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جامعة مصراتة
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الامتحان النهائي لمقرر استكمال وصيانة الآبار هـ.ن 413
تاريخ الامتحان: 2015/3/31
أستاذ المقرر: أبوبكر طليبة

كلية الهندسة
القسم: هندسة النفط
الزمن : 2:30 ساعة

اسم الطالب ..... رقم الطالب .....

QUESTION ONE **(15 MARKS)**

1- What are the Completion Fluid requirements to avoid formation damage?

2- One of the factors that govern the reaction rate of an acid is temperature, talk briefly about this factor?

3- what is the Matrix acidizing in carbonates? Talk briefly about it?

QUESTION TWO **(15 MARKS)**

1- What are the major types of formation damage resulting from fluids placed in the well?

2- What are the four main factors (know as geometric factors) in order to achieve optimum perforation of a particular reservoir?

3- What are the major applications of squeeze cementing?

QUESTION THREE **(15 MARKS)**

Intermediate casing 9 5/8" string under the following conditions:

- Casing setting depth = 4200 ft
- Max. Surface pressure = 1470 psi
- Fracture gradient at shoe = 0.7 psi/ft
- Heaviest mud weight below shoe = 9.3 ppg (0.4836 psi/ft)
- The formation fluid density is 8.5 ppg
- Gas gradient = 0.1 psi/ft
- Design factor of 1.1 for both collapse and burst and 1.6 for tension

1- Determine the burst, collapse and tension loading on the casing string?

2- Select the type of casing necessary to give sufficient joint strength?

3- De-rate the casing's collapse resistance for biaxial loading effects.?

QUESTION FOUR **(15 MARKS)**

Well information:

Well is drilled with 8.5 inch bit to 8,530 ft with oil based mud (9.5 ppg). Estimated hole sized based on an open hole log is 8.6 inch.

Previous casing size is 9-5/8" and its shoe is at 5000' .

Plan to run 7" casing N-80 23 lb/ft and planned shoe depth at 8,500'.

There is one float collar at 8470' .

Top of cement is 2000 ft above 9-5/8" casing.

7" casing ID = 6.185" body yield 532000 lb

9-5/8" casing ID = 8.85"

Cement Type API class G with	3% bentonite + 0.1% retarder + 0.5% turbulence inducer.	
Slurry weight (pcf)	98	
Slurry yield (ft3/sack)	1.25	
Water requirement (gal/sack)	5.0	
Pumping rate through casing	(gal/min)	200
Pumping pressure (psi)		500

Allow 15 min for the release of plugs

1. Calculate the quantities of cement & bentonite and additives required for conventional cementing job.
2. Calculate the volume of mixing water
3. Calculate the total time for both (conventional and for an inner string) job, assuming that the mixing rate is 10 sacks/ min.
5. Calculate the force developed when using a conventional cementing operation. Will the casing float?

Note : use the attached 4 tables and graph

I wish you a good luck