
Coating Inspector Program Level 2 Final Written Exam.

This is a **CLOSED** book exam.

150 questions

100 total points

(7/1/05 - time was increased from 2 hrs to 2.5 hrs to allow ample time for ADA and ESL requests. No additional time should be granted for special requests.)

Using a #2 pencil, please select one answer for each question and fill in the corresponding answer on the Scantron sheet. Be sure to fill in the circle completely. Thoroughly erase any marks if you change an answer.

The requested signatures on the examinee affidavit and attestation are required parts of the examination. Examinations without the requested signatures will not be credited.

PRINTED NAME: _____

I affirm that:

1. I am the person who has completed the attached written examination, and that I have done so fairly without any help.

2. I understand that I am **solely** responsible for making sure that all necessary work experience documentation is completely submitted in good order to, and on hand at NACE Headquarters not less than 60 days prior to the first day of the Peer Review I wish to attend, and that failure to do so may result in my not being able to take the Peer Review.

3. I understand that if I knowingly provide, or cause to be provided, any false information in connection with my recognition under the NACE International Coating Inspector Program, that it will be grounds for action against my standing in the program.

4. It is the responsibility of the individual to complete the renewal or update process, and to notify NACE International of address changes. Each level successfully completed expires on the date noted on the wallet card issued (or three years from the completion date). Failure to receive notices from NACE does not alleviate the individual's responsibility to contact NACE to complete the renewal or update process.

5. With respect to the Peer Review examination;

   a. I understand that passing the Peer Review examination is significantly more difficult than passing any of the training courses and that successful completion of the training courses does not guarantee successful completion of the Peer Review examination. I also understand that in the event that I do not pass the Peer Review examination I must wait not less than one week before making a second attempt.

   b. I understand that in the event that I fail the Peer Review examination twice, I must wait not less than six months before a third or additional retake, and that any person who fails the second or subsequent attempts must wait a minimum of six months between additional attempts.

6. I understand that the names of the categories within the NACE International Coating Inspector Program are as follows:

Highest Level Successfully Completed	Category Title
CIP Level 1	NACE Coating Inspector Level 1—Certified
CIP Level 2	NACE Coating Inspector Level 2—Certified
CIP Levels 1, 2 and Peer Review Examination	NACE Certified Coating Inspector—Level 3

7. NACE has a firm policy regarding the use of its logos and certification numbers and titles. The certification number and category title may be used only by individuals who are NACE Coating Inspector Level 1—Certified, NACE Coating Inspector Level 2—Certified, or NACE Certified Coating Inspector—Level 3 and may not be used by any other persons. All active CIP card holders are permitted to use the term ***NACE Coating Inspector Level 1—Certified***, ***NACE Coating Inspector Level 2—Certified***, or ***NACE Certified Coating Inspector—Level 3*** (whichever level of certification is attained), and their certification number on business cards. This example illustrates how this information can be used someone who has achieved the status of **NACE Coating Inspector Level 1—Certified**:

John Smith
NACE Coating Inspector Level 1—Certified, Cert. No. 9650
ACE Inspections, Inc., Knoxville, TN

This example illustrates how this information can be used by a **NACE-Certified Coating Inspector—Level 3**:

John Smith
NACE Certified Coating Inspector—Level 3, Cert. No. 9650
ACE Inspections, Inc., Knoxville, TN

Those who have achieved any level of certification and who are members in good standing of NACE International may display the NACE Logo for the purpose of identifying the individual as having achieved NACE certification.

I understand that violation of these rules will result in action against my standing in the program on the basis of violation of the NACE International Coating Inspector Program Attestation.

8. I (re) affirm the NACE International Coating Inspector Program attestation and agree to abide by its provisions as long as I hold any level of certification under the program.

Signature:_____ Date:_____

CIP Level 2 – Version A

ATTESTATION: Requirements for recognition or certification under the NACE International Coating Inspector Program include the signing of the following Attestation. In order to maintain your recognition or certification as a NACE International Coating Inspector, you must, on an ongoing basis, fully comply with the NACE International Coating Inspector Program Code of Professional Conduct and the standards contained in this Attestation. Failure to fully comply with the Code of Professional Conduct and/or the Attestation constitutes unprofessional conduct and is a sufficient reason for a reprimand, suspension, revocation, or for the denial of the initial recognition or certification or renewal of recognition or recertification, which will be determined at the sole discretion of NACE.

