UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, NOV. – DEC. 2018

COURSE NO: MN 273

COURSE NAME: INTRODUCTION TO PETROLEUM ENGINEERIN G

CLASS: MN II **TIME:** 3 HOURS

Name**:** _____Index Number: _____

Section A: Choose the Correct Answer from the options given (A – D).

1. Natural gas is composed of a mixture of the……short hydrocarbon molecules.
   a. Sixty
   b. Eighteen
   c. Four
   d. Five
2. Hydrocarbon molecule with…… or more molecules occurs as liquid
   a. Sixty
   b. Eighteen
   c. Four
   d. Five
3. Large asphalt content are usually associated with crude oil with high……..composition.
   a. Naphthene
   b. Paraffin
   c. Aromatic
   d. Condensates
4. ……..-rich crude oil has a fruity odour
   a. Paraffin
   b. Naphthene
   c. Aromatics
   d. Asphaltics
5. The most commonly used density scale for comparing and describing crude oils is known as
   a. Bench mark
   b. ˚API
   c. BTU
   d. BBL
6. Crude oils are classified as sweet and sour on the basis of their……..
   a. Sulphur content
   b. ˚API
   c. Salt Content
   d. Water vapour content
7. Oil that can be purchased from an oil-exporting country is known as…….
   a. Sweet crude
   b. Brent crude

c. West Texas crude
d. Crude stream

8. Oil well production is measured in……
   a. Standard barrel
   b. Barrel of oil per day
   c. US Gallon
   d. Gallon of oil per day

9. During refining processes, the longer the hydrocarbon molecule, the higher it's boiling temperature.
   a. True
   b. False

10. Natural gas with high content of Carbon dioxide (CO_2) is invaluable because CO_2 ……
    a. Is invaluable
    b. formed from carbon and oxygen
    c. Is poisonous
    d. Does not burn

11. A non-associated gas well produces almost pure methane.
    a. True
    b. False

12. …….is commonly called casing-head gasoline, drip gasoline or natural gasoline.
    a. Retrograde gas
    b. Condensates
    c. Volatile oil
    d. Black oil

13. …….can be added to crude oil in the field in a process called spiking to decrease the °API and increase the volume of the oil.
    a. Retrograde gas
    b. Condensates
    c. Volatile oil
    d. Black oil

14. Which of the following hydrocarbon types is a high shrinkage hydrocarbon
    a. Retrograde gas
    b. Condensates
    c. Volatile oil
    d. Black oil

15. A gas in the reservoir under original pressure but liquid condensates form in the subsurface reservoir as pressure decreases with production.
    a. Retrograde gas
    b. Condensates
    c. Volatile
    d. Black oil

16. Wet gas occurs entirely as a gas in the reservoir, even during production, but produces a liquid condensate on the surface.

a. True
b. False

17. Dry gas produce condensate either in the reservoir or on the surface.
    a. True
    b. False

18. ……is fundamental to the exploration and development of petroleum reservoirs
    a. Metamorphic geology
    b. Igneous geology
    c. Sedimentary geology
    d. Combination geology

19. Sedimentary basins represent accumulations of clastic and evaporite materials in a geologically depressed area.
    a. True
    b. False

20. Which of the following type of rock does not belong to the clastic sedimentary rock?
    a. Conglomerates
    b. Shales
    c. Sandstones
    d. obsidian

21. …….make excellent barriers to the migration of fluids and therefore tend to trap pools of petroleum in adjacent porous rock
    a. Conglomerates
    b. Shales
    c. Sandstones
    d. Obsidian

22. ……...are formed by the precipitation of chemicals from solution.
    a. Clastic
    b. Evaporite
    c. Sandstones
    d. Carbonates

23. Rock in which organic material has been converted into petroleum is called……..
    a. Source rock
    b. Reservoir rock
    c. Sandstone
    d. Formation rock

24. …….. can be classified as one of the best source rocks
    a. Shales
    b. Limestone

c. Sandstone
d. Feldspars

25. ……is limited to distances of a few hundred meters at most

a. Primary migration
b. Secondary migration
c. Structural traps
d. Stratigraphic traps

26. ……..is the rock's permeability to a given fluid when another fluid is also present

a. Effective permeability
b. Absolute permeability
c. Relative permeability
d. Directional permeability

27. Movement of hydrocarbon ceases upon reaching a structural high point or a zone of reduced ……..

a. Porosity
b. Permeability
c. Structural raps
d. Water saturation

28. Faults and fold s are examples of……traps

a. Hydrodynamic
b. Combination
c. Stratigraphic
d. Structural

29. The most accurate and widely used means of finding good drilling locations is the…….

a. Magnetic surveys
b. Gravity surveys
c. Seismic survey
d. Land surveys

30. Which of the following surveys involves sending sound waves down into the ground

a. Magnetic
b. Gravity
c. Seismic
d. Land surveys

31. Secondary recovery refers to reservoir pressure maintaining methods like water injection and gas injection.

a. True
b. False

32. The methods employed to increase the ultimate recovery of a reservoir by altering the reservoir fluid properties fall under

a. Secondary recovery methods
b. Tertiary recovery methods
c. Primary recovery methods
d. None

