C-14

PRACTICE TEST

Practice Test (More Than **350** Practice questions)

With Standard exam paper questions

Table of Contents

INTRODUCTION

ALL -IN -ONE

Practice Test - Answers & Standard Exam Paper Questions

We will cover all parts of the C-14 Supervision Of Storage, Handling And Use Of Chemicals In Non production Laboratories.

Practice Test Approximately 90 pages and More than 350 MCQs, prepares you for certification and professional success. This guide covers critical knowledge and skills, with comprehensive practice questions, answers,. Designed to help you excel as a FDNY.

This Practice Test has a proven track record of helping candidates achieve top scores on the FDNY exam and gain the confidence they need for a successful career.

A35 - Critical Topics (30 Questions)

1. What is the primary responsibility of a C-14 Certificate of Fitness holder?
   A. Conducting advanced chemical research.
   B. Supervising chemical storage and use.
   C. Ordering all laboratory supplies.
   D. Designing new laboratory experiments.

2. When must a C-14 Certificate of Fitness holder be present on a laboratory floor?
   A. Only during hazardous experiments.
   B. During any permitted laboratory operations.
   C. At least once per day for inspection.
   D. Whenever new chemicals are delivered.

3. What action should a C-14 holder take if a fire protection system is found to be impaired?
   A. Attempt to repair the system personally.
   B. Ignore the impairment if minor.
   C. Notify the building impairment coordinator.
   D. Evacuate the building immediately.

4. Which document provides specific information about the hazards of a chemical?
   A. The laboratory's annual report.
   B. The building's occupancy permit.
   C. The chemical inventory list.
   D. The Safety Data Sheet (SDS).

5. What is a key requirement for aisles and access to exits in a laboratory?
   A. They must be at least 5 feet wide.
   B. They can be used for temporary storage.
   C. They must be kept clear of obstructions.
   D. They should be painted with yellow lines.

6. How should incompatible materials be stored if not in separate cabinets or rooms?
   A. Stacked on top of each other carefully.
   B. Separated by at least 20 feet.
   C. Mixed together if quantities are small.
   D. Placed on the highest available shelves.

7. What is the minimum distance combustible materials should be kept from an open flame?
   A. 6 inches.
   B. 1 foot.
   C. 2 feet.
   D. 5 feet.

8. When is a Fire Department permit required for a non-production laboratory?
   A. If any amount of chemicals is stored.
   B. If more than 1 gallon of flammable liquid is handled.
   C. Only for laboratories in educational institutions.
   D. When research involves human subjects.

9. How often are Fire Department permits for non-production laboratories typically valid?
   A. For 6 months only.
   B. For 12 months only.
   C. For 24 months only.
   D. Indefinitely until revoked.

10. What should be done with empty chemical containers that are not yet cleaned?
   A. They should be treated as non-hazardous.
   B. They should be stored with regular trash.
   C. They should be handled as having the same hazards.
   D. They can be refilled with any other chemical.

Answer Key: Critical Topics (1-10)

1. B. Supervising chemical storage and use.
2. B. During any permitted laboratory operations.
3. C. Notify the building impairment coordinator.
4. D. The Safety Data Sheet (SDS).
5. C. They must be kept clear of obstructions.
6. B. Separated by at least 20 feet.
7. C. 2 feet.
8. B. If more than 1 gallon of flammable liquid is handled.
9. B. For 12 months only.
10. C. They should be handled as having the same hazards.

---

11. What is the primary purpose of an emergency plan in a laboratory?
A. To outline procedures for chemical emergencies.
B. To detail the laboratory's research goals.
C. To list all chemicals stored on site.
D. To assign blame in case of an accident.

12. Who is responsible for ensuring laboratory users are trained on the emergency plan?
A. The Fire Department inspector.
B. Each individual laboratory user.
C. The building security personnel.
D. The owner or operator of the laboratory.

13. If a chemical spill occurs, what is the first immediate notification that should be made for a major spill?
A. The laboratory supplier.
B. The building owner.
C. The Fire Department (911).
D. The insurance company.

14. What type of clothing is recommended under fire-retardant lab coats when using pyrophoric reagents?
A. Synthetic fiber clothing.
B. Wool or silk clothing.
C. Natural-fiber clothing.
D. Any comfortable clothing.

15. What is the maximum height the top of a portable fire extinguisher should be installed above the floor?
A. 3 feet.
B. 4 feet.
C. 5 feet.
D. 6 feet.

16. What action should be taken if a chemical fume hood's face velocity is found to be deficient?
A. Continue working but report it later.
B. Suspend all activities inside the hood.
C. Increase the sash opening to compensate.
D. Place a fan nearby to improve airflow.

17. How should chemicals be organized on storage shelves?
   A. Alphabetically by chemical name.
   B. By date of purchase only.
   C. By compatibility to prevent reactions.
   D. According to container size.

18. What is the general rule for storing chemicals on the floor?
   A. It is acceptable for large containers.
   B. It should be avoided, especially for glass containers.
   C. It is allowed if space is limited.
   D. It is preferred for heavy items.

19. When transporting hazardous chemicals between floors, what is the recommended method?
   A. Using stairways quickly.
   B. Using an elevator with minimal personnel.
   C. Carrying them by hand during off-hours.
   D. Asking untrained staff for assistance.

20. What information must be on the label of a chemical container?
   A. The purchase price of the chemical.
   B. The name of the person who ordered it.
   C. Clear identification of its contents.
   D. The date it is expected to be used by.

Answer Key: Critical Topics (11-20)

11. A. To outline procedures for chemical emergencies.
12. D. The owner or operator of the laboratory.
13. C. The Fire Department (911).
14. C. Natural-fiber clothing.
15. C. 5 feet.
16. B. Suspend all activities inside the hood.
17. C. By compatibility to prevent reactions.
18. B. It should be avoided, especially for glass containers.
19. B. Using an elevator with minimal personnel.
20. C. Clear identification of its contents.

---

21. What is the minimum fire rating required for a laboratory unit's construction?
A. 30 minutes.
B. 45 minutes.
C. 1-hour.
D. 2-hours if storing large quantities.

22. What should be done with materials that might become hazardous during prolonged storage?
A. They should be used up as quickly as possible.
B. Their containers should be dated when opened.
C. They should be stored in the warmest part of the lab.
D. They can be ignored until they show visible changes.

23. What is the primary hazard associated with storing flammable liquids in ordinary domestic refrigerators?
A. The refrigerator light may fail.
B. The liquids may freeze and expand.
C. Ignition of flammable vapors by internal components.
D. The refrigerator may not maintain temperature.

24. "No Smoking" signs in a laboratory must be:
A. Posted only if someone smokes there.
B. Written in at least five languages.
C. Conspicuously posted in designated areas.
D. Optional if the building has a no-smoking policy.

25. What is the maximum number of flammable liquid storage cabinets typically allowed in a single fire area without separation?
A. One cabinet.
B. Two cabinets.
C. Three cabinets.
D. Four cabinets.

26. Who is responsible for performing a hazard risk assessment before students conduct experiments?
A. The students themselves.
B. The school principal.
C. A qualified person, often the instructor.
D. The Fire Department.

27. What is a critical safety feature of a safety can for flammable liquids?
   A. It must be made of glass.
   B. It has a spring-closing lid and spout cover.
   C. It must hold at least 10 gallons.
   D. It should be painted bright red.

28. When diluting concentrated strong corrosives, what is the correct procedure?
   A. Add water to the corrosive slowly.
   B. Add the corrosive to water slowly while stirring.
   C. Mix them together quickly to ensure dilution.
   D. Heat the water before adding the corrosive.

29. What is the minimum clearance required below sprinkler head deflectors for storage in a sprinklered area?
   A. 6 inches.
   B. 12 inches.
   C. 18 inches.
   D. 24 inches.

30. What is the consequence of failing to comply with Fire Code requirements for a C-14 holder?
   A. A verbal warning only.
   B. Mandatory retraining.
   C. A promotion to a higher level.
   D. Enforcement action, including fines or revocation.

Answer Key: Critical Topics (21-30)

21. C. 1-hour.
22. B. Their containers should be dated when opened.
23. C. Ignition of flammable vapors by internal components.
24. C. Conspicuously posted in designated areas.
25. C. Three cabinets.
26. C. A qualified person, often the instructor.
27. B. It has a spring-closing lid and spout cover.
28. B. Add the corrosive to water slowly while stirring.
29. C. 18 inches.
30. D. Enforcement action, including fines or revocation.

Part I: Definitions and Classifications (Total: 35 MCQs)

1. DEFINITIONS (15 MCQs)

31. What is the definition of "Boiling Point"?
   A. Temperature at which a liquid freezes.
   B. Temperature at which vapor pressure equals atmospheric pressure.
   C. The lowest temperature a liquid ignites.
   D. The temperature a solid becomes liquid.

32. A "Chemical" is defined as:
   A. Only hazardous substances.
   B. An element, compound, or mixture.
   C. Only liquids used in labs.
   D. Any substance that is flammable.

33. What does a "Closed Container" prevent?
   A. Escape of liquid, vapor, or dusts.
   B. The chemical from becoming cold.
   C. Light from degrading the chemical.
   D. The container from being reused.

34. A "Combustible Liquid" has a closed-cup flash point:
   A. Below 100°F.
   B. At or above 100°F.
   C. Exactly at 73°F.
   D. Above 200°F.

35. What is a "Container" for solid and liquid hazardous materials?
   A. A vessel of any size.
   B. A vessel of 60 gallons or less.
   C. Only glass bottles are considered.
   D. Piping systems used for transfer.

36. "Corrosive Materials" cause:
   A. Temporary skin irritation.
   B. Permanent injury to human skin.
   C. A cooling sensation on contact.
   D. Only damage to metals.

37. "Dispensing" involves pouring or transferring that might release:
   A. Only pleasant odors.
   B. Dusts, fumes, mists, vapors, or gases.
   C. Only non-hazardous byproducts.
   D. Heat and light energy.