I, the undersigned, recognize and acknowledge that:

1. Proper coating inspection can be critical to the safety and welfare of the general public and industrial facilities.
2. Coating inspection is obligatory to maximize conservation of our material resources and to reduce economic losses.
3. The entire field of coatings encompasses many diverse skills and disciplines and level of technical competence which must often be taken into consideration.
4. Through continual association and cooperation with others in the coatings field, the safest and most economical solutions may be found to many types of coating problems.
5. The quality of work and personal conduct of each coating inspector reflect on the entire profession of coating inspection.

Therefore, I hereby agree to:

1. Give first consideration in my coating inspection work to safety and public welfare.
2. Apply myself with diligence and responsibility to my coating inspection work.
3. Pursue my work with fairness, honesty, integrity, and courtesy, ever mindful of the best interests of the public, my employer and my fellow workers.
4. Not represent myself to be proficient or make recommendations concerning coatings related work for which I am not qualified by knowledge and experience.
5. Avoid and discourage untrue, sensational, exaggerated, or unwarranted statements regarding my work.
6. Treat as confidential my knowledge of the business affairs or technical processes of clients, employers, or customers.
7. Inform clients or employers of any affiliations, interests, or connections which might influence my judgment.
8. Accept no money gratuities of any kind nor other gratuities whose value could cause a question as to whether they may have influenced my inspection activities, decisions, or reports.
9. Be fair, reasonable, and objective in my work, not allowing myself to be influenced by personalities or other individual considerations.
10. Completely, accurately, and honestly fulfill the reporting requirements of the specifications for any coating operation I may be responsible for inspecting.
11. Take it upon myself to determine from my superiors the scope of my authority and work within it.
12. Ensure, to the best of my ability, that the terms, language, and requirements of the coating specification are clearly understood and agreed to by all parties involved.
13. Strive to obtain the best possible results under given conditions with a given coating specification.

I hereby agree to uphold and abide by the NACE International Coating Inspector Program Code of Professional Conduct and the standards contained in this Attestation as an applicant under this program, and so long as I am a participant in the NACE International Coating Inspector Program. I understand that failure to fully comply with the Code of Professional Conduct and/or the Attestation will be deemed to constitute unprofessional conduct and is a sufficient reason for a reprimand, suspension, revocation, or for the denial of the initial recognition or certification or renewal of recognition or recertification, which will be determined at the sole discretion of NACE.

Signature: _____ Date: _____

Printed Name: _____

CIP Level 2 – Version A

CIP Level 2 – Version A

CIP Level 2 Version 3

1. In a proper specification, information on dry film thickness measurements may be found in which of the following?

   A. Administrative provisions
   B. Inspection section
   C. Scope of work
   D. Approved suppliers section

2. In a proper specification, information on items to be painted may be found in the

   A. administrative provision.
   B. materials section.
   C. coating schedule.
   D. approved suppliers section.

3. In a proper specification, information on degree of blast cleanliness may be found in which of the following?

   A. Administrative Provisions
   B. Materials section
   C. Surface Preparation section
   D. Approve Suppliers section

4. Dry bulb temperature is read from a standard thermometer that has no water on its surface.
   A. True
   B. False

5. The temperature of the air is the same as the dry bulb temperature.
   A. True
   B. False

6. Generally, the dry bulb temperature will be higher than the wet bulb temperature.
   A. True
   B. False

7. The wet bulb temperature is taken by surrounding the bulb (sensor) with a wetted wick and measuring the reading as the moisture evaporates.
   A. True
   B. False

8. NACE RPO287 deals with the use of replica tape to measure the surface profile of abrasive blast cleaned steel.
   A. True
   B. False

9. The joint surface preparation standard NACE No.2/SSPC-SP-10 defines surface preparation of steel and other hard surfaces to near white metal using high and ultra high pressure water jetting.
   A. True
   B. False

10. The SSPC guide for measurement of DFT with magnetic gauges is which of the following?

    A. SSPC-AB-1
    B. SSPC-VIS-1
    C. SSPC-PA2
    D. SSPC-SP-2

11. Water reducible epoxy coatings cure by which of the following?

    A. Water evaporation only
    B. Solvent evaporation
    C. Cross-linking polymerization

12. A pre-job conference is held to discuss the requirements of the specification and to clarify these requirements.

    A. True
    B. False

13. Dehumidification is best described as a process to

    A. lower air temperature to raise the relative humidity.
    B. reduce the moisture content in air to lower its dew point.
    C. raise air temperature to lower the relative humidity.
    D. raise the substrate temperature to lower the dew point.

