

Nepal Engineering Council Registration Examination
MODEL QUESTION
for
Petroleum Engineering (APtE)

(100*1=100)

1. Which type of fault is characterized by horizontal movement of the fault blocks?
[Option]
 - a) Normal fault
 - b) Reverse fault
 - c) Strike-slip fault
 - d) Thrust fault
2. Identify the metamorphic rock formed by thermodynamic method of metamorphism.
 - a) Slate
 - b) Gneiss
 - c) Schist
 - d) Marble
3. The angle at which a sedimentary bed is inclined from the horizontal is called the _____.
 - a) Anticline
 - b) Strike
 - c) Syncline
 - d) Dip
4. Which mineral group is abundantly found in the earth's crust?
 - a) Mica group
 - b) Felspar group
 - c) Oxide group
 - d) Silicate group
5. In seismic refraction method, the radiating shock waves are picked up by
 - a) Geophone
 - b) Wave buoy
 - c) Thermometer
 - d) Cohesive soils
6. What is a significant challenge in surveying offshore oil and gas platforms?
[Option]
 - a) High humidity
 - b) Wave and current effects on equipment
 - c) Excessive heat
 - d) High altitude
7. In micropaleontology, what is the primary use of foraminiferal fossils?

[Option]

- a) Determining the age of sedimentary rock layer
- b) Mapping ancient landforms
- c) Analyzing large scale climate changes
- d) Identifying volcanic activity

8. In which temp range does the oil window typically occur?

[Option]

- a) 50°C to 100°C
- b) 70°C to 150°C
- c) 100°C to 200°C
- d) 150°C to 250°C

9. Which type of rock is commonly associated with cap rocks?

[Option]

- a) Sandstone
- b) Limestone
- c) Shale
- d) Granite

10. In which type of trap do faults create a barrier that can hold oil and gas?

[Option]

- a) Anticline trap
- b) Salt dome trap
- c) Fault trap
- d) Stratigraphic trap

11. What is “Scale” in map compilation?

[Option]

- a) The process of adjusting map colours
- b) The ratio of distance on the map to the actual distance on the ground
- c) The size of the map’s legend
- d) The number of map symbols used

12. What significant event marks the end of Mesozoic era?

[Option]

- a) The formation of Himalayas
- b) The extinction of dinosaurs
- c) The developments of early mammals
- d) The breakup of Pangaea

13. What major challenge does Nepal face in Petroleum Exploration?
[Option]
- a) High Risk of natural disasters.
 - b) Lack of sufficient geological data
 - c) Limited availability of modern drilling technology
 - d) High transportation costs
14. Which type of well log provides information about porosity of rock?
[Option]
- a) Resistivity Log
 - b) Gamma Ray Log
 - c) Sonic Log
 - d) Neutron Log
15. What is the primary purpose of Caliper log?
[Option]
- a) To measure the density of the formation
 - b) To assess the borehole diameter and shape.
 - c) To determine the porosity of the rock
 - d) To record the natural gamma radiation of the formation
16. What type of calibration is crucial for maintaining log accuracy?
[Option]
- a) Sensor Calibration
 - b) Depth Calibration
 - c) Temperature Calibration
 - d) Pressure Calibration
17. What principle underlies the operation of sonic log?
[Option]
- a) Measurement of gamma Radiation
 - b) Detection of electrical resistance
 - c) Propagation of acoustic waves through the formation
 - d) Measurement of magnetic fields
18. Which of the following is not typically function of mud logging?
[Option]
- a) Monitoring the drilling rate.
 - b) Identifying formation pressure
 - c) Measuring the formation's sonic velocity
 - d) Analyzing gas levels in the mud