38. An "Educational Laboratory Unit" is used for students:
   A. Only at the university level.
   B. Through the twelfth grade.
   C. In postgraduate research programs.
   D. For adult vocational training.

39. What is "Face Velocity" in the context of a fume hood?
   A. Speed of chemical reaction inside.
   B. Rate of air moving into the hood.
   C. The time it takes to clean hood.
   D. The pressure exerted by sash.

40. A "Flammable Liquid" has a closed-cup flash point:
   A. Below 100°F.
   B. At or above 100°F.
   C. Only below 0°F.
   D. Above 140°F.

Answer Key: Definitions (31-40)

---

41. What does "Handling" of a material involve?
   A. Only its long-term storage.
   B. Its movement or removal from container.
   C. Only its use in an experiment.
   D. Its final disposal as waste.

42. "Hazardous Materials" are chemicals or substances that are:
   A. Only physical hazards.
   B. Only health hazards.
   C. Physical hazards or health hazards.
   D. Only radioactive materials.

43. An "Instructional Laboratory Unit" is used for students:
   A. Through the twelfth grade.
   B. Beyond the twelfth grade.
   C. Only for teacher training.
   D. In elementary schools.

44. A "Laboratory Unit" is an enclosed space with a minimum fire rating of:
   A. 30-minute construction.
   B. 45-minute construction.
   C. One-hour fire rated construction.
   D. Two-hour fire rated construction.

45. What does "Personal Supervision" by a certificate holder require?
   A. Being on call via telephone.
   B. Reviewing lab notes daily.
   C. Visiting the premises weekly.
   D. Being personally present on premises.

Answer Key: Definitions (41-45)

---

2. CLASSIFICATIONS (20 MCQs)

2.1. Laboratory Unit Hazard Classification (4 MCQs)

46. Under the new fire code, what are the two main classifications for non-production laboratories?
A. Type I and Type II.
B. Class A and Class C.
C. Class B and Class D.
D. Group X and Group Y.

47. Which laboratory classification (new fire code) allows for higher flammable liquid densities but has a lower overall gallon limit similar to the old rule?
A. Class A.
B. Class B.
C. Class C.
D. Class D.

48. Educational and instructional labs, under the new fire code, must comply with which laboratory unit hazard classification requirements?
A. Class A requirements only.
B. Class B requirements only.
C. Class C requirements only.
D. Class D requirements only.

49. For pre-existing laboratories, what were the classifications (e.g., Type I, II, III, IV) based on?
A. Size and number of fume hoods.
B. Fire rating and sprinkler system presence.
C. Types of chemicals stored primarily.
D. Number of students using the lab.

Answer Key: Laboratory Unit Hazard Classification (46-49)

2.2. Class of Flammable and Combustible Liquids (5 MCQs)

50. Class IA flammable liquids have a flash point:
A. Below 73°F and boiling point below 100°F.
B. Above 73°F and boiling point below 100°F.
C. Below 100°F and boiling point above 100°F.
D. At or above 100°F.

51. Acetone, with a flash point below 73°F and boiling point at or above 100°F, is classified as:
A. Class IA flammable liquid.
B. Class IB flammable liquid.
C. Class IC flammable liquid.
D. Class II combustible liquid.

52. Class II combustible liquids have a flash point:
A. Below 100°F.
B. ≥100°F but <140°F.
C. ≥140°F but <200°F.
D. ≥200°F.

53. Xylene, with a flash point ≥73°F but <100°F, is an example of which class of liquid?
A. Class IA flammable liquid.
B. Class IB flammable liquid.
C. Class IC flammable liquid.
D. Class IIIA combustible liquid.

54. Formalin and Glycerine are examples of which class of liquid?
A. Class IC flammable liquid.
B. Class II combustible liquid.
C. Class IIIA combustible liquid.
D. Class IIIB combustible liquid.

Answer Key: Class of Flammable and Combustible Liquids (50-54)

2.3. General Rule of Hazard Classes (3 MCQs)

55. For hazard classes assigned numerical designations (e.g., oxidizers 1-4), what does a higher number generally indicate?
A. A lower level of hazard.
B. A higher level of hazard.
C. The quantity allowed in storage.
D. The year the classification was made.

56. For organic peroxides classified with Roman numerals (I-V), which class represents the highest hazard?
A. Class V.
B. Class IV.
C. Class III.
D. Class I.

57. If a material is a Class 4 oxidizer, it represents:
A. The lowest oxidizer hazard.
B. A moderate oxidizer hazard.
C. The highest oxidizer hazard.
D. A non-oxidizing material.

2.4. NFPA Diamond Sign (8 MCQs)

58. On an NFPA 704 diamond, what hazard does the blue section represent?
A. Flammability.
B. Health.
C. Instability.
D. Special hazards.

59. What numerical rating in the NFPA 704 diamond indicates a severe hazard?
A. 0.
B. 1.
C. 2.
D. 4.

60. What does the symbol "W" with a line through it in the white section of an NFPA diamond indicate?
A. Water reactive, use no water.
B. Wash hands after handling.
C. Store in a wet environment.
D. Dilute with water before use.

61. A "3" in the red (flammability) section of an NFPA diamond means the material:
   A. Will not burn.
   B. Must be preheated to ignite.
   C. Can be ignited under almost all ambient temperatures.
   D. Is extremely flammable, vaporizes readily.

62. What does "OX" in the white section of an NFPA diamond signify?
   A. The material is organic.
   B. The material is an oxidizer.
   C. Oxygen is required for reaction.
   D. The material is explosive.

63. A health hazard rating of "1" on an NFPA diamond indicates that under emergency conditions, the material can cause:
   A. No hazard beyond ordinary combustibles.
   B. Significant irritation.
   C. Serious or permanent injury.
   D. Lethal effects.

64. An instability (reactivity) rating of "0" on an NFPA diamond means the material is:
   A. Normally stable, even under fire.
   B. Unstable at elevated temperatures.
   C. Capable of detonation with initiator.
   D. Readily capable of detonation.

65. If a material has a flammability rating of 4, it means the material:
   A. Will not burn.
   B. Requires preheating to burn.
   C. Ignites at most ambient temperatures.
   D. Rapidly vaporizes and burns readily.

Answer Key: (55-65)

Part II: General Requirements, Design, Storage, Handling, Fire Prevention, Emergency (Total: 185 MCQs)

3. GENERAL FIRE CODE REQUIREMENTS (20 MCQs)

3.1. Fire Department Permit (5 MCQs)

66. A Fire Department permit to operate a non-production laboratory is required if handling more than:
A. 0.5 gallon of flammable liquid.
B. 1 gallon of flammable liquid.
C. 5 gallons of any chemical.
D. 50 SCF of any gas.

67. How must current Fire Department permits be maintained on the premises?
A. Locked in the owner's office.
B. Mailed to the Fire Department annually.
C. Readily available for inspection.
D. Digitally stored on a secure server only.

68. If there is a change in tenancy or ownership of a laboratory, what is required regarding the Fire Department permit?
A. The existing permit remains valid.
B. The permit is automatically renewed.
C. A new permit must be issued.
D. The Fire Department must be verbally notified.

69. Can a C-14 holder determine if a lab is "pre-existing" or "new" from the permit information?
A. No, permits do not contain this.
B. Yes, often by descriptions like "type" or "SF".
C. Only if the lab is older than 20 years.
D. This information is confidential.

70. What may enforcement action for not having a required permit include?
A. A simple warning letter.
B. Mandatory attendance at a safety course.
C. A temporary lab closure only.
D. Fines and/or certificate revocation.

Answer Key: Fire Department Permit (66-70)

3.2. General Operations, Housekeeping and Good Work Practices (15 MCQs)

71. Before performing any chemical reaction, what evaluation must be made?
A. The cost of the chemicals involved.
B. The potential hazards encountered or generated.
C. The time it will take to complete.
D. The availability of publishing journals.

72. How should access doors, aisles, and exit doors be maintained?
A. Clear of all obstructions.
B. Used for temporary chemical storage.
C. Partially blocked if space is needed.
D. Marked with red tape only.

73. What should be done with spilled chemicals?
A. Left to evaporate if non-volatile.
B. Cleaned up immediately by trained personnel.
C. Covered with paper towels and ignored.
D. Washed down the nearest drain.

74. How should incompatible materials be separated if not by distance or in separate cabinets?
A. By placing them on different shelves.
B. By wrapping one in plastic film.
C. By a noncombustible partition extending 18 inches.
D. By storing them in the fume hood.

75. When diluting concentrated strong acids, you should always:
A. Add water to the acid rapidly.
B. Add acid to water slowly while stirring.
C. Use warm water for faster dilution.
D. Perform the dilution in a sealed container.

76. Where should Safety Data Sheet (SDS) information be kept?
A. In a central office off-site.
B. Locked in the supervisor's desk.
C. Readily available to lab staff.
D. Only with the chemical manufacturer.

77. What is a key principle for the amount of hazardous materials in a work area?
A. Stockpiling to ensure availability.
B. Keeping amounts to the minimum needed.
C. Having at least a one-week supply.
D. Storing all chemicals in the work area.

78. What is required for furniture, casework, and equipment arrangement in laboratory units?
   A. Arranged for maximum storage space.
   B. Positioned against walls to save space.
   C. Allowing easy access to an exit.
   D. Secured to the floor permanently.

79. What must be provided on entrances to locations where hazardous materials are stored?
   A. The purchase date of materials.
   B. The name of the C-14 holder.
   C. Code-required signage.
   D. A list of emergency contacts.

80. What should be done with empty, but not clean, containers?
   A. Recycled with ordinary plastics.
   B. Treated as having the same hazards.
   C. Used for storing different chemicals.
   D. Discarded in general waste bins.

Answer Key: General Operations, Housekeeping and Good Work Practices (71-80)

---

81. What is the minimum separation distance for incompatible materials in storage if not using cabinets or partitions (for containers >0.5 gal)?