33. ……can dissolve more gas at the given temperature.

a. Saturated oil
b. Under saturated oil
c. Black oil
d. Volatile oil

34. Hydrocarbon mixture that has lost all its volatile components and at the surface there is very little gas to come out of solution is known as.

a. Condensates
b. Dead oil
c. Retrograde
d. saturated

35. When processes are used to increase the energy level or facilitate the flow of hydrocarbons inside the well bore it is known as……..

a. Boosting
b. Artificial lift
c. Natural flow
d. Energy processing

36. The first phase of oil and gas operations is ……

a. Development
b. Exploration
c. Exploitation
d. Production

37. A service contract is a type of ……

a. Risk service contract
b. Concessionary contract
c. Contractual contract
d. Pure service contract

38. The oldest form of oil and gas contract is the……

a. Contractual
b. Concessionary
c. Pure service contract
d. Risk service contract

39. Bonuses, taxes and royalties are paid to……

a. Multinational companies
b. Host Companies
c. Service companies
d. Production companies

40. If commercial amounts of oil/gas are found, an agreed share of the oil/gas called …….. goes to the contractor to recover cost under production sharing contract.

a. Profit oil
b. Exploration oil
c. Cost oil
d. Net oil

41. ……. is the remaining oil after costs have recovered, and is split by an agreed formula between the multinational company and the host government.

a. Cost oil
b. Profit oil
c. Produced oil
d. Net oil

42. …… is most common offshore and is based on cost per day to drill to the contract depth.

a. Footage
b. Daywork
c. Turnkey
d. Combination

43. The first well to be drilled in an area is …….

a. Development well
b. Production well
c. Confirmatory
d. Wildcat

44. This type of casing may or not be run into a well depending on the pressure.…….

a. Conductor
b. Production
c. Intermediate
d. Surface

45. The following are locations for drilling oil and gas except ……..

a. Onshore
b. Swamp
c. Offshore
d. River

46. …… and …… are two major types of land drilling rigs.

a. Conventional and mobile
b. Submersible and drillship
c. Jackup and potable mast
d. None of the options

47. Bottom-supported units can either be …… or …… submersible, jackup (b). jackup and drill ship (c). Submersible and drillship

a. Submersible, jackup
b. Jackup and drill ship
c. Submersible and drillship
d. A & C

48. Each section of drillpipe is called a ……

a. Kelly
b. Section
c. Joint
d. Pipe

49. The ability of mud to suspended cuttings is …….

a. Answer
b. Answer
c. Answer
d. Answer

50. Question

a. Viscosity
b. Density
c. Thickness
d. Gel strength

51. The function of the …… system is to remove cuttings out of the hole as drilling progresses.

a. Hoisting
b. Circulating
c. Power
d. Rotating

SECTION B

Answer any Two Questions from this Sections. Begin each question from a fresh Page

Question One

i. What is the use of separator? Mention the types of separators available for hydrocarbon separation. (4)

ii. Mention four chemical composition of typical crude oil and natural gas. (4)

iii. For the following offshore rigs types namely: (a) Jackup (b) semisubmersible, give two advantages and two disadvantages each. (4)

iv. Mention four factors that make possible the transformation of decayed plants and animals into petroleum (4)

v. Mention four products that can be obtained from a refined crude oil. (4)

Question Two

i. Mention four (4) non-hydrocarbon, gaseous impurities that could be found in a typical natural gas. (4)

ii. Differentiate between the following: (a) Associated and Non-associated gas (b) Primary and secondary migration. (4)

iii. Mention four requirements for commercial oil accumulation. (4)

iv. Apart from being an energy source, what other products can be obtained from crude oil? List eight of such products. (4)

v. After its formation, petroleum may migrate from the source rock into porous and permeable beds where it accumulates and continues its migration until finally trapped. Give fours forces or factors that causes this migration. (4)

Question Three

i. Explain the two methods used by the Geophysicist for the determination of the subsurface structure of the formation during reconnaissance. (4)

ii. Mention the composition/constituents of a complete oil and gas production system. (4)

iii. For any four (4) of the part of the production system mentioned in question 5, state the functions. (4)

iv. Mention the composition of natural based on the number of hydrocarbon molecules. (4)

v. Give a brief description of the following reservoir fluid types: (a) Dead oil (b) Black oil (c) Volatile oil (d) Wet gas (4)

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