19. What is added to natural gas to make it detectable by smell?
[Option]
- a) Sulphur
 - b) Nitrogen
 - c) Mercaptan
 - d) Methane
20. Relative permeability is defined as
[Option]
- a) The ratio of effective permeability to absolute permeability
 - b) The ratio of absolute permeability to porosity
 - c) The ability of the rock to transmit a single fluid only
 - d) The product of permeability and fluid viscosity
21. At what point does the bubble point pressure occur in a fluid system
[Option]
- a) When gas first starts to evolve from the liquid
 - b) When the gas phase dominates the system
 - c) At the minimum reservoir pressure
 - d) When the temperature is the lowest
22. Darcy's Law assumes the flow of fluid is:
[Option]
- a) Laminar
 - b) Turbulent
 - c) Transient
 - d) Chaotic
23. What is the primary method used to measure reservoir pressure?
[Option]
- a) Core sampling
 - b) Wire line formation testing
 - c) Seismic survey
 - d) Logging while drilling
24. Which drive mechanism is most effective at maintaining reservoir pressure during production?
[Option]
- a) Solution gas drive
 - b) Water drive
 - c) Gravity drainage
 - d) Depletion drive

25. What component of the sucker rod pumping system converts the rotary motion of the motor into reciprocating motion?

[Option]

- a) Stuffing box
- b) Traveling valve
- c) Walking beam
- d) Down hole pump

26. What is the primary purpose of hydraulic fracturing in oil and gas reservoirs?

[Option]

- a) To clean the wellbore
- b) To increase the permeability of the reservoir rock
- c) To remove water from the formation
- d) To reduce well pressure

27. Which of the following is NOT a primary function of the Christmas tree?

[Option]

- a) Control the flow of oil or gas from the well
- b) Regulate well pressure
- c) Aid in well fracturing operations
- d) Support the drill string during drilling

28. What is the main benefit of using compressed air in well activation?

[Option]

- a) It increases the oil viscosity
- b) It helps maintain reservoir pressure
- c) It is readily available and inexpensive
- d) It can improve the permeability of the reservoir

29. What is paraffin deposition in oil wells primarily caused by?

[Option]

- a) High gas-to-oil ratio
- b) Low reservoir temperature
- c) Cooling of oil as it moves up the wellbore
- d) High water cut in the production fluids

30. What is the primary advantage of using a Jack-up Rig for offshore drilling?

[Option]

- a) Ability to operate in deep water
- b) Mobility and ability to adjust its elevation relative to the sea floor
- c) Large storage capacity for crude oil
- d) Permanent installation on the seabed

31. What is the primary advantage of Directional Drilling?

[Option]

- a) It can drill vertical wells only
- b) It allows drilling at multiple angles and along curved paths

- c) It is the fastest drilling method available
 - d) It is used for shallow well applications
32. Which term describes the time it takes for the cement slurry to set and harden after being pumped into the wellbore?
- [Option]
- a) Setting time
 - b) Pumping time
 - c) Curing time
 - d) Flow time
33. Which of the following is a primary goal of directional drilling in offshore operations?
- [Option]
- a) To avoid drilling through formations with high pressure
 - b) To reduce the length of the wellbore
 - c) To minimize the environmental impact by drilling from a single location
 - d) To increase the number of wells in the area?
34. Which type of casing is typically used to provide the initial structural support for the wellbore?
- [Option]
- a) Production Casing
 - b) Intermediate Casing
 - c) Surface Casing
 - d) Liner Casing
35. Which method is commonly used for onshore disposal of drill cuttings to minimize land use?
- [Option]
- a) Deep well injection
 - b) Land farming
 - c) Incineration
 - d) On-site burial
36. Which type of packer is typically used in production wells to prevent fluid flow between different zones?
- [Option]
- a) Retrievable Packer
 - b) Permanent Packer
 - c) Drillable Packer
 - d) Liner Packer
37. How does increasing the pressure in a pipeline typically affect the flow of fluids?
- [Option]
- a) It decreases the flow rate
 - b) It has no effect on the flow rate
 - c) It increases the flow rate