A. 5 feet.
B. 10 feet.
C. 15 feet.
D. 20 feet.

82. What is a critical step before using glass equipment for distillations?

A. Chilling it in a refrigerator.
B. Washing it with soap only.
C. Inspecting for cracks and defects.
D. Labeling it with the user's name.

83. How should areas be maintained to avoid accumulations of combustible dust?

A. By daily sweeping only.
B. Through good housekeeping practices.
C. By installing powerful fans.
D. By wetting down all surfaces.

84. What is prohibited regarding liquids and electrical receptacles or switches?

A. Storing liquids above receptacles.
B. Using liquids within 10 feet of them.
C. Allowing liquids to contact them.
D. Cleaning receptacles with liquid cleaners.

85. If a Certificate of Fitness holder is aware of a non-operational safety system, what is their immediate responsibility?

A. To order replacement parts.
B. To attempt a temporary fix.
C. To notify the building owner/designee.
D. To document it in a logbook only.

Answer Key: General Operations, Housekeeping and Good Work Practices (81-85)

---

4. LABORATORY UNIT HAZARD CLASSIFICATION, DESIGN AND STORAGE (55 MCQs)

4.1. Flammable & Combustible Liquids Quantity Limitation for Different Laboratory Units (8 MCQs)

(Refer to Tables II-2 and II-3, and Appendix D in the study material for these questions)

86. For a pre-existing Type I laboratory (2-hr rating, sprinklered), what is the maximum quantity of flammable liquids allowed?

A. 30 Gallons.
B. 25 Gallons.
C. 20 Gallons.
D. 15 Gallons.

87. In a new fire code Class D laboratory (1-hr rating, educational), what is the maximum quantity of Class I, II, IIIA liquids per 100 sq ft, excluding cabinets?

A. 5 gal/100ft².
B. 1 gal/100ft².
C. 10 gal/100ft².
D. 2 gal/100ft².

88. For a new fire code Class B laboratory with a 1-hr fire rating, what is the maximum quantity of Class I liquids alone per lab unit, excluding cabinets?

A. 10 gallons.
B. 15 gallons.
C. 5 gals/100ft² (max 25).
D. 20 gallons.

89. If a new fire code Class D laboratory (other than educational) has a 2-hr fire rating, what is the maximum quantity of Class I, II, IIIA liquids per lab unit, including storage cabinets?

A. 75 gallons.
B. 100 gallons.
C. 150 gallons.
D. 200 gallons.

90. For pre-existing laboratories in schools (K-12), what is the maximum allowable quantity of combustible liquids?

A. 5 Gallons.
B. 10 Gallons.
C. 15 Gallons.
D. 20 Gallons.

91. In a new fire code Class B laboratory with a 2-hr fire rating, what is the maximum quantity of Class I, II, IIIA liquids per lab unit, including storage cabinets?

A. 20 gals/100ft² (max 25).
B. 10 gals/100ft² (max 30).
C. 5 gals/100ft² (max 25).
D. 15 gals/100ft² (max 30).

92. For a new fire code Class D laboratory (educational, 1200 sq ft, 1-hr rating), what is the maximum total quantity of Class I, II, IIIA liquids allowed, excluding cabinets?

A. 10 gallons.
B. 15 gallons.
C. 12 gallons.
D. 24 gallons.

93. Laboratory units used for the instruction of students through the 12th grade (new fire code, Class D) are limited to what percentage of the flammable and combustible liquids quantity otherwise allowed for Class D?

A. 25 percent.
B. 75 percent.
C. 100 percent.
D. 50 percent.

Answer Key: Flammable & Combustible Liquids Quantity Limitation (86-93)

4.2. Other Laboratory Hazardous Material Quantity Limitations (7 MCQs)

(Refer to Tables II-4, II-5, II-6, II-7, II-8 and Appendix E in the study material for these questions)

94. For a pre-existing Type II laboratory, what is the maximum quantity of oxidizing material allowed?

A. 40 Lbs.
B. 50 Lbs.
C. 30 Lbs.
D. 20 Lbs.

95. In a new fire code laboratory (1-hr fire rated), what is the maximum quantity of pyrophoric material allowed?

A. 1 Lb.
B. 0.5 Lbs.
C. 5 Lbs.
D. 2.5 Lbs.

96. For a new fire code laboratory (2-hr fire rated), what is the maximum quantity of unstable reactive material allowed?

A. 3 Lbs.
B. 6 Lbs.
C. 12 Lbs.
D. 1 Lb.

97. In a new fire code educational laboratory, what is the maximum capacity of flammable gases allowed?

A. 12 Cu. Ft.
B. 20 SCF.
C. 6 Cu. Ft.
D. 2.4 Cu. Ft.

98. For a new fire code non-instructional lab (500 sq ft), what is the maximum capacity of liquefied flammable gases?

A. 0.36 Cu. Ft.
B. 1.2 Cu. Ft.
C. 2.4 Cu. Ft.
D. 0.06 Cu. Ft.

99. What is the total number of lecture bottle-sized containers of any type limited to in a new fire code educational laboratory?

A. 5.
B. 25.
C. 15.
D. 10.

100. For a pre-existing laboratory (up to 500 Sq. Ft.), what is the maximum capacity of flammable gases allowed?

A. 15.4 Cu. Ft.
B. 9.24 Cu. Ft.
C. 1.54 Cu. Ft.
D. 12 Cu. Ft.

Answer Key: Other Laboratory Hazardous Material Quantity Limitations (94-100)

A. Prohibitions (5 MCQs)

101. Which of the following is prohibited to be stored, handled, or used in any non-production laboratory?
A. Class 1 unstable material.
B. Class 3 oxidizing material.
C. Explosive materials.
D. Flammable liquids above grade.

102. Is it permissible to use an open flame for heating flammable liquids in a non-production laboratory?
A. Yes, if under a fume hood.
B. Yes, if quantities are small.
C. No, it is generally prohibited.
D. Only with special FDNY approval.

103. Which class of unstable (reactive) material is prohibited in non-production laboratories?
A. Class 1.
B. Class 2.
C. Class 3.
D. Class 4.

104. Storing which of the following is prohibited below grade in a non-production laboratory?
A. Combustible liquids.
B. Corrosive materials.
C. Flammable gas.
D. Oxidizing solids.

105. For pre-existing K-12 school laboratories, what is the maximum amount of potassium and/or sodium chlorate permitted to be stored?
A. 5 pounds.
B. 15 pounds.
C. 25 pounds.
D. 50 pounds.

Answer Key: Prohibitions (101-105)

B. Laboratory Safety Requirement (35 MCQs)

(1) Hazard identification signs (5 MCQs)

106. What wording is required on the sign outside a new laboratory according to the new Fire Department rule?

A. "Chemicals Inside - Enter Carefully".
B. "Research In Progress - Do Not Disturb".
C. "Laboratory - Potentially Hazardous Substances".
D. "Laboratory - Caution: Hazardous Materials".

107. Hazard identification signs on stationary containers should be affixed where?

A. Only on the bottom.
B. Conspicuously on the container.
C. Inside the container lid.
D. On the shelf below.

108. For pre-existing laboratories, what sign language was generally required on the outside of each laboratory door (excluding educational facilities initially)?

A. "Danger - Chemicals".
B. "Authorized Personnel Only".
C. "Laboratory - Potentially Hazardous Substances".
D. "Warning - High Voltage".

109. NFPA Standard 45 requires warning signs on entrance doors for labs storing or using materials that constitute:

A. Any type of chemical.
B. Only flammable liquids.
C. An unusual or severe fire hazard.
D. Materials costing over $100.

110. "No Smoking" signs must be provided in English as a primary language and:

A. Optionally in other languages.
B. Only if smoking is permitted nearby.
C. Conspicuously posted in required locations.
D. Made of reflective material only.

Answer Key: Hazard identification signs (106-110)

((2) Fume hoods and exhaust systems (6 MCQs)

111. What is the primary purpose of a chemical fume hood?
A. To store chemicals safely.
B. To provide bright lighting.
C. To capture and exhaust fumes.
D. To cool down reactions.

112. How often must the face velocity of chemical fume hoods be inspected and tested?
A. Every five years.
B. Every two years.
C. Annually.
D. Monthly.

113. For new laboratories, NFPA 45 requires fume hoods to be evaluated using which standard?
A. OSHA Standard 1910.
B. EPA Clean Air Act.
C. ASHRAE Standard 110.
D. NFPA 704 Standard.

114. What should be done with chemical fume hood sashes when the hood is unattended?
A. Left fully open for ventilation.
B. Partially open to save energy.
C. Removed for better access.
D. Kept fully closed.

115. Air exhausted from chemical fume hoods shall NOT be:
A. Discharged above the roof.
B. Recirculated into the laboratory.
C. Monitored for flow rate.
D. Vented to an outdoor location.

116. What information must be affixed to each chemical fume hood or kept in a log?
A. The original purchase price.
B. The date of the last inspection.
C. The name of all users.
D. A list of compatible chemicals.

Answer Key: Fume hoods and exhaust systems (111-116)

---

(3) Heating equipment (3 MCQs)

117. Laboratory heating equipment shall not be used to heat flammable liquids unless:
A. The liquids are in glass containers.
B. It is designed to prevent internal explosion.
C. The heating is done very slowly.
D. A fire extinguisher is nearby.

118. How should baths handling flammable liquids heated to their flash points be managed?
A. Placed in direct sunlight for heat.
B. Operated only by experienced staff.
C. Placed in a fume hood or vented.
D. Covered with a non-flammable lid.

119. Strong oxidizing materials, such as perchloric acid, shall NOT be heated by:
A. Electric hot plates.
B. Steam baths.
C. Gas flames or oil baths.
D. Microwave ovens.

