**Course 7, “Paper Machine Efficiency: Defoamers, Biocides, Detackifiers, *etc.*,” Final Quiz**

**Complete the following form and take the quiz to receive a certificate of course completion. Please enter your information in the way you would like it to appear on your certificate. Send your completed form (in WORD or PDF format) as an email attachment to hubbe@ncsu.edu.**

**Your full name (print carefully or type):**

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**Having taken this course will help me to…**

**This course could be improved by…**

**My idea for a future course in this series would be…**

FINAL QUIZ FOR COURSE 7 (ten questions)

1 – Which of the following categories of deposit-prone materials has its origin in the wood from which paper is made?

1. Stickies
2. SBR latex
3. Pitch
4. Alkenylsuccinic anhydride (ASA)

2 – Which of the following classes of wood extractives is an ester with three fatty acid groups attached?

1. Pinene (pine oil)
2. Abietic acid (rosin)
3. Unsaponifiables
4. Triglyceride fats

3 – What is the name for the value of pH at which one-half of the carboxyl groups present on wood resin materials (or other substances) will be in their dissociated (negatively charged) ionic state?

1. pHD
2. Solubility point
3. Most-tacky condition
4. pKa

4 – What are the most common sources of deposited materials that are called “stickies” by papermakers?

1. Wood resins such as triglyceride fats and fatty acids
2. Pressure-sensitive labels and latex from paper coatings
3. Rosin-type (terpene) compounds such as abietic acid
4. Alkenylsuccinic anhydride (ASA) and its hydrolysate

5 – Three of the following are established methods to monitor the seriousness of slime problems, such that the test results can be used as a basis for making adjustments in a slime-control program. Which one of the following is NOT an established test method for slime monitoring?

1. Mass spectrometry
2. ATP (adenosine triphosphate) tests
3. Plate counts of bacterial colonies (Petri dish)
4. Microscopy, supplemented by tactile and odor evidence

6 – Which of the following types of scale is often associated with a locally higher temperature within a paper machine process environment?

1. Barium sulfate
2. Ferrous hydroxide
3. Calcium carbonate
4. Aluminum oxalate

7 – What type of metal is highly susceptible to pitting corrosion, especially when part of the surface may be covered by deposits and when chloride ions are present in solution?

1. Titanium
2. Cast iron
3. Stainless steel
4. Epoxy-coated copper

8 – Which of the following substances is known to result in highly tacky deposits in systems where alkenylsuccinic anhydride (ASA) is being used?

1. Aluminum ions (Al3+)
2. Magnesium ions (Mg2+)
3. Cationic starch
4. NaOH to raise the pH above 9

9 – What problem on paper machines is associated with blemishes on the paper surface, pinholes, deposit formation, solids losses from spills from chests, reduced product strength, and reduced drainage rate?

1. Foam
2. Dissolved and colloidal substances
3. Loss of papermaker’s alum
4. Slime

10 – Which of the following substances can be solubilized, and for instance removed from a contaminated wet-press felt, by treatment with either an acidic solution or an alkaline solution?

1. Lignin
2. Al(OH)3 (alum floc)
3. CaCO3 (calcium carbonate)
4. Grease