- d) It makes the fluid more viscous
38. What is the key characteristic of a centrifugal compressor?
[Option]
- a) It uses a piston to compress gas
 - b) It compresses gas by converting kinetic energy to pressure energy through the use of rotating impellers
 - c) It operates at low speeds with high volumetric flow rates
 - d) It uses sliding vanes to trap gas
39. In pigging operations, what is the pig launcher used for?
[Option]
- a) To inspect the pipeline for leaks
 - b) To inject the pig into the pipeline for its journey
 - c) To clean the pig after use
 - d) To remove debris from the pipeline
40. Which of the following is not a stage of oil recovery?
[Option]
- a) Primary Recovery
 - b) Secondary Recovery
 - c) Quaternary Recovery
 - d) Enhanced Oil Recovery
41. One advantage of using CO₂ flooding is:
[Option]
- a) The ability to use it in shallow reservoirs
 - b) The reduction of greenhouse gases by sequestering CO₂
 - c) The increase in water cut
 - d) Its low cost compared to water flooding
42. MEOR is considered an environmentally friendly technique because:
[Option]
- a) It uses CO₂ to dissolve oil
 - b) It injects chemicals that degrade quickly
 - c) It utilizes naturally occurring or engineered microorganisms instead of chemicals
 - d) It involves thermal processes
43. In gasoline production, the blending process is used to achieve:
[Option]
- a) A higher flash point
 - b) The correct octane rating for various grades of fuel
 - c) Increased water content in the fuel
 - d) A lower freezing point

44. Which of the following is a major product of catalytic cracking?
[Option]
- a) Asphalt
 - b) Gasoline
 - c) Lubricants
 - d) Coal
45. What are the two main types of petroleum coke?
[Option]
- a) Fluid coke and delayed coke
 - b) Sponge coke and needle coke
 - c) High-sulphur coke and low-sulphur coke
 - d) Light coke and heavy coke
46. What is the primary purpose of sulphur recovery in refineries and gas plants?
[Option]
- a) To remove sulphur compounds to meet environmental regulations
 - b) To increase the viscosity of crude oil
 - c) To convert sulphur into sulfuric acid
 - d) To lower the carbon content of fuel
47. Which process is used to separate crude oil into its different components based on boiling points?
[Option]
- a) Catalytic cracking
 - b) Distillation
 - c) Hydrocracking
 - d) Reforming
48. Which process is commonly used for desulfurizing diesel fuels?
[Option]
- a) Fluid catalytic cracking
 - b) Hydrocracking
 - c) Hydrotreating
 - d) Catalytic reforming
49. Chronic inhalation exposure to low levels of petroleum hydrocarbons may lead to:
[Option]
- a) Lung cancer
 - b) Central nervous system depression and dizziness
 - c) Skin burns
 - d) Kidney failure
50. In fracturing operations, why are biocides added to the fracturing fluid?
[Option]
- a) To increase the pressure inside the formation
 - b) To prevent bacterial growth that can cause corrosion

- c) To enhance the conductivity of the fracture
- d) To reduce water content

51. In an automatic shutdown system, which type of signal typically triggers the system to engage?

[Option]

- a) Manual override
- b) Sensor signals indicating abnormal pressure, temperature, or flow rates
- c) Time-based schedule
- d) Weather conditions

52. What is the response time of a gas detector?

[Option]

- a) The time it takes to calibrate the detector
- b) The duration the detector takes to alert after detecting a hazardous gas concentration
- c) The lifespan of the detector's sensor
- d) The frequency of signal transmission

53. Which type of pollution is directly caused by the disposal of produced water from oil and gas production operations?

[Option]

- a) Air pollution
- b) Water pollution
- c) Light pollution
- d) Noise pollution

54. Landfilling as a waste treatment method involves:

[Option]

- a) Disposing of waste in open land with no cover??
- b) Burying waste in engineered sites designed to prevent environmental contamination??
- c) Burning waste in large pits??
- d) Separating waste materials for recycling??