Answer Key: Heating equipment (117-119)

---

(4) Safety showers, neutralizing or absorbing agents and curtains (5 MCQs)

120. When are fixed overhead or flexible hand-held safety showers required in a laboratory?
A. If any corrosive liquid is present.
B. If more than 1 gallon of flammable liquid.
C. When more than 5 gallons of corrosive/flammable liquids.
D. Only in educational laboratories.

121. How often must safety showers be tested?
A. Daily.
B. Weekly.
C. Monthly.
D. Annually.

122. Where should neutralizing or absorbing agents be provided?
A. Only in the chemical storage room.
B. Near the main laboratory exit.
C. Where >5 gal corrosives stored/used.
D. Locked in a safety cabinet.

123. Curtains and drapes used in laboratories must be documented as:
A. Waterproof and stain-resistant.
B. Light-blocking for experiments.
C. "Flame proof" or "inherently flame resistant".
D. Made from natural fibers only.

124. Safety showers must be located in the laboratory or within what distance of the lab/storage room entrance?
A. 10 feet.
B. 50 feet.
C. 75 feet.
D. 25 feet.

Answer Key: Safety showers, neutralizing or absorbing agents and curtains (120-124)

---

(5) Fire retardant clothing for using pyrophoric reagents (3 MCQs)

125. Who must wear fire-retardant lab coats?
A. Anyone entering the laboratory.
B. Persons using pyrophoric reagents outside glovebox.
C. Only students in educational labs.
D. Supervisors during inspections.

126. What type of gloves should be worn when using pyrophoric reagents outside a glovebox, if possible?
A. Thin disposable latex gloves.
B. Standard cotton work gloves.
C. Fire-retardant gloves.
D. Heavy leather welding gloves.

127. What type of clothing must be worn under fire-retardant lab coats when using pyrophoric reagents outside a glovebox?
A. Synthetic fiber clothing (e.g., polyester).
B. Any clothing that is comfortable.
C. Clothing made of wool or silk.
D. Natural-fiber clothing.

Answer Key: Fire retardant clothing for using pyrophoric reagents (125-127)

---

(6) Ventilation and oxygen sensor (4 MCQs)

128. What is the recommended minimum room air changes per hour for occupied laboratories?

A. 2 air changes per hour.
B. 4 air changes per hour.
C. 8 air changes per hour.
D. 12 air changes per hour.

129. Storage rooms for laboratory chemicals shall be equipped with a continuously operated ventilation system providing at least:

A. 2 room air changes per hour.
B. 4 room air changes per hour.
C. 6 room air changes per hour.
D. 10 room air changes per hour.

130. When is an oxygen sensor with an audible alarm required in cryogenic gas storage or use areas?

A. If any cryogenic gas is present.
B. If total capacity exceeds 10 gallons.
C. If total capacity exceeds 60 gallons.
D. Only in below-grade locations.

131. At what oxygen concentration should an oxygen sensor alarm typically actuate?

A. When oxygen drops below 21.0%.
B. When oxygen drops below 20.5%.
C. When oxygen drops below 19.5%.
D. When oxygen drops below 18.0%.

Answer Key: Ventilation and oxygen sensor (128-131)

---

(7) Inert Atmosphere Glove Boxes (3 MCQs)

132. Inert atmosphere glove boxes are primarily used for handling:
A. Highly fragrant chemicals.
B. Radioactive isotopes safely.
C. Pyrophoric or water-reactive materials.
D. Large quantities of solvents.

133. Glove boxes that are vented shall be vented to:
A. The general room atmosphere.
B. An adjacent storage room.
C. The chemical exhaust system.
D. A portable filtration unit.

134. How should glove boxes typically be operated regarding pressure?
A. At a negative pressure.
B. At ambient room pressure.
C. At a positive pressure.
D. With fluctuating pressure cycles.

Answer Key: Inert Atmosphere Glove Boxes (132-134)

---

(8) Means of access to an Exit (3 MCQs)

135. What is the primary requirement for means of egress in a laboratory?
A. Must be decorated attractively.
B. Must be locked after hours.
C. Must be continuously maintained free.
D. Must have at least three options.

136. Obstructing or impeding access to any required means of egress is:
A. Permitted during cleaning.
B. Allowed for temporary storage.
C. Unlawful at all times.
D. Acceptable if an alternative route exists.

137. When is emergency lighting required for a laboratory work area?
A. In all laboratory work areas.
B. Only in labs larger than 500 sq ft.
C. If requiring a second access means.
D. When experiments run overnight.

Answer Key: Means of access to an Exit (135-137)

---

(9) Storage room requirements (3 MCQs)

138. What is the minimum fire rating for the construction of a chemical storage room?
A. 30-minute fire rating.
B. 1-hour fire rating.
C. 2-hour fire rating.
D. 4-hour fire rating.

139. Electrical devices in new code storage rooms must comply with requirements for which locations?
A. Class I, Group A, Division 1.
B. Class I, Group D, Division 2.
C. Class II, Group F, Division 1.
D. General purpose unclassified locations.

140. What is the maximum liquid density of chemicals allowed in a new code storage room per square foot?
A. 1 gallon per square foot.
B. 2 gallons per square foot.
C. 5 gallons per square foot.
D. 10 gallons per square foot.

Answer Key: Storage room requirements (138-140)

---

5. CHEMICAL STORAGE, HANDLING, USE, AND WASTE DISPOSAL (40 MCQs)

5.1. Chemical Storage and Handling (15 MCQs)

141. How should chemical containers generally be stored?
A. On their sides to save space.
B. Open to allow for ventilation.
C. Upright and closed when not used.
D. Stacked as high as possible.

142. What is a primary consideration when organizing chemicals for storage?
A. Alphabetical order for easy finding.
B. Date of purchase for rotation.
C. Container size and shape.
D. Compatibility to prevent reactions.

143. Is it permissible to store flammable gas below grade?
A. Yes, if in small cylinders.
B. Yes, if the area is ventilated.
C. No, it is not allowed.
D. Only with a special permit.

144. Under the new fire code, can Class I liquids be stored below ground level?
A. Yes, in any quantity.
B. Yes, if the area is sprinklered.
C. No, they cannot be stored below grade.
D. Only in approved safety cans.

145. What is recommended for storing flammable solvents instead of glass containers?
A. Plastic milk jugs.
B. Open beakers for easy access.
C. Safety cans.
D. Cardboard boxes lined with plastic.

146. What is the rule for storing chemicals above eye level?
A. It is preferred for visibility.
B. It should generally be avoided.
C. It is acceptable for small containers.
D. Only non-hazardous items allowed.

147. What is the minimum distance storage must be maintained below the ceiling in a non-sprinklered area?

A. 6 inches.
B. 12 inches.
C. 18 inches.
D. 2 feet.

148. What should be done with defective chemical containers?

A. Repaired with duct tape.
B. Used for less hazardous chemicals.
C. Promptly removed or disposed of.
D. Stored in a separate, marked area.

149. When transporting hazardous chemicals between different floors, it is NOT encouraged to use:

A. Elevators with few people.
B. Designated chemical transport carts.
C. Stairways for any amount.
D. Sealed secondary containers.

150. Containers of materials that become hazardous during prolonged storage should be:

A. Opened and vented periodically.
B. Stored at elevated temperatures.
C. Dated when received or opened.
D. Mixed with stabilizers regularly.

Answer Key: Chemical Storage and Handling (141-150)

---

151. What should a C-14 holder do if a container label is illegible and contents are unknown?
A. Attempt to identify by smell.
B. Ask colleagues for their best guess.
C. Treat contents as hazardous waste.
D. Pour it into a labeled container.

152. What is the maximum allowable individual container capacity for storing Class IA flammable liquids in glass?
A. 1 gallon.
B. 1 quart.
C. 1 pint.
D. 5 gallons.

153. For educational lab work areas, what is the maximum capacity for Class I or II liquids in containers other than safety cans?
A. 5 gallons.
B. 2.1 gallons.
C. 1 gallon.
D. 0.5 gallons.

154. How should chemicals be stored to minimize tipping or breakage?
A. On the very edge of shelves.
B. In a secure, stable manner.
C. Loosely packed for easy removal.
D. Near areas of high foot traffic.

155. Class I liquids shall NOT be transferred from one vessel to another in:
A. A chemical fume hood.
B. An exit access corridor.
C. A designated dispensing area.
D. An outdoor, well-ventilated space.

Answer Key: Chemical Storage and Handling (151-155)

5.2. Flammable and Combustible liquid storage cabinets (8 MCQs)

156. What wording must be on the label of a flammable liquid storage cabinet?
A. "DANGER - HIGHLY FLAMMABLE".
B. "CHEMICAL STORAGE - AUTHORIZED PERSONNEL".
C. "FLAMMABLE - KEEP FIRE AWAY".
D. "COMBUSTIBLES STORED HERE".

157. Cabinet doors for flammable liquids must be well fitted, self-closing, and equipped with:
A. A simple magnetic catch.
B. A standard keyed lock.
C. A two-point latch system.
D. A three-point latch.

158. The bottom of a flammable liquid storage cabinet must be liquid-tight to what minimum height?
A. 1 inch.
B. 2 inches.
C. 3 inches.
D. 4 inches.

159. What is the combined total quantity of liquids that shall not be exceeded in a single flammable liquid storage cabinet?
A. 60 gallons.
B. 90 gallons.
C. 120 gallons.
D. 150 gallons.

160. How many flammable liquid storage cabinets can be located in a single fire area before requiring 100 ft separation?
A. One.
B. Two.
C. Three.
D. Four.

161. The label on a flammable liquid storage cabinet must be in what color letters?
A. Black letters on yellow.
B. White letters on red.
C. Yellow letters on black.
D. Red letters on contrasting background.

162. Can installing flammable liquid storage cabinets increase the maximum allowable quantity of flammable liquids in a lab?

A. No, cabinet storage counts same.
B. Yes, it can increase allowances.
C. Only if cabinets are vented.
D. Only for combustible liquids.

