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PROGRAM INFORMATION BULLETIN NO. P07-28

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SUBJECT: Updated Test Questions for Certifying Individuals to Perform Dust Sampling and Maintenance and Calibration of Approved Sampling Equipment (Amended)

**Who needs this information?**

Mine Safety and Health Administration (MSHA) enforcement personnel, coal operators, miners' representatives, contractors, and special interest groups.

**Why is MSHA issuing this bulletin?**

This Program Information Bulletin (PIB) and associated test questions amends PIB 07-23 which omitted laboratory performance criteria for the respirable dust sampling test and contained errata in the test questions. This PIB informs the mining community of the updated pool of test questions for certifying individuals to perform dust sampling and maintaining and calibrating approved sampling equipment. Questions have been updated to include a more recently approved coal mine respirable dust sampling unit, remove units no longer approved, and improve coverage of the different aspects of the associated regulations. The questions related to maintenance and calibration of the approved respirable dust sampling unit have been updated to include new technology and improved coverage of the associated regulations.

**What is the background for this PIB?**

Title 30 C.F.R. parts 70, 71, and 90 require respirable dust sampling and maintenance and calibration of approved sampling devices to be performed by a certified person. Current regulations require an individual to pass the MSHA examination on sampling of respirable coal mine dust or the MSHA examination on maintenance and calibration procedures for respirable dust sampling equipment to become certified in either function.

### **What is the effect of updating the certification examination(s)?**

The updated test questions will help those seeking to be certified to become familiar with the regulatory sampling requirements, the sampling and calibration equipment required to be used, and the procedures to be used for maintenance and calibration of this equipment. It will also help instructors better evaluate the knowledge, skills, and abilities of an individual seeking to perform the duties and responsibilities of a certified person and ensure more uniform administration of certification examinations.

### **How will the examination(s) be administered?**

If the individual seeking to be certified for respirable dust sampling attends a class of instruction administered by MSHA, the certification examination will involve answering at least 25 questions, completing the Dust Data Card based on the scenario provided, and satisfactory completion of the performance criteria outlined below. The examination will consist of at least 5 questions, selected by the instructor, from each of the 5 sections of the pool of questions.

In the event the individual elects to only take the exam, the certification examination will involve answering all 123 questions included in the 5 sections, completion of the Dust Data Card, and satisfactory completion of the performance criteria outlined below.

Performance Criteria. Each applicant will:

1. Perform checks for the MSA Escort ELF® and any other approved sampling device.
  - a. Test the voltage of each battery pack while under actual load.
  - b. Examine the cyclone(s) for cleanliness.
  - c. Examine the inner surface of the cyclone(s) for scoring.
  - d. Examine external tubing for leaks, cleanliness, and proper length.
  - e. Examine the clamping and positioning of the cyclone, vortex finder, and cassette to insure they are rigid in alignment, and firmly in contact.
2. Check the airflow rate on the MSA Escort ELF® and any other approved sampling device.
3. Correctly place the MSA Escort ELF® and any other approved sampling device on another class member or on the instructor.

Those seeking to be certified to maintain and calibrate approved respirable dust sampling equipment will be required to answer all 37 questions from the 4 sections of the examination. In addition, the individual must demonstrate proficiency in setting up the calibration equipment, examining and testing an approved sampling device for deficiencies, and properly calibrating at least one sampling device.

The minimum passing score for each examination (including lab or performance criteria) will be 80 percent.

**Who are the contact persons for this bulletin?**

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**Is this information bulletin on the Internet?**

This PIB may be viewed on the Internet by accessing MSHA's Home Page at <http://www.msha.gov> and then choosing "Compliance Info" and "Program Information Bulletins."

**What is the authority for this bulletin?**

The Federal Mine Safety and Health Act of 1977, as amended, 30 U.S.C. § 801 et seq.; 30 C.F.R. parts 70, 71, 74, and 90.

**Who will receive this bulletin?**

Program Policy Manual Holders  
Miners' Representatives  
Mine Operators  
Contractors  
Special Interest Groups

Attachments

# Sampling for Respirable Coal Mine Dust Certification Examination

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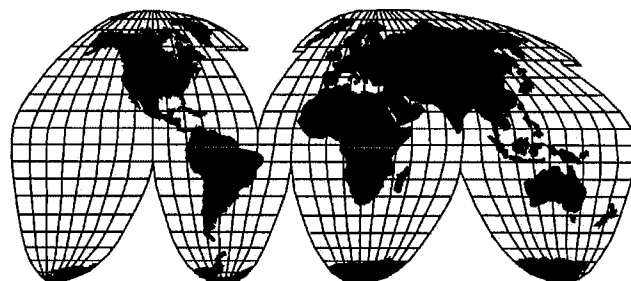