55. Standard dimensions (mm x mm) of A3 drawing sheet is

[Option]

- a) 11.69×16.54
- b) 29.7×42
- c) 297×420
- d) 420×280

56. Which of the following methods of charging depreciation of an asset has increased amount of depreciation as the age of asset increases

[Option]

- a) sum-of-year digit
- b) sinking fund
- c) diminishing balance

d) straight line

57. The process of optimizing the project's limited resources without extending the project duration is known as

[Option]

- a) project crashing
- b) resource levelling
- c) resource smoothing
- d) networking

58. The process of composing/raising the required fund from different sources such as equity, preferred stock, bond and debenture is known as

[Option]

- a) capital structure planning
- b) project financing
- c) capital budgeting decision
- d) deducing earning per share

59. In which of the following society people used to seek their existence on growing plants for their cattle and domestic animals

[Option]

- a) pastoral society
- b) tribal society
- c) horticultural society
- d) agricultural society

60. According to Nepal Engineering Council Act, 2055 (Revised, 2079), all engineering academic institutions shall bein the Council.

[Option]

- a) affiliated
- b) united
- c) recognized
- d) associated

61. Igneous rock form from:

[Option]

- a) Weathering of rocks
- b) Sedimentation
- c) Pressure and heat
- d) cooling and solidification of magma

62. Levelling in surveying is used to determine

[Option]

- a) Direction between two points.
- b) Difference in elevation between points
- c) Distance between points
- d) Latitude and longitude

63. A normal fault is caused by:

[Option]

- a) Shear

- b) Compression
 - c) Folding
 - d) Tension
64. The method of surveying that uses sound waves to determine subsurface features is
[Option]
- a) Seismic Surveying
 - b) hydrographic surveying
 - c) GPS Surveying
 - d) Photo grammetric Surveying
65. Gravity method measures;
[Option]
- a) Magnetic Field
 - b) Rock Density Variation
 - c) Electrical conductivity
 - d) Temperature
66. Microfossils are generally defined as fossils smaller than;
[Option]
- a) 1 mm
 - b) 5 mm
 - c) 0.5 mm
 - d) 2 mm
67. Oil generation mainly occurs during;
[Option]
- a) Diagenesis
 - b) Metagenesis
 - c) Weathering
 - d) Catagenesis
68. The oil window generally occurs within that temperature range?
[Option]
- a) 20-50°C
 - b) 60-120°C
 - c) 150-250°C
 - d) 250-320°C
69. Porosity produced due to fractures or dissolution is called;
[Option]
- a) primary
 - b) Secondary
 - c) Effective
 - d) Fracture Porosity
70. The upward migration of oil is mainly due to;
[Option]
- a) ??capillary action
 - b) ??pressure of gas cap
 - c) ?? Buoyancy difference between oil and water
 - d) ??gravitational settling

71. The Mesozoic era is also known as
[Option]
- a) Age of mammals
 - b) Age of fishes
 - c) Age of reptiles
 - d) Age of amphibians
72. IN Nepal.petroleum exploration activities have been focused mainly in
[Option]
- a) himalayan region
 - b) Terai plains and siwalik ranges
 - c) mid-mountain regions
 - d) Tibetan plateau
73. The log header includes information such as
[Option]
- a) Casing diameter only
 - b) Mud properties only
 - c) Well name, location, depth, and logging company details
 - d) Temperature only
74. One major source of error in logging is:
[Option]
- a) Tool calibration and borehole condition
 - b) Rock color
 - c) Mud viscosity only
 - d) Operator shift timing
75. Resistivity logs measure:
[Option]
- a) Ability of formation to conduct electricity
 - b) Sonic wave travel time
 - c) Temperature
 - d) Borehole size
76. A major advantage of mud logging is:
[Option]
- a) Continuous real-time monitoring of formation changes
 - b) Reduced drilling time
 - c) Elimination of casing
 - d) No need for well logs
77. API gravity is a measure of
[Option]
- a) Flash point of crude oil
 - b) Sulfur content
 - c) Density of crude oil compared to water
 - d) Viscosity of crude oil

