Unit 10 - Week 8

Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-25, 23:59 IST.

1) A porous medium of overall volume 100 mL contains 10 mL of oil and 15 mL of water. What is the porosity of the medium?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.2,0.3

1 point

2) For the system in Question 1 above, calculate the oil saturation.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.35,0.45

1 point

3) A fluid of surface tension 70 mN/m and viscosity 10^{-3} Pa.s forms a contact angle 15° with glass, and enters into a glass capillary of diameter 1 μm by imbibition. Calculate the length of penetration (cm) over a duration of 10 seconds.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.1,1.5

1 point

4) When wetting phase displaces the non-wetting phase from a pore, the process is known as

1 point

a) drainage
b) imbibition
c) viscous instability
d) surface tension based instability

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

5) When non-wetting phase displaces the wetting phase from a pore, the process is known as

1 point

a) drainage
b) imbibition
c) viscous instability
d) surface tension based instability

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

6) Under what condition, capillary pressure term does not appear in Darcy equation for two phase flow

1 point

a) When the flow is under "drainage" mode
b) When the flow is under "imbibition" mode
c) When the two phase flow is at steady state
d) None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

7) Two phase flow under steady state implies

1 point

a) Total flow rate is constant with time
b) The flow rate of wetting phase is constant with time
c) The saturation remains uniform over entire porous medium during flow
d) None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

8) Capillary pressure gradient for steady two phase flow is

1 point

a) zero
b) arbitrary value depending on the system parameters
c) same as the total pressure gradient
d) none of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

9) In funicular two phase flow model, which phase remains at the core

1 point

a) Wetting phase
b) Non-wetting phase
c) Either of the two phases
d) None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

10) Relative permeability curve does not depend on

1 point

a) Surface tension
b) Contact angle
c) Pore structure
d) Overall pressure gradient

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

11) Wetting phase is likely to enter into a conical capillary, filled apriori with non-wetting phase through

1 point

a) the end with smaller opening
b) both ends equally
c) the end with larger opening
d) either of the ends

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

12) Relative permeability of wetting phase increase with increase in

1 point

a) Wetting phase saturation
b) Non-wetting phase saturation
c) Flow rate of non-wetting phase
d) None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

13) For differential mass balance of i^{th} phase in multiphase incompressible flow through porous medium, the mass accumulation term is expressed as

1 point

a) Zero
b) $-\varphi V \frac{\partial \rho_i}{\partial t}$
c) $-\rho_i \varphi V \frac{\partial (S_i)}{\partial t}$
d) $-\varphi V S_i \frac{\partial \rho_i}{\partial t}$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

14) In case of channel flow model of two phase flow, the stationary blob or ganglia (of original phase present in the pore space, and got cut-off and surrounded by the displacing phase) can be made to move by

1 point

a) reducing the capillary number
b) reinjecting the original phase into the porous medium
c) provide flow pulses
d) none of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

15) Capillary number can be expressed as

1 point

a) $\frac{\mu u}{\sigma}$
b) $\frac{\omega d}{\sigma}$
c) $\frac{\omega d}{\mu}$
d) $\frac{\mu u}{D}$

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.