163. If additional cabinets (beyond three) are needed in one fire area, they must be separated by at least:

A. 25 feet.
B. 50 feet.
C. 75 feet.
D. 100 feet.

Answer Key: Flammable and Combustible liquid storage cabinets (156-163)

5.3. Storage of Class I and Class II Liquids in Refrigerators (5 MCQs)

164. Which type of laboratory refrigerator is designed to protect against ignition both inside and outside the compartment?
A. Standard domestic refrigerator.
B. Flammable liquids storage refrigerator.
C. Explosion-proof model.
D. Commercial food-grade refrigerator.

165. What sign should be posted on ordinary domestic refrigerators in chemical laboratories?
A. "COLD STORAGE - USE CAUTION".
B. "LABORATORY SAMPLES ONLY".
C. "STORE NO FLAMMABLE LIQUIDS".
D. "REFRIGERATOR FOR FOOD ITEMS".

166. The intent of a "flammable liquids storage refrigerator" is to eliminate ignition of vapors:
A. Outside the storage compartment only.
B. Inside the storage compartment by internal sources.
C. From static electricity buildup.
D. During power outages only.

167. Can ordinary domestic refrigerators be used to store flammable liquids in a lab?
A. Yes, if clearly labeled.
B. Yes, if quantities are small.
C. No, they are not permitted for this.
D. Only if modified by lab staff.

168. When storing flammable liquids in any approved refrigerated equipment, they must be in:
A. Open beakers for quick cooling.
B. Original cardboard shipping boxes.
C. Closed containers.
D. Specially designed cooling bags.

Answer Key: Storage of Class I and Class II Liquids in Refrigerators (164-168)

5.4. Liquid Dispensing (including sub-points) (7 MCQs)

169. Pressurized liquid dispensing containers for flammable liquids must be pressurized only with:
A. Compressed air.
B. Oxygen.
C. Nitrogen or inert gas.
D. Carbon dioxide.

170. Dispensing of Class I liquids to or from containers (≤ 5 gal) can be performed in a chemical fume hood or an area with ventilation adequate to prevent vapors from exceeding what percentage of the LFL?
A. 10 percent of LFL.
B. 25 percent of LFL.
C. 50 percent of LFL.
D. 75 percent of LFL.

171. Class I liquids must NOT be transferred between conductive containers (>1 gal) unless:
A. Containers are made of plastic.
B. The transfer is done quickly.
C. Containers are electrically bonded.
D. The liquid is cooled first.

172. Pyrophoric liquids dispensed in a chemical fume hood should be from what type of bottles?
A. Open-top beakers.
B. Standard glass reagent bottles.
C. Sure-seal-type bottles.
D. Plastic squeeze bottles.

173. Non-metallic pressurized liquid dispensing containers larger than what size must NOT be used for flammable/combustible liquids?
A. 0.5 gallon.
B. 1 gallon.
C. 2 gallons.
D. 5 gallons.

174. When dispensing Class I liquids, what is crucial for nonconductive containers larger than 1 gallon?
A. Using metal funnels only.
B. Grounding the user directly.
C. Special dispensing procedures.
D. Filling them only halfway.

175. What should be used to minimize splashing when pouring liquids?
   A. Pouring from a greater height.
   B. Using a very wide-mouth container.
   C. A stirring rod or pouring down side.
   D. Shaking the container vigorously.

Answer Key: Liquid Dispensing (169-175)

5.5. Waste, Handling and Disposal (5 MCQs)

176. Before a chemical material is used, the user shall determine that information and facilities are available for:
A. Long-term storage of byproducts.
B. Safe disposal of hazardous materials.
C. Recycling into new products.
D. Selling excess material online.

177. Chemical waste containers must be labeled in accordance with regulations of the:
A. Food and Drug Administration (FDA).
B. Department of Transportation (DOT).
C. NY State Dept. of Environmental Conservation.
D. Consumer Product Safety Commission (CPSC).

178. Flammable and combustible liquid waste quantities are subject to the maximum container sizes specified in:
A. The laboratory's internal policy.
B. The NFPA 704 diamond guide.
C. Table II-10 (max allowable container capacity).
D. The building's fire safety plan.

179. Can waste chemicals be combined or mixed with other waste chemicals?
A. Yes, always to save space.
B. Only if they are same color.
C. Not unless evaluated for compatibility.
D. Yes, if they are all liquids.

180. All hazardous waste quantities must be included in the:
A. Laboratory's annual budget report.
B. List of chemicals to be reordered.
C. Maximum allowable quantity for lab unit.
D. Inventory sent to the EPA.

Answer Key: Waste, Handling and Disposal (176-180)

---

6. FIRE PREVENTION AND PROTECTION SYSTEMS (35 MCQs)

6.1. Fire Alarm Systems (5 MCQs)

181. What is the primary purpose of a fire alarm system within protected premises?
A. To detect unauthorized entry.
B. To monitor chemical inventory levels.
C. To warn occupants and transmit signals.
D. To control laboratory ventilation systems.

182. Who is typically responsible for conducting inspections and ensuring maintenance of a fire alarm system?
A. The C-14 Certificate of Fitness holder.
B. The building security guard on duty.
C. Any laboratory personnel present.
D. An S-95 Certificate of Fitness holder.

183. How do fire alarm systems typically warn occupants of a fire condition?
A. By sending text messages only.
B. Through automated phone calls.
C. Using sirens, bells, and strobes.
D. Via announcements on local radio.

184. If a C-14 holder becomes aware of a need to repair a fire alarm system, they should:
A. Attempt to reset the system.
B. Notify the building impairment coordinator.
C. Wait for the annual inspection.
D. Disconnect the faulty component.

185. Fire alarm systems transmit signals indicating a fire condition to the Fire Department via:
A. A direct phone line to station.
B. An approved central station company.
C. A designated laboratory employee.
D. An email notification system.

Answer Key: Fire Alarm Systems (181-185)

6.2. Sprinkler System and Standpipe System (5 MCQs)

186. What is the main purpose of a fire sprinkler system?
A. To extinguish all fires completely.
B. To control or suppress the fire.
C. To activate the building's ventilation.
D. To cool the laboratory equipment.

187. Sprinklers are intended to control the heat release rate of a fire to prevent:
A. Water damage to equipment.
B. The fire alarm from sounding.
C. Building structure collapse.
D. Chemicals from becoming too hot.

188. What is a standpipe system designed to provide?
A. Drinking water during emergencies.
B. A backup power supply.
C. Rapid access to water for firefighting.
D. A means of chemical neutralization.

189. Dry standpipe systems consist of pipes that are:
A. Always filled with pressurized water.
B. Filled with fire-retardant foam.
C. Dry and empty until used.
D. Connected to the plumbing system.

190. Water reactive substances may pose special risks in locations with:
A. Only dry chemical extinguishers.
B. Poor laboratory ventilation.
C. Sprinkler or standpipe systems.
D. Excessive amounts of glassware.

Answer Key: Sprinkler System and Standpipe System (186-190)

6.3. Portable Fire Extinguishers (including types, tags, inspections) (25 MCQs)

191. Portable fire extinguishers are NOT intended to fight:
A. Small, incipient stage fires.
B. Fires involving paper or wood.
C. Large or spreading fires.
D. Fires in wastebaskets.

192. What is the minimum clearance between the bottom of a fire extinguisher and the floor?
A. 1 inch.
B. 2 inches.
C. 4 inches.
D. 6 inches.

193. Class A fires involve which type of materials?
A. Flammable liquids and gases.
B. Energized electrical equipment.
C. Combustible metals like magnesium.
D. Ordinary combustibles like wood.

194. Which type of extinguisher should NOT be used for Class B (flammable liquid) fires?
A. CO2 extinguishers.
B. Dry chemical extinguishers.
C. Foam extinguishers.
D. Water type extinguishers.

195. Class C fires involve:
A. Cooking oils and fats.
B. Flammable liquids.
C. Energized electrical equipment.
D. Ordinary combustible materials.

196. What type of extinguisher is specifically designed for combustible metal fires (Class D)?
A. A standard ABC extinguisher.
B. A water mist extinguisher.
C. A Class D extinguisher.
D. A carbon dioxide extinguisher.

197. All laboratories are required to have a minimum fire extinguisher rating of:
A. 10-B.
B. 20-B.
C. 5-A:10-B:C.
D. 40-B:C.

198. What is the maximum travel distance to a fire extinguisher in a laboratory?
A. 25 ft.
B. 75 ft.
C. 100 ft.
D. 50 ft.

199. What does a shaded background and a slash through a symbol on a fire extinguisher indicate?
A. The extinguisher is fully charged.
B. The extinguisher is suitable for that fire.
C. The extinguisher needs inspection.
D. The extinguisher must not be used.

200. What is the first step in operating most portable fire extinguishers (P.A.S.S. method)?
A. Aim at the top of flame.
B. Squeeze the operating lever.
C. Sweep from side to side.
D. Pull the safety pin.

Answer Key: Portable Fire Extinguishers (191-200)

---

201. What feature on a new PFE tag helps verify its legitimacy?
A. A handwritten serial number.
B. A high-quality silver hologram.
C. The signature of the C-14 holder.
D. A bright green background color.

202. Scanning the QR code on a new PFE tag should direct you to:
A. The manufacturer's website.
B. A fire safety training video.
C. The FDNY approved company list.
D. The building's emergency plan.

203. How often must portable fire extinguishers undergo a "quick check"?
A. Daily.
B. Weekly.
C. Monthly.
D. Annually.

204. Who is responsible for designating a person to perform the monthly "quick check" of fire extinguishers?
A. The Fire Commissioner.
B. The C-14 Certificate of Fitness holder.
C. The building owner.
D. The W-96 Certificate of Fitness holder.

205. What is one item checked during the monthly "quick check" of a fire extinguisher?
A. The internal pressure with gauge.
B. The weight of the extinguisher.
C. That it is fully charged.
D. The chemical composition of agent.