14. The predominant reason dehumidification is used during coating operations is to

    A. control the environment.
    B. reduce the possibility of missing the recoat window.
    C. allow the contractor to guarantee the completion date.
    D. avoid repetitive blasting/coating operations.

15. Two methods of dehumidification commonly used on coating projects are which of the following?

    A. Heat and refrigeration
    B. Refrigeration and desiccation
    C. Desiccation and heat
    D. Adsorbent and absorbent desiccants

16. If the relative humidity in a tank can be held to a low level, say less than 40%, then it is possible to

    A. hold the blast for an extended period of time.
    B. increase curing time for coatings.
    C. minimize the need for surface preparation.
    D. maximize the rate of rust bloom.

17. If silica gel becomes contaminated it will

    A. hold more moisture.
    B. lower the dew point.
    C. no longer hold moisture.
    D. raise the substrate temperature.

18. Which of the following may be used as desiccants?

    A. Hydrogen Sulfide
    B. Carbon Dioxide
    C. Carbon Monoxide
    D. Lithium Chloride

19. The air next to the steel substrate is called the

    A. substrate layer.
    B. interface layer.
    C. boundary layer.
    D. topcoat layer.

20. Silica gel is not a very good desiccant.

    A. True
    B. False

21. According to the NACE Surface Preparation No. 5/SSPC-SP 12, which of the following abrasives are used in the water jetting process?

    A. Steel shot
    B. Non-metallics
    C. Garnet
    D. None

22. Ultra high pressure water jetting (>30,000 psi[>210MPa]) used on new steel will produce a surface profile of which of the following?

    A. 0 mils
    B. 1-2 mils
    C. 2-3 mils
    D. >3 mils

23. The NACE No. 5/SSPC-SP12 joint standard deals with the cleaning medium of which of the following?

    A. Steel shot
    B. Water
    C. Non-metallic material
    D. Sand

24. High and ultra-high pressure water jetting does not produce a surface profile on smooth steel.

    A. True
    B. False

25. In a water jetting operation, the hose shroud provides which of the following?

    A. Permanent barrier if hose breaks
    B. Temporary protection if hose breaks
    C. Prevents hose ends from whipping around if broken under pressure
    D. Water filtration

26. Generally for safety considerations, water jetting hose connections use which of the following?

    A. Oil/water separator
    B. Long wand
    C. Whiplock device
    D. Filters

27. According to NACE No. 5/SSPC-SP 12 high-pressure water cleaning is performed at which of the following pressures?

    A. 5,000 psi and below (34 MPa and below)
    B. 5,000 to 10,000 psi (34 to 70 MPa)
    C. 10,000 to 15,000 psi (70 to 105 MPa)
    D. 15,000 to 20,000 psi (105 to 140 MPa)

28. Which of the following types of abrasive is most commonly used for centrifugal blasting of steel or concrete surfaces before coating?

    A. Steel shot and steel grit
    B. Synthetic abrasives
    C. Silica
    D. Agricultural

29. Degree of cleanliness or surface profile provided by centrifugal blast-cleaning is **NOT** affected by which of the following?

    A. Travel speed of object being blasted
    B. Abrasive type and size
    C. Location and size of the hot spot
    D. Pressure and volume of air

30. Steel shot or grit contaminated with oil or grease used in a centrifugal blast cleaning should be

    A. washed with clean potable water prior to use.
    B. mixed with uncontaminated abrasive.
    C. run through the air wash separator.
    D. disposed of.

31. Which of the following is **NOT** an advantage of centrifugal blast cleaning?

    A. Few moving parts
    B. Abrasive recycling
    C. Blasting/priming of work piece in an in-line operation
    D. More economical than nozzle blast cleaning

32. Advantages of centrifugal blast cleaning include which of the following?

    A. Dust containment
    B. Inexpensive equipment
    C. Ease of cleaning complex shapes
    D. Few moving parts

33. Steel grit is most commonly used in which of the following?

A. Water jetting
B. Wheel blast operations
C. Manual blast operations
D. Wet blast operations

34. Drager tubes are normally used for which of the following?

A. simultaneous determination of oxygen and solvent concentration
B. estimating the amount of thinners applied to an epoxy coating
C. calibrating dry film thickness meters
D. measuring a specific gas

35. What is the main reason impressor hardness testing on fiberglass laminates is best done before the application of the gel coat?