U.S. Department of Labor  
Mine Safety and Health Administration  
National Mine Health and Safety Academy

Instruction Guide Series  
IG 100

2007

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# Sampling for Respirable Coal Mine Dust Certification Examination

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Elaine L. Chao  
Secretary

Mine Safety and Health Administration  
Assistant Secretary

Instruction Guide Series  
IG 100

2007



# Certification Sampling for Respirable Coal Mine Dust Examination Question Pool

## I. General Knowledge

1. Turning the sampling head assembly upside down \_\_\_\_\_.
  - a. has no effect on the sample
  - b. makes the pump run harder
  - c. is a common cause of voided samples
  - d. is the recommended means of collecting samples
  
2. The purpose of the \_\_\_\_\_ is to separate respirable and non-respirable dust.
  - a. nylon cyclone
  - b. tubing
  - c. vortex finder
  - d. grit pot
  
3. Scratches or cuts on the inside of the sampling head's nylon cyclone are called \_\_\_\_\_.
  - a. scoring
  - b. bruising
  - c. scratching
  - d. marking
  
4. There are \_\_\_\_\_ nickel cadmium cells in the battery pack of an MSA Escort ELF<sup>®</sup> personal dust sampler.
  - a. 3
  - b. 4
  - c. 5
  - d. 6
  
5. To become a person certified to sample for respirable coal mine dust, the applicant must \_\_\_\_\_.
  - a. petition the state
  - b. pass an examination conducted by MSHA
  - c. attend a dust certification course conducted by MSHA
  - d. apply to the county in which the mine is located
  
6. A personal respirable coal mine dust sampler must be approved by \_\_\_\_\_ for electrical safety.
  - a. the Academy
  - b. MSHA
  - c. the District Manager
  - d. the inspector



7. The respirable coal mine dust standard in the United States is based in part on the British dust sampling instrument known as the \_\_\_\_\_.
  - a. impinger
  - b. precipitator
  - c. MRE
  - d. grit pot
  
8. An MMU identification number looks most like \_\_\_\_\_.
  - a. 002-0
  - b. 00-20
  - c. 0-020
  - d. 0020
  
9. A DWP identification number looks most like \_\_\_\_\_.
  - a. 045-1
  - b. 001-0-376
  - c. 12345
  - d. 1-2-3
  
10. The mine operator must comply with \_\_\_\_\_ provisions of the approved dust control plan.
  - a. 2
  - b. 5
  - c. all
  - d. no
  
11. Dust concentrations may be controlled by the use of \_\_\_\_\_.
  - a. water sprays
  - b. ventilation
  - c. scrubbers
  - d. all of the above
  
12. Falsifying respirable coal mine dust samples is a (an) \_\_\_\_\_ practice under the coal regulations.
  - a. common
  - b. prohibited
  - c. accepted
  - d. legitimate
  
13. The concentration of respirable coal mine dust is reported to the operator in \_\_\_\_\_.
  - a. pounds per pint
  - b. parts per million
  - c. feet per minute
  - d. mg/m<sup>3</sup> (milligrams/cubic meter), MRE equivalent

14. The \_\_\_\_\_ is a porous membrane housed in plastic and used to collect the respirable dust.
  - a. scoring
  - b. latex
  - c. calibration mark
  - d. filter
  
15. A mine operator may hire a contract sampler to collect samples if the contract sampler is \_\_\_\_\_.
  - a. certified by MSHA
  - b. available
  - c. handicapped
  - d. the operator's uncle
  
16. The only coal mine dust personal sampler units currently approved [2007] for use are made by \_\_\_\_\_.
  - a. Ford Motor Company
  - b. MSA Company
  - c. MSHA
  - d. Sony
  
17. Typical designated areas (DAs) in a mine include \_\_\_\_\_ and belt entries.
  - a. pump locations
  - b. roof bolter operators
  - c. miner operators
  - d. fan installations
  
18. A typical designated occupation (DO) in a mine is the \_\_\_\_\_.
  - a. brattice man
  - b. belt man
  - c. face boss
  - d. continuous miner operator
  
19. Certified persons (sampling) have a moral and legal obligation to collect and submit \_\_\_\_\_.
  - a. the mine operators' excise tax payments on coal
  - b. respirable dust coal mine samples representing the coal mine work-place atmosphere
  - c. miners' chest x-rays
  - d. respirable dust control plans
  
20. The miners' chest x-ray program is regulated and administered by the \_\_\_\_\_.
  - a. Mine Safety and Health Administration
  - b. state in which the mine is located
  - c. Black Lung Coalition
  - d. NIOSH (Department of Health and Human Services)

