



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA
SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: PE 170

COURSE NAME: PRINCIPLES OF PETROLEUM ENGINEERING

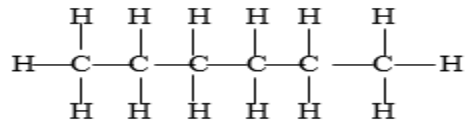
CLASS: PE 1

TIME: 2 HRS

Name: _____ Index Number: _____

Read each question carefully and select or provide the correct answer that makes the statement complete and true.

1. The state of the hydrocarbon type shown below is



- a. Gas
b. Liquid
c. Semi-solid
d. Solid
2. All the following sources of the hydrocarbons are strip-mined except
a. Shale gas
b. Shale oil
c. Coal
d. Tar sand
3. Which of the is an example of paraffinic hydrocarbons
a. Toluene
b. Propane
c. Cyclopentane
d. Carbon dioxide
4. The weight of the hydrocarbon molecule is predominantly determined by
a. the number of hydrogen atoms
b. the amount of water vapor present
c. the number of aromatic compounds
d. the number of carbon atoms
5. Which of the following is true according to the Darcy flow equation?
a. the production rate increases as the pressure gradient decreases
b. apparent fluid velocity increase as the pressure gradient increases

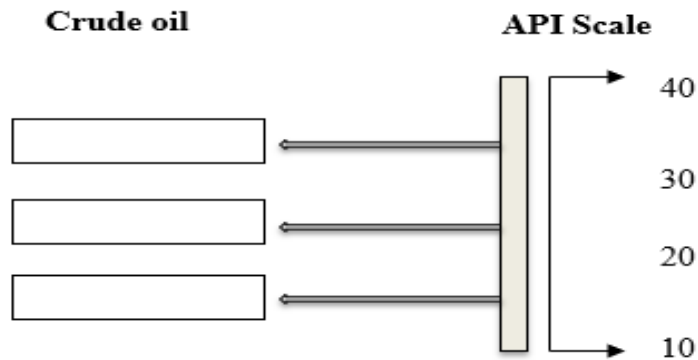
- c. Smaller the cross-sectional area, the slower the flow of fluid
 - d. As the size of rock gets larger, its permeability increases
6. The fundamental oil and gas exploration method is
 - a. Gravity survey
 - b. Magnetic survey
 - c. Resistivity survey
 - d. Seismic survey
 7. Which of the following is not associated with oil and gas drilling?
 - a. Top drive
 - b. bit
 - c. Christmas tree
 - d. Blowout preventer
 8. One of these activities belongs to the midstream aspect of oil and gas value chain.
 - a. Exploration
 - b. Transportation
 - c. Refining
 - d. Production
 9. Oil saturation is defined
 - a. as the fraction of rock bulk volume occupied by the oil
 - b. as the fraction of the pore volume occupied by the oil
 - c. as the ratio of pore volume to bulk volume
 - d. as the fraction of the pore volume occupied by the total rock fluids
 10. Pick among the list one which is a biofuel source.
 - a. coal
 - b. water
 - c. wind
 - d. charcoal
 11. The temperature at which amount of vapour rising from the surface of heated oil is enough to support combustion is called?
 - a. Flash point
 - b. Cloud point
 - c. Pour point
 - d. Refractive index
 12. The length of a stand of drill pipes is
 - a. 90 ft
 - b. 30 ft
 - c. 60 ft
 - d. 120 ft
 13. Which of these offshore rigs would you recommend for drilling in water depth greater than ten thousand feet?
 - a. Drillship
 - b. Jack up
 - c. Semi-submersible
 - d. Drilling barge
 14. The primary control of formation pressure during drilling is achieved by using
 - a. mud
 - b. BOP