A. Repairs are required if testing is performed after gel coat application.
B. The gel coat is softer and may affect the reading.
C. The fiberglass laminate can be placed into service faster.
D. It is more convenient for the applicator's work sequence.

36. Potassium Ferricyanide papers turn what color in the presence of soluble iron salts?

A. Green
B. Blue
C. Black
D. White

37. Drager tubes are capable of measuring which of the following?

A. concentration levels of solvent vapor or gas
B. pH
C. toxicity levels
D. LEL (Lower Explosive Limit)

38. Blisters in a coating film are most likely caused by which of the following?

A. Water droplets on the substrate when the coating was applied
B. The presence of hygroscopic salts beneath the coating film
C. The presence of corrosion pitting beneath the coating film
D. Poor spray technique

39. When doing the ASTM-D 4541 pull-off adhesion test, test values are reported as

A. units of force such as psi, kg.m2 and/or Mpa.
B. 0A-5A
C. 0B-5B
D. Barcol units

40. According to ASTM D714 Standard Test Method for Evaluating Degree of Blistering of Paints, which of the following is **NOT** reported?

    A. Size
    B. Frequency
    C. Distribution
    D. Cause

41. According to ASTM D714 Standard Test Method for Evaluating Degree of Blistering of Paints, the frequency is reported as

    A. Few, Medium, Medium Dense, Dense
    B. Few, Medium, Dense
    C. Few, Medium, Medium Dense
    D. Spotty, Local, General

42. The solvent sensitivity test can be used to determine the cure of which of the following?

    A. Coal tar cutback
    B. Vinyl
    C. Ethyl silicate inorganic zinc
    D. Chlorinated rubber

43. The instrument(s) described in ASTM D4128 Measuring DFT by Destructive Means does **NOT** include which of the following?

    A. Precision groove grinder
    B. Tooke gauge
    C. Saberg drill
    D. Type II DFT gauge

44. Cold flow or "creep" occurs because

    A. the material is not fully cured.
    B. the material being measured is fairly plastic.
    C. the material being measured is fairly brittle.
    D. the material being measured is cold.

45. The solvent sensitivity/solvent wipe test (ASTM D4752) is used to determine the cure of which of the following?

    A. Urethanes
    B. Inorganic Zincs
    C. Epoxies
    D. Powder coatings

46. The "solvent sensitivity" (also known as "solvent wipe") test is sometimes used as a test for which of the following?

    A. Entrapped solvents inn lining materials
    B. Cure of coatings which cure by solvent evaporation
    C. Cure by coatings which cure by chemically induced polymerization
    D. Cure by coalescence

47. When will a Bar-Col hardness test be performed on a fiberglass lining system?

A. After application of the gel coat
B. Before the application of the gel coat
C. Before creeping occurs
D. After creeping occurs

48. Results of the pull-off adhesion test (ASTM-D 4541) shall include

I. description of test specimen.
II. coating system thickness.
III. location of failure.
IV. type of failure.

A. I, II & IV only
B. I, III & IV only
C. I, II & III only
D. I, II, III & IV only

49. Use of the 10x Paint Inspection ("Tooke") gauge tip determines the thickness of which of the following?

A. Film (>50 mils, 1270 µm)
B. Films (10-20 mils, 254 - 508 µm)
C. Films (<3 mils, 76.2 µm)
D. Films (20-50 mils 508-1270 µm)

50. Recommended Practice, Test Method and Materials Requirements are classifications of standards published by which of the following?

A. SSPC
B. NACE
C. ASTM
D. AWWA

51. Solvent evaporation coatings cure when the solvent(s) evaporate and the resin is deposited, unchanged, on the surface.

A. True
B. False

52. Which of the following components is **NOT** found in powder coatings?

A. Resin
B. Solvent
C. Pigment
D. Additives

53. Fusion bonded epoxy powder coatings are

A. thermoset materials.
B. thermoplastic materials.
C. liquid applied materials.
D. solvent evaporation cure materials.

54. Polypropylene coatings are

A. thermoset materials.
B. thermoplastic materials.
C. resistant to high temperatures.
D. two-component solvent based materials.

