleum Model
 - All of the above
90. After the discount rate has been selected, and adjustments for risk have been made, the appraiser discounts the total operating income of the property to reach a value conclusion.
- True
 - False
91. To determine the value of the mineral rights, the estimated value of the active improvements is offset from the total cash flow value.
- True
 - False
92. New reserves are taxable and acquire a base year value as of the first lien date that gas or oil extraction has started.
- True
 - False
93. Both the current market value and the adjusted base year value must be calculated annually for conventional properties. The enrolled value is the lesser of the two values.
- True
 - False