- c. packer
d. bit
15. The first well drilled in a region is called
- a. producer
b. infill
c. wildcat
d. injector
16. All the following are associated with gas gathering system except
- a. compressors
b. pipelines
c. pumps
d. flowlines
17. A reservoir core sample is 12 cm long and 4 cm in diameter. What is the porosity of this rock if the measured pore volume is 26 cm³?
- a. 26%
b. 17.2%
c. 5.76%
d. 15%
18. A mixture of hydrocarbons that are in a gaseous state at normal temperature and pressure is
- a. Natural gas
b. Crude oil
c. Coal
d. Syncrude
19. In countries like New Zealand and Iceland, cold water is pumped into the earth and comes out as steam. The steam is used to turn turbines to generate electricity. Name this renewable energy source.
- a. Hydropower
b. Geothermal
c. Solar
d. Wind
20. Example of structural hydrocarbon trap among the following is
- a. salt dome
b. pinch-out
c. unconformity
d. hydrodynamic
21. Phase of migration where the hydrocarbons are initially expelled from the source after their formation is called
- a. Secondary migration
b. Primary migration
c. Carrier bed migration
d. Hydrodynamic migration
22. The following is associated with offshore seismic exploration.
- a. Geophones
b. Magnetometers
c. Gravimeters
d. Hydrophones
23. The last casing that is run when we drill a well to the target zone is called
- a. Surface casing
b. Conductor casing

32. Mention the two parameters that are used to determine the quality of crude oil.
- a. Water vapour and density
 - b. Density and sulfur content
 - c. Solid content and carbon dioxide
 - d. Salt and sulfur content
33. Group these under the following heads in the table. “octane, benzene, cyclopentane, iso-butane, xylene,

Paraffinic	Naphthenic	Aromatic

34. Liquefaction of natural gas are mainly for the purposes of transportation economic. True or False
35. Associated gas can exit as free gas sitting on top of oil or dissolved in crude as solution gas. True or False
36. Provide the crude oil type based on the API scale given below.



37. Whether oil and gas are transported by land or on the sea, the main concerns raised are bothered around three main factors. These factors are:
- a.
 - b.
 - c.

38. How many gallons are contained in a barrel of crude oil.
- 62.4
 - 14.7
 - 7.89
 - 42
39. Which of the following is not associated with well completion string?
- Packer
 - Tubing
 - Christmas tree
 - Kelly
40. The correct order of well drilling process is
- Drill first hole section
 - Cementing
 - Casing
 - Drill next hole section with smaller diameter bit
- I, IV, II, III
 - I, III, II, IV
 - I, II, IV, III
 - II, IV, II
41. Oil and gas exploration geologists believe that hydrocarbon accumulations are mainly restricted to sedimentary basins and metamorphic rocks. True or False
42. Hydrostatic pressure as exerted by fluid originally contained in the pores of rock formation is referred to as
- formation pressure
 - overburden pressure
 - fluid pressure
 - matrix pressure
43. What are the two main methods of gas transportation.
- -
44. During distillation of crude oil, what fraction is likely to condense out at a temperature range of 260 to 280 degrees Celsius
- Kerosene
 - Gasoline
 - Diesel
 - Bitumen
45. Determination of composition and properties of oil and gas is paramount for the following reasons except
- Price negotiation
 - Facility design
 - Maximizing recovery
 - Safety of drilling crew
46. The hardest coal among the following is
- lignite
 - anthracite

- c. bituminous coal
d. none of the above
47. Reservoir fluid with API value of 55 is likely to be
a. a dry gas
b. heavy viscous oil
c. a condensate
d. heavy crude
48. This property is useful in detecting oil show during drilling and mud logging.
a. Fluorescence
b. Refractive index
c. Pour point
d. Flash point
49. A well drilled to incline at an angle more than 80° to the vertical is described as
a. Vertical well
b. Multilateral well
c. Horizontal well
d. None of the above
50. The composition of LPG is mainly
a. CH_4
b. C_2H_6
c. C_3H_8
d. C_5H_{12}
51. The standard unit of measurement of natural gas is MMSCF. The MM stands for
a. Million
b. Thousand
c. Billion
d. Trillion

D. Ocran/E. Amarfio