55. Thermoset powder coating materials soften and become fluid each time they are heated.

A. True
B. False

56. A disadvantage of powder coatings includes which of the following?

A. One coat application is usually sufficient
B. Solvent-free material
C. Uniform coating thickness
D. Does not lend itself to field applications for mainline sections of pipe.

57. Some coatings which cure by chemically induced polymerization may be force-cured to

I. remove volatile solvent.
II. decrease time required for cure.
III. improve polymerization.
IV. enhance gloss finish

A. I, II & III only
B. II, III & IV only
C. I, II & IV only
D. I, III & IV only

58. Linings are not used to protect the substrate from which of the following?

A. Corrosion
B. UV protection
C. Erosion
D. Abrasion

59. Electrostatic spray may be used to reduce coating loss due to overspray items.

A. True
B. False

60. When guniting, the application sequence is to start

A. from the top of a vertical drop and work down doing bottom areas last.
B. at the middle of a vertical drop and work up doing overhead areas last.
C. with the overhead areas and work down to the bottom of a fully gunited area.
D. from the bottom of a vertical drop and work up doing the overhead areas last.

61. A gunite mixture that has too much liquid will

A. cure too hard and crack.
B. tend to slump or not hold to the surface.
C. not cure and remain soft indefinitely.
D. will increase material costs.

62. Plural component spray equipment requires which of the following?

A. Use of spray guns which mix the components at or before the gun
B. Spraying on the catalyst after spraying on the resin
C. Use of power rollers
D. Electrostatic charge

63. Static, in-line mixers are most likely to be used when applying which of the following?

A. Plural component coating systems
B. Chlorinated rubber coatings
C. Single component systems
D. Shotcrete

64. In-line mixers most frequently used when using

A. conventional air spray system.
B. high volume low pressure (HVLP) systems.
C. external mix plural component spray systems.
D. internal mix plural component spray systems.

65. A centrifugal spray head propels chopped glass fibers into the sprayed coating materials.

A. True
B. False

66. With an external mix plural component spray gun, the material is mixed

A. in a static mixer just before the spray gun.
B. in a mechanical mixer just before the spray gun.
C. in the spray pattern in front of the spray gun.
D. inside of the spray gun itself.

67. Transfer efficiency of electrostatic spray is about the same as that of conventional air spray.

A. True
B. False

68. Which of the following should be done before blasting of concrete substrate?

A. Acid etch
B. Vacuum cleaning
C. Removal of any oil or grease
D. Determination of moisture content

69. When abrasive blasting a concrete surface, the operator should

A. increase abrasive size.
B. hold the blast nozzle closer to the substrate.
C. move nozzle more slowly.
D. move nozzle more quickly.

70. Concrete is a good corrosion-resistant coating that may be used on steel if

A. it is dense and well poured.
B. honeycombed.
C. scored to allow expansion.
D. acid treated to prevent moisture transfer.

71. Concrete will not allow moisture to pass through it.

A. True
B. False

72. The weak surface layer which may occur on concrete is called

A. scale.
B. slurry.
C. laitance.
D. water of convenience.

73. Concrete can readily absorb contaminants.

A. True
B. False

74. Galvanized zinc surfaces to be coated may be treated with a mordant solution which is a

A. strong alkali solution.
B. strong acid solution.
C. weak alkali solution.
D. weak acid solution.

75. During the reaction with its environment, a protective oxide film is formed on which of the following metals and alloys?

I. Stainless steel
II. Nickel
III. Tin
IV. Cadmium

A. I & II only
B. I, II & III only
C. I & III only
D. I, II, III & IV

76. Coatings can be applied to wood to

A. separate the anode from the electrode.
B. slow the flow of electrons.
C. eliminate the metallic path.
D. make it flame retardant.

77. Polymer concrete is used

A. in applications where conditions are highly corrosive to regular concrete.
B. to reduce material costs on a project.
C. to reduce corrosion resistance when using a chemical resistant top-coat.
D. to eliminate the need for placement forms.