78. The equilibrium ratio (K-value) is defined as:
[Option]
a) Liquid volume / gas volume
b) Gas pressure / liquid pressure
c) Temperature ratio
d) Mole fraction in vapor phase divided by that in liquid phase
79. Darcy's law is valid for:
[Option]
a) Laminar flow only
b) Turbulent flow
c) Sonic flow
d) Multiphase flow always
80. Gas coning occurs when:
[Option]
a) Gas moves downward into the producing oil zone
b) Water flows upward
c) Oil is displaced
d) Gas is vented
81. Gas lift system operates by:
[Option]
a) Injecting gas into the formation
b) Injecting gas into the production tubing to reduce hydrostatic pressure
c) Increasing wellhead pressure
d) Using mechanical rods to lift the fluid
82. Hydraulic fracturing enhances well productivity by:
[Option]
a) Dissolving rock minerals
b) Reducing bottom-hole pressure
c) Creating fractures and increasing effective permeability
d) Increasing reservoir temperature
83. The component that suspends and supports tubing strings is called:
[Option]
a) Packer
b) Tubing hanger
c) Valve
d) choke
84. The size and orientation of perforations mainly influence:
[Option]
a) Fluid viscosity
b) Casing strength
c) Flow efficiency and well productivity
d) Reservoir pressure
85. Workover operations are mainly done to
[Option]
a) Drill new wells

- b) Restore or improve production from existing wells
 - c) Build wellhead structures
 - d) Inject gas into formation
86. The economics of drilling fluid depend on:
[Option]
- a) Cost of additives and mud losses
 - b) Well depth only
 - c) Type of drill bit only
 - d) Type of formation only
87. ??? Cement thickening time is important to:
[Option]
- a) Ensure proper placement before setting
 - b) Increase casing pressure
 - c) Reduce slurry flow rate
 - d) Avoid overpressuring
88. A **S-shaped** directional well profile is mainly used to??
[Option]
- a) Reduce bit wear
 - b) Reach multiple reservoirs
 - c) Minimize torque and drag
 - d) Increase vertical depth
89. In a **reciprocating compressor**, compression is achieved by?
[Option]
- a) Centrifugal force
 - b) Positive displacement using a piston
 - c) Rotary motion
 - d) Vane rotation
90. **Pigging operations** in pipelines are carried out for
[Option]
- a) Cleaning and inspection of pipelines
 - b) Increasing pressure
 - c) Reducing friction
 - d) Removing valves
91. **Secondary recovery** typically involve?
[Option]
- a) Gas injection only
 - b) Hydraulic fracturing
 - c) Polymer injection
 - d) Water flooding or gas injection to maintain pressure
92. The primary advantage of MEOR over chemical methods is:
[Option]
- a) Low cost and environmental friendliness
 - b) High temperature requirement
 - c) Corrosive nature
 - d) High chemical demand

93. **Blending** in refineries is done to:
[Option]
a) Adjust product specifications and properties
b) Increase crude throughput
c) Reduce sulfur content
d) Lower flash point
94. **Petroleum coke** is mainly used for
[Option]
a) Electrode manufacture and fuel in cement kilns
b) Asphalt binder
c) Diesel blending
d) Jet fuel production
95. **Manual shutdown systems** are used when?
[Option]
a) Automatic systems fail
b) The plant is under construction
c) During startup only
d) Production is low
96. The **primary firefighting agent for hydrocarbon fires** is:
[Option]
a) CO₂ only
b) water
c) Foam
d) Sand
97. **Solid waste** from refineries is commonly disposed of by:
[Option]
a) Open burning
b) Sea disposal
c) Dumping into rivers
d) Landfilling or incineration
98. **Bioremediation** refers to
[Option]
a) Physical washing
b) Chemical neutralization
c) Use of microorganisms to degrade oil contaminants
d) Adsorption only
99. **Orthographic projection** represents
[Option]
a) Isometric drawing
b) 3D perspective
c) Sectional drawing
d) Views of an object from different directions (top, front, side)

100. The **project life cycle** phases typically include

[Option]

- a) Initiation, Planning, Execution, Monitoring, Closure
- b) Design, Marketing
- c) Financing, Tender
- d) Surveying