206. How often must all portable fire extinguishers be professionally checked by a W-96 COF holder?
A. Every 6 months.
B. Annually.
C. Every 2 years.
D. Every 5 years.

207. What will a W-96 COF holder do after each annual inspection of a PFE?
A. Repaint the extinguisher.
B. Refill it regardless of pressure.
C. Replace the PFE tag.
D. Conduct a discharge test.

208. Where is the monthly quick check documented?
A. Only in a central logbook.
B. On the back of the PFE tag or electronically.
C. Reported directly to the FDNY.
D. On a sticker applied to front.

209. What should you do if you suspect a PFE tag is counterfeit?
A. Remove the tag immediately.
B. Attempt to fix it yourself.
C. Ignore it until annual check.
D. Contact your supervisor or FDNY.

210. Which class of fire involves combustible cooking media like vegetable or animal oils?
A. Class A.
B. Class B.
C. Class D.
D. Class K.

Answer Key: Portable Fire Extinguishers (201-210)

---

211. Using an ammonium-based dry chemical extinguisher on chlorine-based oxidizers may produce:
A. A harmless neutralizing effect.
B. A dense, cooling foam.
C. An explosive compound (NCl_3).
D. A fine, inert powder.

212. What is a key characteristic of lithium-ion battery fires?
A. They are easily put out with water.
B. They rarely produce smoke.
C. Unexpected re-ignition is common.
D. They burn at low temperatures.

213. What should you do immediately if you notice a lithium-ion battery overheating or smoking?
A. Pour water on it quickly.
B. Cover it with a blanket.
C. Stop using/charging and call 911.
D. Place it in a refrigerator.

214. When charging lithium-ion powered devices, it is recommended to:
A. Use any compatible charger.
B. Plug into a power strip.
C. Follow manufacturer's instructions.
D. Charge them overnight unattended.

215. Are standard fire extinguishers effective on lithium-ion battery fires?
A. Yes, Class ABC work well.
B. Yes, CO_2 is very effective.
C. No, they generally do not work.
D. Only water extinguishers are effective.

Answer Key: Portable Fire Extinguishers (211-215)

---

7. EMERGENCY PLANS (10 MCQs)

7.1. Emergency Plans (10 MCQs)

216. Who is responsible for preparing plans for laboratory emergencies?
A. The individual C-14 holder.
B. The local Fire Department precinct.
C. The owner of the laboratory.
D. The chemical suppliers.

217. An emergency plan must include procedures for:
A. Ordering new safety equipment.
B. Conducting routine chemical inventory.
C. Evacuating and accounting for personnel.
D. Publishing research findings.

218. How often must laboratory users be trained on the emergency plan?
A. Only upon initial hiring.
B. Every five years.
C. Prior to lab use and annually.
D. Only if an emergency occurs.

219. Emergency plans should include procedures for notifying and coordinating with:
A. The media and public relations.
B. Internal department heads only.
C. The Fire Department and other agencies.
D. Neighboring businesses or residences.

220. What is a required component of an emergency plan regarding equipment?
A. A list of all equipment costs.
B. Procedures for shutting down equipment.
C. Manuals for all laboratory equipment.
D. Preferred vendors for new equipment.

221. Records for emergency plan training must be maintained on premises for a minimum of:
A. 6 months.
B. 1 year.
C. 3 years.
D. 5 years.

222. Emergency plans must include procedures and schedules for conducting:
A. Weekly staff meetings.
B. Regular emergency drills.
C. Annual budget reviews.
D. Monthly equipment calibration.

223. The appointment and training of personnel to carry out assigned duties is part of:
A. The laboratory's research protocol.
B. The chemical hygiene plan only.
C. The emergency plan.
D. The facility maintenance schedule.

224. An emergency plan should designate aisles as necessary for:
A. Storage of emergency supplies.
B. Movement of personnel and response.
C. Setting up temporary workstations.
D. Displaying safety posters.

225. Safe procedures for startup following an emergency abatement are part of:
A. The daily opening checklist.
B. The emergency plan.
C. The chemical inventory process.
D. The equipment maintenance log.

Answer Key: Emergency Plans (216-225)

---

8. EMERGENCY PROCEDURES (5 MCQs)

8.1. Penalties for Non-compliance with Fire Code (5 MCQs)

226. What is the first action required by anyone becoming aware of an unwanted fire?
A. Attempt to extinguish it alone.
B. Immediately notify emergency operator (911).
C. Inform their direct supervisor first.
D. Activate the building sprinkler system.

227. Can a supervisor issue a directive to delay reporting a fire to the department?
A. Yes, if the fire is small.
B. Yes, if they can handle it.
C. No, this is not permitted.
D. Only during non-business hours.

228. In case of a major chemical spill, who must the C-14 holder notify immediately?
A. The chemical manufacturer.
B. The building's insurance company.
C. The Fire Department by calling 911.
D. The Environmental Protection Agency.

229. What should a C-14 holder know regarding manual fire alarm pull stations?
A. Their exact cost of replacement.
B. How to disable them if needed.
C. Their locations and how to operate.
D. The brand and model number.

230. Failure to comply with Fire Code provisions may subject a C-14 holder to:
A. A mandatory pay raise.
B. Additional laboratory responsibilities.
C. Violations, summonses, and fines.
D. A commendation for independence.

Answer Key: Penalties for Non-compliance with Fire Code (226-230)

---

9. LABORATORY OPERATIONS (15 MCQs)

9.1. Preparation (2 MCQs)

231. Before an experiment, what information is typically found on the SDS regarding materials?
A. The cost and supplier details.
B. The historical uses of chemical.
C. Hazards, reactivity, and end products.
D. The patent number of substance.

232. If a new material might have explosion potential, the experiment must be conducted:
A. Quickly to minimize risk time.
B. Only by senior research staff.
C. In an enclosure protecting people.
D. During off-peak hours only.

Answer Key: Preparation (231-232)
231. C. Hazards, reactivity, and end products.
232. C. In an enclosure protecting people.

9.2. Heating and Distillation Operations (3 MCQs)

233. Glass equipment used for distillations should be inspected for what prior to each use?
A. Its aesthetic appearance.
B. Its current market value.
C. Cracks, scratches, and other defects.
D. The manufacturer's warranty period.

234. What is recommended to avoid when using solvent stills?
A. Using high purity solvents.
B. Presence of unstable components (peroxides).
C. Operating under a fume hood.
D. Regularly cleaning the apparatus.

235. Separation techniques involving flammable materials shall be protected from ignition sources and provided with:
A. Bright, direct lighting.
B. A nearby water source.
C. Ventilation to prevent vapor buildup.
D. Soundproofing materials.

Answer Key: Heating and Distillation Operations (233-235)

9.3. Open Flame Operations (3 MCQs)

236. Combustible materials shall be kept at least how far away from portable open-flame devices?

A. 6 inches.
B. 1 foot.
C. 2 feet.
D. 5 feet.

237. Hoses connecting a gas supply to a Bunsen burner must be rated at least what percentage of working pressure?

A. 50 percent.
B. 100 percent.
C. 150 percent.
D. 200 percent.

238. If open flame operations are performed outside a hood, they should NOT be conducted:

A. On a heat-resistant surface.
B. Near a fire extinguisher.
C. Under shelves or cabinets.
D. By a trained individual.

Answer Key: Open Flame Operations (236-238)

9.4. Biological operations using open flames and flammable liquids (3 MCQs)

239. During biological operations with open flames, the volume of flammable liquid in use in an open container shall be limited to:

A. 0.1 pint or less.
B. 0.5 pint or less.
C. 1 pint or less.
D. 1 quart or less.

240. The container of flammable liquid during such biological operations shall be kept how far from the open flame?

A. At least 6 inches.
B. At least 12 inches.
C. At least 18 inches.
D. At least 24 inches.

241. What should NOT be used under an open flame operation in biological settings?

A. A metal tray.
B. A heat-resistant mat.
C. Absorbent paper.
D. A glass surface.

Answer Key: Biological operations using open flames and flammable liquids (239-241)

9.5. Operations involving possible vigorous reactions (4 MCQs)

242. What should be done with quantities of reactants in operations involving possible vigorous reactions?

A. Maximized for efficiency.
B. Limited and procedures developed.
C. Heated rapidly to start reaction.
D. Mixed all at once.

243. Glass apparatus containing gas or vapors under vacuum or pressure shall be:

A. Used only by PhD level staff.
B. Made of thin, delicate glass.
C. Shielded or wrapped with tape.
D. Heated directly with open flame.

244. Flammable gases or vapors evolved during drying operations shall be:

A. Allowed to dissipate in room.
B. Ignited to prevent buildup.
C. Condensed, trapped, or vented.
D. Mixed with air for dilution.

245. When synthesizing materials with unknown hazard characteristics, precautions employed should control for the:

A. Lowest possible hazard.
B. Most common hazard type.
C. Highest possible hazard.
D. Hazard of starting materials.

Answer Key: Operations involving possible vigorous reactions (242-245)

---

10. Educational and Instructional Laboratory Operations (5 MCQs)

246. Educational and instructional laboratory units must be under whose direct supervision while in operation?
A. The school principal.
B. A designated student monitor.
C. An instructor.
D. The C-14 certificate holder only.

247. What must be performed before instructors or students use hazardous chemicals in demonstrations or experiments?
A. A cost-benefit analysis.
B. A peer review of experiment.
C. A documented hazard risk assessment.
D. A student survey on comfort level.

248. Bulk quantities of chemicals in educational laboratories should be stored:
A. On open shelves in classroom.
B. In students' personal lockers.
C. In a locked room outside classroom.
D. Under the instructor's desk.

249. Experiments involving chemicals performed outside a fume hood in educational settings must be performed at least 10 feet from students OR:
A. With students wearing respirators.
B. Behind an impact-resistant shield.
C. Only with non-flammable materials.
D. During after-school hours only.