78. Corrosion resistant cementitious products may fail prematurely if used in which of the following?

A. A neutral pH environment
B. A pH range below 8
C. A pH range above 8
D. An acidic environment

79. Design considerations for a monolithic corrosion-resistant cementitious installation will **NOT** include which of the following?

A. maximum ambient temperatures
B. cathodic disbondment
C. construction features such as expansion joints
D. pH range of the environment to which the installation will be exposed

80. Special attention to detail is required when inspecting an interior tank lining because

A. of possible contamination of the product being stored.
B. tank linings are sensitive to ambient conditions after installation.
C. the exposure to ultra violet light will accelerate degradation of the lining.
D. coatings used for tank linings are designed for ease of installation.

81. Of the choices shown below, which application would be most likely to use polymer cement?

A. Swimming pool
B. Concrete block
C. Weight coating
D. Industrial floor drains

82. Which test is **NOT** used on a glass lined vessel?

A. High voltage AC holiday test
B. Visual inspection
C. Low voltage wet sponge holiday test
D. Abrasive blast inspection

83. Glass linings are normally applied under factory conditions.

A. True
B. False

84. Which of the following is **NOT** a reason to apply a gel coating to a fiberglass reinforced coating/lining system?

A. To prevent "wicking" of chemicals or water by the glass fibers
B. To retard curing of the system
C. To make the laminate more resistant to ultraviolet light
D. To add additional dry film thickness

85. Which rubber can be used for hydrochloric (muriatic) acid or for food grade phosophoric acid service?

A. Soft rubber
B. Semi-hard rubber
C. Hard rubber
D. XX-hard rubber

86. The membrane used with acid proof brick provides additional protection from which of the following?

A. High temperatures
B. Cracking
C. Chemical attack
D. External environment

87. Surface preparation requirements for rubber linings are not as strict as they are for most liquid coatings, because the rubber linings are thicker.

A. True
B. False

88. Paraffin wax additives are sometimes added to polyester and vinyl ester gels coats to

A. make the gel coat easier to topcoat.
B. prevent oxygen from retarding the cure of the gel coat.
C. allow moisture to penetrate the gel coat.
D. allow for easier clean up.

89. Coal tar enamel coatings are usually applied with a film thickness of 10 mils (250 microns) or less.

A. True
B. False

90. Coal tar enamels are liquified for application by which of the following?

A. Solvents
B. Heat up to 490 degrees F
C. Plural component system
D. Air assisted airless system

91. Ductile iron pipe is often encased in polyethylene sleeves in corrosive areas.

A. True
B. False

92. Polyethylene pipe for gas service is generally joined together by bell and spigot with an "O" ring gasket.

A. True
B. False

93. Coatings are used on the interior of pipelines for which of the following?

A. Aesthetic reasons
B. Color
C. Product contamination prevention
D. Reduction of magnetic polarity

94. A mainline coating is defined as which of the following?

A. The entire coating system of a pipeline
B. The total coating on the body of the pipe less any field joint coatings
C. The primer system
D. Topcoat and/or finish coat

95. Pipelines laid offshore often are given a weight coating to provide which of the following?

A. Positive buoyancy
B. Negative buoyancy
C. Cathodic protection
D. Coral reef formation

96. The top interior vapor space of large diameter concrete sewer pipe is often

A. left uncoated.
B. coated with latex.
C. glass lined.
D. coated with coal tar epoxy.

97. The process used to apply polyethylene in the plant to pipe valves, fittings, bends, etc. is

A. airless spray.
B. sintering.
C. coalescence.
D. mitt.

98. Protective coatings are applied to the exterior surfaces of underground pipelines for which of the following?

A. Appearance
B. Corrosion protection
C. Weatherproofing
D. To improve transmission efficiency

99. Which of the following is **NOT** used to coat girth welds (field joints) on pipelines?

A. Duct tape
B. Coal tar enamel
C. Polyethylene tapes
D. FBE

100. Polyethylene may be extruded onto pipe by the crosshead extrusion or by the side extrusion method.

A. True
B. False

101. Which of the following is **NOT** true with respect to bluing of steel?

A. Bluing occurs when the steel temperature reaches 290C (554F)
B. Bluing is a form of oxidation
C. Bluing is highly beneficial to the adhesion of fusion bonded epoxy
D. Checking for bluing is critical prior to application of a fusion bonded epoxy

