UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, DEC, 2014

COURSE NO: PE 381
COURSE NAME: **PRODUCTION OPERATION AND EQUIPMENT**
CLASS: PE III TIME: **3 HRS.**

Name**:** _____ Index Number: _____

INSTRUCTIONS:

Answer all questions UNDER both sections A and B. Section A carries 40 marks whiles section B carries 20 marks.

SECTION A

1. State 2 advantages of vertical separators over horizontal separators (2 marks)

2. Mention 2 components of a packer (2 marks)

3. Wellheads provides for: (1 marks)

   i. Suspension of all individual casings and tubings concentrically in the well

   ii. Ability to install a surface closure or flow control device namely BOP and Xmas tree.
   iii. Hydraulic access to the annuli between the casing and the formation, and between the production casing and the tubing.
   a. i only
   b. i, ii only
   c. I, ii, iii
   d. None of the above.

4. Perforating a well during completion stage can be done in two ways. Mention those 2 options. (2 marks)

5. Give the 2 different tools or methods that can be employed to convey completion guns to the wellbore. (2 marks)

6. After a casing or tubing is run during drilling operation, a pressure test is conducted to check the proper functioning of the sealing devices in the casing head housing or tubing spool. True or false. (1 marks)

7. Give 2 other sources of scale formation apart from separation of solid phase from the water. (2 marks)

8. Mention 3 factors that promote scale formation. (3marks)

9. Mention 2 ways of enhancing primary separation of crude oil from water. (2 marks)

10. Name the 3 basic wellhead designs frequently used in the oil industry. (3 marks)

11. Mention 3 functions of the packer system in the production well. (2 marks)

12. Give the 2 fundamental classifications of packers. (2 marks)

13. Name 3 methods of setting a packer system. (3 marks)

14. What are the 3 alternative approaches that can be employed in completing a reservoir zone? (3 marks)

15. There are the 2 types of corrosion encountered in oil and gas production wells. (2 marks)

16. Mention the 2 types of sub-surface safety valves we have. (2 marks)

17. Mention the 3 methods of completing a multi-zone reservoir. (3 marks)

18. Mention 3 types of artificial lift systems used in the petroleum production industries currently.

SECTION B

Question1. (10marks)

a) Most produced water is disposed to the marine environment at specified oil content by the governing national legislation. Mention one beneficial way an oil company can dispose of their produced water. Explain. 3marks

b) As a Drilling Engineer put on the well planning team of the GNPC team of engineers to see to the development of the jubilee field, where in terms of the positions of drilled formation should the casings with the maximum collapse strength and maximum burst strength be placed? Explain your answer. 3marks

c) What is an artificial lift system? 2marks

d) Describe the mechanism or the principles under which the gas lift system operates. 2marks

Question2. (10 marks)

a) Why would a company use a variable choke as oppose to a fixed choke at the start of production operations? 5marks

b) Outline the qualities of reservoirs that serve as a leverage for oil producing companies to complete without casing (open-hole completion). 2marks

c) What is the advantage of installing SSSV (sub-surface safety valve) in a production well? 3marks

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