

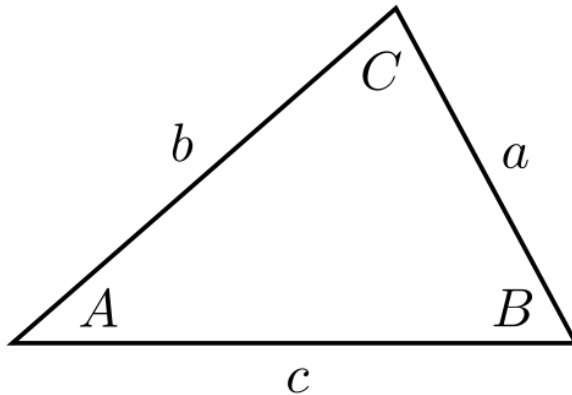
Exam 3 trial questions

1. The 16th century Dutch merchant ships were called the _____. 7#2-3
2. When wood pitch and tar became scarce the British navy turned to _____ for coating the ships bottoms. 7#6-9
3. In the process of coke formation coal is heated anaerobically driving off which three things? 7#8-9
4. The banks in England got their start as _____. 7#3-4
5. The anaerobic decomposition of pinewood yields _____, _____, _____ and _____. 7#5-7
6. The coal gas from coking was first used for _____. 7#10-11
7. The first two chemicals extracted from coal tar were _____ and _____. 7#12
8. Quinine, a remedy for malaria, was first isolated from the _____ plant. 7#15
9. Synthetic dyes were accidentally discovered while trying to extract _____ from coal tar. 7#16-17
10. Color chemistry was developed in _____ but flourished in _____. 7#16-18
11. Aristocrats in England were _____ to make a profit from their _____. 7#17
12. The Haber/Bosch process was originally designed to make Sodium nitrate (NaNO_3) used for the purpose of _____. 7#18-19
13. In a failed attempt to make synthetic diamonds Moissan made calcium carbide which when added to water gave off _____ gas. 7#20-21
14. In 1905 the market for acetylene lamps decreased significantly do to the gas mantle and cheap electricity. Subsequently, it was discovered that calcium carbide could “fix” nitrogen and be used as a _____. 7#21
15. Name three natural polymers: 7#26
16. Name three synthetic polymers? 7#31
17. What is the source for nearly all the synthetic polymers? 7#29
18. What were the three major technologies discussed in this portion of the course? #1 from chps. 7-9

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19. There has been solid fuel (gunpowder, etc.) rockets for hundreds of years. Why are liquid fuel rockets unique and so important? Lecture notes
20. What is the propellant in the XIPS rockets? 8#27
21. Explain the difference between thermoplastics and thermoset plastics. 7#32-35
22. Explain the new warfare technologies discussed in this section of the course. How and why did they affect troop size? 8#3-5
23. After the battle of Marengo what two things did Napoleon employ to get France back in financial shape? 8#6
24. One of the awards from the Society for the Encouragement of Industry was for _____. 8#7
25. Preserved food first became available in England to the public in 1820. What container was used for this food? 8#7-8
26. Clostridium Botulinum is a lethal bacterium, which under anaerobic conditions produces a deadly nerve toxin. What is the common medical name for this nerve toxin? 8#9-10
27. What was the trigger for the first air-cooling system? 8#11
28. Explain how the air was cooled in J. Gorrie's first air-cooling system. 8#13
29. Bucket 1 contains 1gallon water and bucket 2 contains 2gallons water both start at the same temperature. After adding an equal amount of heat to each bucket compare the final temperatures in the two buckets. Is one hotter than the other? If so, which one? 8#17
30. Write the equation for a liquid, its vapor and heat? 8#17
31. Explain how the modern refrigerator works. 8#17-19
32. What was the first refrigerant used in the first household refrigerator and explain how heat was used to start the refrigerator? 8#17-18
33. Why is the adiabatic flask important to liquid fuel rockets? 8#21-22
34. Which country was first to use liquid fuel rockets for military purposes? 8#23-24
35. Explain the difference between heat and temperature. 8#17

36. In the following figure, side c is 321m. What is the approximate distance of side a if angles A and B are 45° and 65° respectively? 9#6 (hint: $\sin 45^\circ = 0.707$ & $\sin 70^\circ = 0.9397$ and remember $A+B+C=180^\circ$) 9#6



37. The first actual use of limelight was to solve a _____ problem. 9#10-11
38. Placing electrode wires from a battery in water yields _____ and _____. This process is called _____. 9#12
39. What is the difference, if any, between oxygen and air? Hint: what is the concentration of oxygen in air?
40. Limelight requires fuel plus _____ to create the necessary heat to incandesce. 9#11-12
41. Limelight was planned for lighthouses but didn't succeed. What lighting source was eventually used in lighthouses and how does it work? 9#13-14
42. Motion pictures in California got it start in San Francisco in 1872 to solve a bet using sequential photographic images of _____. 9#17-18
43. What was the iconoscope? 9#25-27
44. What were the architectural changes caused by the cannon? 9#2-3
45. Valence electrons falling to lower energy levels emit _____. 9#15
46. The conversion of light into electricity from a metal surface is called the _____ effect. 9#22
47. What are the brain tricks used in television to provide the illusion of picture and motion? _____. 9 #16 & 29

Exam 3 trial questions

48. What is the name of the process used to separate the components of petroleum?
7#13
49. The second law of thermodynamics states “Heat can never pass from a colder to warmer body without another concurrent change within.” What is the concurrent change in the modern refrigerator? 8#29
50. Quantum physics states that particles like photons, electrons and atoms exist as _____ until seen or measured thus explaining their wave/particle duality. Suggesting further that our _____ is entangled in reality. 9 #23