

Chemistry 400A Quiz 3 Spring 2019 KEY

Answer the following questions on the Scantron form. Questions 1-20 are True/False while Questions 21-25 are multiple choice.

Questions 1-20 are True/False (A = TRUE; B = FALSE)

1. Thermoplastics can be molded but permanently set by cross-linking on heating. **F**
2. Atactic polypropylene has all stereocenters the same handedness throughout the polymer chain. **F**
3. Rigidity in polymers like polyethylene is provided by crystalline regions within the polymer chains. **T**
4. Elastomers such as cis-poly(isoprene) deform under stress but revert back to their original shape when the stress is removed. **T**
5. Bakelite is a rigid, highly cross-linked polymer made from phenol, formaldehyde and wood dust. **T**
6. PEG is an example of a polyester. **F**
7. ROMP polymerization converts cyclic alkenes into polymeric alkenes. **T**
8. Styrofoam is widely used as in containers for organic liquids (like toluene or acetone). **F**
9. Polyanhydrides contain water-soluble ether linkages. **F**
10. Cellulose acetate is extremely flammable. **F**
11. 'Soaps' in the traditional sense refer specifically to sodium salts of long chain fatty acids. **T**
12. LAS and ABS detergents are examples of cationic surfactants. **F**
13. Carrageenan is found in all toothpastes as an abrasive. **F**
14. The main function of aluminum salts in antiperspirants is to kill bacteria. **F**
15. The optimal pH for a shampoo and/or conditioner is 7.4. **F**
16. Permanent hair dyes are formed by oxidative coupling of aromatic amines and/or diamines. **T**
17. Lanolin, a common ingredient in cosmetics, comes from the waxy secretions on sheep's wool. **T**
18. The 'musk' scent common in perfumes is due to a macrocyclic ketone called civetone, originally sourced from African Civet cats (as well as other species). **T**
19. UVA refers to the harmful, shorter wavelength, higher energy UV light that can cause skin cancer but does not pass through glass. **F**
20. Sunscreens contain highly conjugated molecules like oxybenzone that absorb mainly in the near infrared. **F**

Questions 21-25 are multiple choice; choose the one best answer per question.

21. Plastics are:

- (a) macromolecules that can be molded or shaped
- (b) a subset of the general class of 'polymers'
- (c) usually made from petrochemical precursors
- (d) all of the above**

22. Polyesters

- (a) can be formed by condensation polymerization
- (b) can be broken down by treatment with strong acid or base
- (c) can be formed by ring opening polymerization of lactones
- (d) include PET (or PETE) as an example
- (e) all of the above are true**

23. Which of the following is a polyamide?

- (a) PLA
- (b) ABS
- (c) PVC
- (d) nylon-6,6**
- (e) epoxy resin

24. A typical powdered laundry detergent includes sodium sulfate, Na_2SO_4 . Its main role is to:

- (a) prevents precipitation of heavy metals
- (b) absorbs moisture so the powder remains free flowing**
- (c) keeps dirt from redepositing on clothes
- (d) helps whiten clothes
- (e) none of the above

25. Which of the following components of laundry detergent acts as a bleaching agent?

- (a) zeolites
- (b) perborates**
- (c) carboxymethylcellulose
- (d) sodium silicates
- (e) sodium alkylbenzenesulfonates

END