102. Thermosetting fusion bonded epoxy powder coatings are normally repaired using which of the following methods?

A. Hot-melt sticks
B. Single component solvent evaporation cure urethane
C. Fabric reinforced petrolatum tapes
D. Extruded polyethylene

103. In powder coatings, when the particles of powder begin to flow but are not fully liquid, they are in what stage?

A. Flow stage
B. Wetting stage
C. Cure stage
D. Gel stage

104. Holiday testing of fusion bonded epoxy coating is most commonly performed using which of the following?

A. A low-voltage wet-sponge holiday detector
B. A 5000 volt low-frequency AC-type holiday detector
C. Visual inspection only
D. A high voltage DC holiday detector

105. Steel laminations in high-pressure pipe are repaired at a fusion bonded epoxy application by which of the following?

A. Grinding
B. Wire brushing
C. Hammering flat
D. Filling with reinforced epoxy

106. When applied to a properly heated surface, what is the **SECOND** stage that FBE powders pass through?

A. Wetting
B. Gel
C. Flow
D. Cure

107. Powder coatings can be applied by which of the following?

A. Brush
B. Electrostatic spray
C. Airless spray
D. Conventional spray

108. Generally, electrostatic spray of powders produces somewhat thicker coatings at the edges than on flat surfaces.
    A. True
    B. False

109. Which of the following coatings would **NOT** provide good gloss retention when applied to surfaces exposed to ultra-violet light?

    A. Aliphatic urethane
    B. Water - borne Acrylic
    C. Marine enamel
    D. Fusion bonded epoxy

110. The coating project should be inspected at all stages by qualified personnel.
    A. True
    B. False

111. Which of the following is **NOT** a reason the inspector must keep comprehensive reports?

    A. aid the paint contractor's invoicing procedures
    B. provide a record to assist in a premature coating failure investigation
    C. furnish documentation for evaluating coating life-cycles
    D. to record the technical details of the project

112. The most important document that the inspector should have to fulfill a successful project is which of the following?

    A. A non-conformance report
    B. The contract
    C. The specification
    D. The inspectors daily report

113. During the application of a spray applied coating the inspector should **NOT**

    A. observe the application looking for runs and sags, uneven coverage or other application defects.
    B. observe the measuring of WFT (Wet Film Thickness) by the painter.
    C. direct the applicator on how to spray the coating correctly should runs and sags occur.
    D. measure and record ambient conditions to ensure compliance with the specification.

114. High silicon steels may develop dull gray (zinc) appearance when hot-dip galvanized.
    A. True
    B. False

115. The high heat of the zinc bath during galvanizing causes mill scale to pop off the steel and sink to the bottom of the kettle with the dross.
    A. True
    B. False

116. Fluxing of the steel workpiece prior to galvanizing is done to remove metal oxides on the steel.
    A. True
    B. False

117. Flux inclusions may be due to stale flux burnt on during dipping.
    A. True
    B. False

118. Generally, flux inclusions in zinc galvanized coatings, if not removed, are a cause for rejection by the buyer.
    A. True
    B. False

119. Rust staining of a hot dipped galvanized article may be caused by which of the following?

    A. Flux deposits
    B. Dross deposits
    C. Seepage from joints and seams
    D. Ash inclusions

120. The rate at which an object cools after being hot dipped galvanized affects its

    A. surface brightness and spangle size.
    B. film thickness of the zinc layer.
    C. corrosion protection of the galvanized object.
    D. service life of the galvanizing.

121. The average thickness of a hot-dip galvanized coating may be estimated by "weighing" the part(s).
    A. True
    B. False

122. Blisters found in the zinc coating after galvanizing can be corrected by re-galvanizing.
    A. True
    B. False

123. Thermal sprayed zinc (TSZ) is the preferred metallized coating for use in immersion service.
    A. True
    B. False

124. In spray metallizing, the spray angle should be as close to 90^0 to the surface as possible and should not be less than 45^0 .
    A. True
    B. False

125. Stainless steel, zinc, and aluminum wire can be applied by spray using which of the following?

    A. HVLP
    B. Electric arc
    C. Conventional spray
    D. Airless spray

126. In spray metallizing for immersion service, the minimum standard of blast cleaning is which of the following?

A. White metal
B. Near white metal
C. Commercial blast
D. Brush off blast

127. Thermo spray coatings can be sealed very shortly after application.
A. True
B. False

128. Spray metallizing may be used on tanker interiors but not on fresh water tanks.
A. True
B. False

129. Spray metallized coatings may **NOT** be used on which of the following?

A. Bridges
B. Ship hulls
C. Hot surfaces (stacks, mufflers)
D. FRP

130. Coatings and cathodic protection (CP) are used together because

A. CP systems often fail.
B. coatings are not reliable on buried or immersed structures.
C. coatings reduce current requirements and maintenance on the CP system.
D. initial costs are reduced.