250. The instructor shall conduct what prior to the start of each student experiment?
A. A quiz on chemical formulas.
B. A demonstration of advanced techniques.
C. A safety briefing.
D. A historical overview of discovery.

Answer Key: Educational and Instructional Laboratory Operations (246-250)

Part III: Specific Material Types (Total: 40 MCQs)

11. CORROSIVE MATERIALS (15 MCQs)

11.1. General Description (5 MCQs)

251. Corrosive materials act by chemically destroying parts or by causing:
A. A pleasant tingling sensation.
B. Temporary numbness in the area.
C. Inflammation.
D. Rapid cell regeneration.

252. What personal protective equipment (PPE) is crucial when working with corrosives to prevent eye injury?
A. Standard prescription glasses.
B. A wide-brimmed hat.
C. Adequate safety glasses/goggles.
D. Dark sunglasses for glare.

253. If a corrosive substance enters the eye, what is the immediate first aid step?
A. Rub the eye vigorously.
B. Apply a neutralizing chemical.
C. Flush with water for 15 minutes.
D. Cover eye with dry patch.

254. Acids and bases are common corrosive materials that should NOT be stored near each other because:
A. They might neutralize each other.
B. Their fumes can be pleasant.
C. Accidental mixing can generate heat.
D. They occupy too much shelf space.

255. The need for specific PPE when handling corrosives depends on the:

Answer Key: Corrosive Materials - General Description (251-255)
251. C. Inflammation.
252. C. Adequate safety glasses/goggles.
253. C. Flush with water for 15 minutes.
254. C. Accidental mixing can generate heat.
255. C. Nature and quantity of materials.

11.2. Storage and Use Requirements (10 MCQs)

256. What is the best choice for storing acid containers to prevent corrosion of cabinets?
A. Standard metal cabinets.
B. Wooden shelves with good airflow.
C. Chemically-resistant cabinets (e.g., polyethylene).
D. Open bench tops for visibility.

257. When are containers of sodium bicarbonate or other neutralizing agents required in corrosive storage areas?
A. If any amount of acid stored.
B. If more than 1 gallon stored.
C. If more than 5 gallons stored/used.
D. Only for strong bases.

258. Corrosive liquids stored in excess of 5 gallons require what nearby safety equipment?
A. A specialized fume hood.
B. A Class D fire extinguisher.
C. An emergency safety shower.
D. A HEPA-filtered vacuum cleaner.

259. How should corrosive containers be stored regarding height?
A. On the highest shelves.
B. Below eye level if possible.
C. Stacked to save shelf space.
D. Alternating high and low.

260. Emergency showers for corrosive spills must be:
A. Tested weekly by users.
B. Accessible and unobstructed.
C. Filled with neutralizing solution.
D. Located outside the building only.

261. What can minor spills and acid fumes quickly do to standard metal storage cabinets?
A. Strengthen the metal.
B. Improve their appearance.
C. Corrode the cabinets.
D. Make them fire-resistant.

262. Should compressed gas containers be exposed to corrosive chemicals or fumes?
A. Yes, it helps clean them.
B. Only if containers are new.
C. No, it can damage containers/valves.
D. It doesn't matter for inert gases.

263. Polyethylene spill trays are a good idea for acid storage:
A. Only if stored in cabinets.
B. Only for very weak acids.
C. Whether on bench or in cabinet.
D. If acids are in plastic bottles.

264. Handling and use of corrosive materials should be located considering:
A. Proximity to the main entrance.
B. Distances and exposures like storage.
C. Availability of natural light.
D. The quietest area of the lab.

265. What is a primary risk if corrosive materials are exposed to incompatible materials?
A. The corrosive may become diluted.
B. A dangerous reaction may occur.
C. The materials may become inert.
D. The corrosive may lose potency.

Answer Key: Corrosive Materials - Storage and Use Requirements (256-265)

r.

12. COMPRESSED AND LIQUEFIED GASES (25 MCQs)

12.1. General Requirement (5 MCQs)

266. Why are all compressed gases potential hazards?
A. Due to their color and odor.
B. Due to pressure, flammability, or toxicity.
C. Only if they are very cold.
D. Because they are expensive to buy.

267. How must the contents of any compressed gas container be identified?
A. Solely by the container's color.
B. By a verbal confirmation from user.
C. Stenciled or labeled on container.
D. By the size of the container.

268. Is it permissible to transfer compressed gases from one commercial container to another?
A. Yes, if done carefully.
B. Yes, with proper equipment.
C. No, this practice is not permitted.
D. Only for inert gases.

269. Compressed gas containers not in use must be stored:
A. In any available lab space.
B. Horizontally to save room.
C. In an approved storage area.
D. Without their valve caps.

270. What should you do if a compressed gas container is unmarked or has conflicting labels?
A. Use it if you think you know.
B. Test a small amount carefully.
C. Reject the container.
D. Relabel it based on its color.

Answer Key: Compressed and Liquefied Gases - General Requirement (266-270)

12.2. Storing Containers (5 MCQs)

271. How must all compressed gas containers (except very small ones) be secured and stored?
A. Leaning against a sturdy wall.
B. In a horizontal position always.
C. Secured upright with regulator attached.
D. Secured from tipping, stored upright.

272. Containers of gases with high health hazard ratings (3 or 4) or pyrophoric gases must be kept in:
A. Any standard laboratory cabinet.
B. A continuously mechanically ventilated hood/enclosure.
C. The coldest part of laboratory.
D. An open area for dispersion.

273. How should compressed gas containers be segregated in storage?
A. By size and weight only.
B. Alphabetically by gas name.
C. By hazard classes and compatibility.
D. Randomly to ensure mixed use.

274. Combustible waste shall be kept a minimum of how far from compressed gas containers?
A. 2 feet.
B. 5 feet.
C. 10 feet.
D. 20 feet.

275. Oxidizing gases shall NOT be stored or used in contact with:
A. Water or aqueous solutions.
B. Inert gases like nitrogen.
C. Oil, grease, or petroleum base.
D. Stainless steel or brass fittings.

Answer Key: Compressed and Liquefied Gases - Storing Containers (271-275)

12.3. Containers in Use (5 MCQs)

276. Compressed gas containers, when in use, must be connected to a gas delivery system and a:
A. Simple on/off valve.
B. Flow meter only.
C. Regulator instrument.
D. Pressure relief disk.

277. A regulator system for compressed gas must be equipped with how many gauges?
A. One gauge for container pressure.
B. One gauge for system pressure.
C. Two gauges (container and system).
D. No gauges are strictly required.

278. When should valve protection caps remain on a compressed gas container?
A. Only during transportation.
B. At all times, even during use.
C. Until ready to withdraw gas/connect.
D. They can be removed permanently.

279. What is a crucial piece of PPE when working on or near compressed gas systems?
A. Heavy leather gloves.
B. A full-face respirator.
C. Steel-toed safety shoes.
D. Eye protection (goggles/face shield).

280. Compressed gas containers not "in use" (except small propane) shall be:
A. Kept alongside connected ones.
B. Stored with regulators attached.
C. Removed to a storage facility.
D. Vented slightly to reduce pressure.

Answer Key: Compressed and Liquefied Gases - Containers in Use (276-280)

12.4. Typical Internal Volume of Cylinders (2 MCQs)

(Refer to Table in Section 12.4 of study material)

281. What is the approximate internal water volume of a standard "Lecture Bottle" compressed gas container?

A. 0.016 Cu. Ft.
B. 0.164 Cu. Ft.
C. 1.54 Cu. Ft.
D. 0.08 Cu. Ft.

282. A common "H" type cylinder has an approximate internal water volume of:

A. 0.77 Cu. Ft.
B. 1.54 Cu. Ft.
C. 1.75 Cu. Ft.
D. 2.414 Cu. Ft.

Answer Key: Typical Internal Volume of Cylinders (281-282)

12.5. Compressed Gas Container Disposal or Return (3 MCQs)

283. When is a compressed gas container considered "empty" for disposal/return purposes?

A. When no more gas flows out.
B. When pressure is at 0 psig.
C. When pressure is at atmospheric (or 15 psia).
D. When it is less than 10% full.

284. How should empty compressed gas containers be labeled?

A. With the original contents label only.
B. "HAZARDOUS - DO NOT TOUCH".
C. With "EMPTY" or "MT" and date.
D. No special label is needed.

285. How should empty compressed gas containers be handled?

A. As non-hazardous general waste.
B. Carefully, as residual pressure exists.
C. By venting all remaining gas.
D. They can be refilled by lab staff.

Answer Key: Compressed Gas Container Disposal or Return (283-285)

12.6. Piping system (2 MCQs)

286. Permanent piping for compressed gases must be identified with the name of the material at the supply point and:

A. At every 10-foot interval.
B. Only where it enters building.
C. At each discharge point.
D. With a color-coded band.

287. Can piping systems, including regulators, be used for gases other than those for which they are designed?

A. Yes, if pressures are similar.
B. Yes, for short periods of time.
C. Not without review and modification.
D. Only if the new gas is inert.

Answer Key: Piping system (286-287)

12.7. Cryogenic Liquid (3 MCQs)

288. What is a primary hazard of cryogenic liquids due to their extremely low temperatures?
A. They can cause rapid corrosion.
B. They can produce frostbite on skin.
C. They are highly flammable always.
D. They expand rapidly when warmed.

289. When charging a warm container with cryogenic liquid, what always occurs?
A. The container cools very slowly.
B. A vacuum is created inside.
C. Boiling and splashing.
D. The liquid solidifies instantly.

290. What PPE should always be worn when handling anything that comes in contact with cold cryogenic liquids/vapors?
A. Thin cotton gloves for dexterity.
B. Standard safety glasses only.
C. Insulated, loose-fitting gloves.
D. A tight-fitting rubber apron.

