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الزمن / 3 ساعات
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كلية الهندسة – جامعة مصراته
فصل الربيع 2015/2014
الامتحان النهائي لمقرر / مقرر اختياري هن 556
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رقم الطالب:

أسم الطالب:

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Answer all questions:

Question No.1

- I- What are the factors for sizing and a selecting separator?
- II- List with drawing the stages of separations?
- III- What are the factors affecting on separation and what are the major sections of separation vessels? (10marks)

Question No.2

- I- What are the separator troubleshooting problems?
- II- Describe the possible causes the problems of separators?
- III- Explain the major problems encountered in the operations? (10marks)

Question No.3

- I- Define a Sour gas, what is the method for sweetening and what the main benefit obtained from the removal of both of hydrogen sulphide (H_2S) and some carbon dioxide (CO_2)?
- II- What are the general factors that need to be considered when selecting a sweetening process. and list the general operating problems with treating amine processes? (10marks)

Question No.4

- I- Sour gas flows to the amine absorber at a rate of 75 mmscf/d and contains 2% H_2S .
- 1) Calculate the required circulation flow rate of MDEA solution in the amine absorber, taken lean amine concentration 60% by weight. Assuming that the maximum acid gas removal is required.
- 2) What the MDEA solution flow rate per minute, if the lean amine concentration is 40 % instead of 60% by weight.

بقية الأسئلة خلف الورقة

الصفحة 1 من 2

II- It is required to increase the concentration of MDEA solution in the amine system from 45% to 50% .If the total volume of the MDEA solution in the system (absorber , flash tank , surge tank , heat exchanger, amine stripper and reboiler) is 10000 gallons , How much MDEA must be added ?

2) How much water must be added to the amine system to reduce the concentration of MDEA solution from 70% to 60% ? (MDEA 40 - 60 wt. % 5 – 7) (15marks)

Question No.5

I- What are the purposes of gas dehydration, and write all the steps of determining glycol circulation flow rate?

II-Gas plant produces 30 mmcf/day of natural gas. Calculate the glycol circulation flow rate required to dehydrate this amount of gas. Data given :

- The sales specification allows only 5 lbs. of water per million cf of natural gas.
- 4 gallons of glycol is required to absorb 1 pound of water vapour (design specification).
- Temperature of wet gas to contactor is 107 °F.
- The contactor pressure is 850 psig.

*The amount of water in gas entering the dehydration system (contactor) at P = 850 psig and T = 107 °F is equal to 92 lbs. Water / mmcf of gas .

III- What are the major Operating Problems of dehydration processes? (15marks)

Good Luck

الصفحة 2 من 2