131. The cathodic disbondment test specifically measures resistance of a coating to

A. disbonding due to DC electric currents.
B. disbonding due to corrosion of the substrate.
C. cracking due to its flexibility.
D. disbonding due to AC electric currents.

132. Cathodic protection makes use of a flow of electric current though which of the following?

A. The air above the metal being protected
B. The air below the metal being protected
C. In whatever the structure is buried or submerged
D. The utility lines in the adjacent area

133. Cathodic protection using impressed current is most effective on which of the following?

A. Automobiles and trucks
B. High voltage transmission towers
C. Railroad rolling stock
D. Below ground storage tanks

134. Measuring MEK Resistance of Ethyl Silicate Inorganic Zinc Rich Primers by Solvent Rub requires which of the following?

A. 25 single rubs with a saturated cloth
B. 35 single rubs with a saturated cloth
C. 50 double rubs with a saturated cloth
D. 25 double rubs with a saturated cloth

135. When drying oils are used as coatings they

A. have poor wetting ability and will not penetrate rust.
B. develop a solid film very rapidly.
C. have poor solvent resistance.
D. are commonly used in modern coating applications.

136. Uralkyd coatings' performance is similar to that of which of the following?

A. Novalac epoxies
B. Epoxy esters
C. Moisture cure urethanes
D. Poly-amide epoxies

137. With chemically induced polymerization coatings, defects such as crawling, fisheyes, and cratering may occur as a result of which of the following?

A. Excessive thinning
B. Applying the coating to a hot surface
C. Using too much air pressure
D. Insufficient digestion (sweat-in) time

138. Two component epoxies are coatings activated by adding a curing agent, also sometimes called a

A. surfactant.
B. additive.
C. converter.
D. retarder.

139. If a sample of a coating is soluble in MEK, it would indicate that the coating is most likely a

A. silicate.
B. vinyl.
C. epoxy.
D. novolac epoxy.

140. When exposed, inorganic zinc rich coatings protect the steel surface by acting as

A. a cathode.
B. an anode.
C. a barrier.
D. an inhibitor.

147. Which of the following tests would **NOT** be used to test the abrasion resistance of a coating?

A. Falling sand
B. Air blast abrasive
C. Indentation test
D. Taber abraser

148. In the Northern Hemisphere, which of the following light sources is the best for evaluating color in the field without access to a hand held instrument?

A. Indirect north daylight
B. Direct north daylight
C. Direct sunlight from the south
D. Direct sunlight from the west.

149. A mandrel test would be performed to measure a coating's

A. abrasion resistance.
B. hardness.
C. gloss.
D. flexibility.

150. A Falling Sand test would be performed to measure a coating's

A. abrasion resistance.
B. hardness.
C. gloss,
D. flexibility.

141. Flood coating is a technique used for coating which of the following?

A. Small parts
B. Large complex pieces
C. Strip steel
D. I-beams

142. Modern electro-painting, utilizes cathodic rather than anodic, deposition resulting in which of the following?

A. A wider variety of colors
B. A higher quality finish
C. Less voltage requirement
D. Fewer man hours of labor

143. Very small articles such as screws, clips, stress studs, etc. are commonly coated by which of the following?

A. Dip coating
B. Flow coating
C. Curtain coating
D. Barrel coating

144. Coating surveys may be formed to

I. identify premature coating failures.
II. provide budget information for maintenance programs.
III. estimate the remaining life of the coatings on the structure.

A. I only
B. II only
C. III only
D. I, II & III

145. Coating surveys are mandatory in some cases such as

A. fertilizer plants.
B. refineries.
C. ships.
D. deionized water tanks.

146. Coating surveys may be mandatory as in the case of which of the following?

A. "I" beams and angle iron
B. Ships and offshore platforms
C. Smoke stacks
D. Stainless steel tanks