Answer Key: Cryogenic Liquid (288-290)

Part IV: Appendix A - Specific Hazard Classes (Total: 40 MCQs)

1. FLAMMABLE SOLID (6 MCQs)

1.1. General Description & Requirements (6 MCQs)

291. Flammable solids may be ignited by:
A. Exposure to cold temperatures.
B. Contact with inert gases.
C. Friction, heat, sparks, or flame.
D. Dilution with water.

292. What can dusts or fumes from some flammable solids form in air?
A. A neutralizing mixture.
B. A fire-retardant barrier.
C. Explosive mixtures.
D. A dense, harmless fog.

293. What is a common extinguishing agent for fires involving many flammable solids, like metals?
A. Pressurized water.
B. Carbon dioxide.
C. Dry sand.
D. Foam concentrate.

294. Oxides from metallic fires are often:
A. Beneficial for plant growth.
B. A severe health hazard.
C. Completely odorless and invisible.
D. Easily neutralized with water.

295. Some flammable solids are pyrophoric, meaning they can:
A. Only burn if preheated.
B. Spontaneously ignite in air.
C. React violently with acids.
D. Dissolve rapidly in water.

296. Cutting some flammable solids, like titanium, can:
A. Make the material stronger.
B. Cool the material rapidly.
C. Generate enough heat to ignite.
D. Produce a non-flammable byproduct.

Answer Key: Flammable Solid - General Description & Requirements (291-296)

---

2. HIGHLY TOXIC AND TOXIC MATERIALS (7 MCQs)

2.1. General Description (2 MCQs)

297. Toxic chemicals can produce injury or death when:
A. Only ingested in large doses.
B. Only if they are flammable.
C. Inhaled, ingested, or absorbed.
D. Stored for over one year.

298. For Fire Code purposes, Toxic & Highly Toxic Materials are defined in terms of:
A. Their boiling points.
B. Their flash points.
C. LD50 and LC50 values.
D. Their reactivity with water.

Answer Key: Highly Toxic and Toxic Materials - General Description (297-298)

2.2. Storage and Use Requirements (liquids/solids) (5 MCQs)

299. What supporting documentation is important for the toxicity of materials being stored or used?
A. The purchase order for chemical.
B. The laboratory's annual budget.
C. Safety Data Sheets (SDS).
D. The manufacturer's marketing brochure.

300. Can the level of toxicity of Highly Toxic materials be reduced by dilution?
A. No, toxicity is inherent.
B. Yes, dilution can reduce it.
C. Only if diluted with acid.
D. Only for solid materials.

301. A mixture containing any amount of Highly Toxic material is presumed to be:
A. Non-toxic if diluted by 50%.
B. A highly toxic material.
C. Safe for general handling.
D. Only moderately toxic.

302. Highly Toxic and Toxic Materials that are compressed gases primarily follow requirements of:
A. NFPA 45 and Fire Code Ch. 30.
B. Only the Clean Air Act.
C. The laboratory's internal SOP.
D. DOT shipping regulations only.

303. If Highly Toxic Materials also meet definitions of other hazard classes, they must:
A. Only comply with toxicity rules.
B. Comply with those other rules also.
C. Be treated as least hazardous.
D. Be sent back to manufacturer.

Answer Key: Highly Toxic and Toxic Materials - Storage and Use Requirements (299-303)

---

3. UNSTABLE REACTIVES (INSTABILITY HAZARD) (7 MCQs)

3.1. General Description (2 MCQs)

304. Unstable reactive materials require care to ensure they do not encounter:
A. Bright laboratory lighting.
B. Standard atmospheric pressure.
C. Incompatible materials or conditions.
D. Ventilated storage areas.

305. Storage of temperature-sensitive unstable materials requires temperature controls and:
A. Daily manual temperature checks.
B. An emergency alarm for setpoint deviations.
C. Storage in dark colored bottles.
D. Mixing with stabilizing agents.

Answer Key: Unstable Reactives - General Description (304-305)
304. C. Incompatible materials or conditions.
305. B. An emergency alarm for setpoint deviations.

3.2. Storage and Use Requirements (5 MCQs)

306. Storage and use of unstable reactives near what must be avoided?
A. Emergency exits for quick disposal.
B. Other unstable reactive materials.
C. Incompatibles like heat sources.
D. The laboratory's main water sink.

307. To determine if an unstable reactive is "deflagrating," one should consult:
A. A general chemistry textbook.
B. The SDS or chemical manufacturer.
C. Online forums for lab technicians.
D. The NFPA 704 diamond rating.

308. Which class of unstable reactive must be handled more carefully?
A. Class 1 unstable reactive.
B. Class 2 unstable reactive.
C. Class 3 unstable reactive.
D. Class 4 unstable reactive.

309. Many unstable materials possess other hazards such as:
A. Strong, pleasant odors.
B. High nutritional value.
C. Flammability, corrosivity, toxicity.
D. Ability to clean glassware.

310. In the event of an uncontrolled spill or release of an unstable reactive, the area should be:
A. Immediately cleaned by any staff.
B. Ventilated by opening windows.
C. Evacuated and 911 notified.
D. Covered with absorbent material.

Answer Key: Unstable Reactives - Storage and Use Requirements (306-310)

---

4. OXIDIZERS AND ORGANIC PEROXIDES (7 MCQs)

4.1. General Description (2 MCQs)

311. Oxidizers are chemicals that release large amounts of:
A. Hydrogen gas.
B. Carbon dioxide.
C. Oxygen.
D. Nitrogen.

312. Organic peroxides contain what thermally sensitive and energetic bond?
A. Carbon-carbon double bond (-C=C-).
B. Oxygen-hydrogen bond (-O-H).
C. Nitrogen-nitrogen triple bond (-N≡N-).
D. Oxygen-oxygen linkage (-O-O-).

Answer Key: Oxidizers and Organic Peroxides - General Description (311-312)

4.2. Storage and Use Requirements (5 MCQs)

313. The fundamental rule for storing oxidizing materials is to keep what away from them?
A. Water and moisture.
B. Fuels and sources of ignition.
C. Other oxidizing materials.
D. Strong bases and acids.

314. What is the most important factor to control when handling or storing organic peroxides?
A. Exposure to light.
B. Humidity levels.
C. Temperature.
D. Air pressure.

315. Containers holding peroxide-forming compounds should be labeled with "Date received," "Date opened," and:
A. "Manufacturer's batch number".
B. "User's initials".
C. "Expiration date".
D. "Intended research project".

316. Which group of peroxide-forming chemicals can form explosive levels even in an unopened container?

A. Group C chemicals.
B. Group B chemicals.
C. Group A chemicals.
D. All groups equally.

317. Strong oxidizing materials like perchloric acid should NOT be heated by:

A. Electrical heating mantles.
B. Steam baths.
C. Gas flames or oil baths.
D. Hot plates with magnetic stirrers.

Answer Key: Oxidizers and Organic Peroxides - Storage and Use Requirements (313-317)

---

5. WATER-REACTIVE SOLID & LIQUIDS (7 MCQs)

5.1. General Description (2 MCQs)

318. Water-reactive chemicals react with water to create new chemicals and produce:
   A. A cooling effect.
   B. Only harmless gases.
   C. Energy (exothermic reaction).
   D. A stable, inert compound.

319. Water-reactive materials are often:
   A. Halogenated solvents.
   B. Elemental metals.
   C. Noble gases.
   D. Strong acids.

Answer Key: Water-Reactive Solid & Liquids - General Description (318-319)

5.2. Storage and Use Requirements (5 MCQs)

320. What is crucial to prevent when storing water-reactive materials?
A. Exposure to direct sunlight.
B. Contact with any water/moisture.
C. Storage in glass containers.
D. Vibration or movement.

321. Water-reactive solids not protected by mineral oil should be handled/dispensed:
A. In a well-ventilated room.
B. Under a running water tap.
C. Inside an inert atmosphere glove box.
D. Quickly to minimize air contact.

322. The use of water-reactive materials near what must be avoided?
A. Other reactive chemicals.
B. Sources of ignition.
C. Incompatibles like heat and water.
D. Emergency eyewash stations.

323. To determine the hazard class of a water-reactive material, one should consult:
A. The periodic table of elements.
B. A senior laboratory technician.
C. The SDS or chemical manufacturer.
D. Its physical appearance (color/texture).

324. Water-reactive materials in glove boxes shall be sealed in what when not in use?
A. Open beakers for easy access.
B. Porous paper bags.
C. Airtight containers.
D. Water-filled secondary containers.

Answer Key: Water-Reactive Solid & Liquids - Storage and Use Requirements (320-324)

---

6. PYROPHORICS MATERIALS (6 MCQs)

6.1. Storage and Use Requirements (6 MCQs)

325. Pyrophoric reagents shall be handled in systems or enclosures that prevent ignition when:
A. Exposed to strong light.
B. A dry or inert atmosphere required.
C. Stored at low temperatures.
D. Mixed with flammable solvents.

326. Who should handle pyrophoric reagents?
A. Any laboratory personnel.
B. Only the C-14 certificate holder.
C. Those experienced or under direct supervision.
D. Interns or new employees for training.

327. Open dispensing of pyrophoric liquids or solids must be done:
A. On an open lab bench.
B. Inside an inert atmosphere glove box.
C. Near a source of running water.
D. Under a standard fume hood.

328. The void space at the top of containers of pyrophoric reagents shall be backfilled with what as reagent is removed?
A. Compressed air.
B. Oxygen gas.
C. A high-purity dry inert gas.
D. Carbon dioxide.

329. What type of fire extinguisher should be present in areas where pyrophoric materials are handled?
A. Water-based extinguisher.
B. Carbon dioxide extinguisher.
C. Class ABC dry chemical.
D. Class D fire extinguisher.

330. Is manufacturing, storing, or using detonable pyrophoric materials generally permitted?
A. Yes, with standard precautions.
B. Yes, if quantities are small.
C. No, it is prohibited in most cases.
D. Only in educational laboratories.

Answer Key: Pyrophorics Materials - Storage and Use Requirements (325-330)

PART 2: Standard Exam Paper Questions