21. The \_\_\_\_\_ pump is not affected by radio frequency interference.
- Flow-Lite™
  - Model G
  - Flow-Lite ET™
  - Escort ELF®
22. Questions regarding respirable coal mine dust sampling pumps affected by radio frequency interference should be directed to the \_\_\_\_\_.
- MSHA District Manager
  - state mine inspector
  - Mine Safety Appliances Company
  - lamp house
23. The \_\_\_\_\_ pump does not have a float-type flow rate meter.
- Flow-Lite™
  - Model G
  - Escort ELF®
  - Flow-Lite ET™
24. Respirable coal mine dust presents the greatest danger to the human \_\_\_\_\_.
- windpipe
  - nose
  - lungs
  - eyes
25. The human respiratory system can defend against respirable dust particles by \_\_\_\_\_.
- collecting dust in the nose and mouth
  - collecting dust in the windpipe
  - attacking dust particles in the lung
  - a, b, and c above
26. In addition to coal dust, another more toxic dust found in coal mines is \_\_\_\_\_.
- quartz [silica]
  - rock dust along belts
  - wood dust from sawing timbers
  - none of the above
27. CWP is an acronym for \_\_\_\_\_.
- cold weather pajamas
  - cash with payment
  - chicken with potpie
  - coal workers' pneumoconiosis

28. Particles capable of reaching the air sacs in the lungs are generally less than \_\_\_\_\_ microns in diameter.
- a. 3
  - b. 5
  - c. 7
  - d. 10
29. The most effective means of controlling respirable coal mine dust are water application and \_\_\_\_\_.
- a. good ventilation
  - b. dry roadways
  - c. good lighting
  - d. good eye protection
30. The battery "surface charge" generally dissipates within \_\_\_\_\_ minutes after the pump is turned on.
- a. 15
  - b. 30
  - c. 45
  - d. 60
31. Modifications to the sampling head assembly are permitted \_\_\_\_\_.
- a. upon approval of the District Manager
  - b. at no time
  - c. by the Mine Safety Appliances Company
  - d. by the state mine inspector

## II. Sampling Procedure

1. The dust sampling device shall in no case operate more than \_\_\_\_\_.
  - a. 10 hours
  - b. 8 hours
  - c. 6 hours
  - d. 12 hours
  
2. The flow rate of the personal respirable coal mine dust sampler shall be checked by a certified person sampling \_\_\_\_\_ and during the last hour of operation.
  - a. during the second hour of operation
  - b. daily
  - c. weekly
  - d. every hour
  
3. The dust sampling device shall operate \_\_\_\_\_.
  - a. only during high dust levels
  - b. only while coal is being produced
  - c. portal to portal, but no more than 8 hours
  - d. only when the certified person is present
  
4. If an improper flow rate is observed during the last hour of operation, the respirable coal mine dust sample shall be \_\_\_\_\_.
  - a. discarded
  - b. reported in writing to the District Manager
  - c. transmitted to MSHA with a notation on the dust data card stating that the proper flow rate was not maintained
  - d. postponed until the following bimonthly period
  
5. Designated occupation samples from a mechanized mining unit shall be collected on \_\_\_\_\_.
  - a. consecutive normal production shifts
  - b. normal production shifts each of which is worked on consecutive days
  - c. either a or b
  - d. none of the above
  
6. Each designated occupation sample taken on a mechanized mining unit shall be taken on \_\_\_\_\_.
  - a. a normal production shift
  - b. any shift
  - c. a day when dust is greatest
  - d. a day when dust is least

7. For surface sampling purposes, rainy-day samples may be voided by MSHA if the \_\_\_\_\_ believes dust concentrations could have been greatly reduced by rain.
- certified person (sampling)
  - weather forecaster
  - plant operator
  - dozer operator
8. Despite the constant-flow feature on approved respirable coal mine dust sampling pumps, the \_\_\_\_\_ of those pumps must still be checked during the second and last hour of sampling by a certified person (sampling).
- battery voltage
  - hose length
  - permissibility features
  - flow rate
9. Scratches or cuts on the inside of the sampling head's nylon cyclone are called \_\_\_\_\_.
- scoring
  - bruising
  - scratching
  - marking

### III. Sample Set-up & Processing

1. When scoring is found on the \_\_\_\_\_ of the cyclone, the cyclone must be discarded and replaced.
  - a. grit pot
  - b. outer surface
  - c. inner surface
  - d. none of the above
  
2. The identification number of the filter cassette must be identical to the identification number on the \_\_\_\_\_.
  - a. dust data card
  - b. pump
  - c. vortex finder
  - d. tubing
  
3. Approved sampling devices shall be tested and examined \_\_\_\_\_ each sampling shift.
  - a. after
  - b. by MSHA after
  - c. immediately before
  - d. none of the above
  
4. The pre-shift checks of the dust sampling devices must be performed by \_\_\_\_\_.
  - a. a person certified to sample for respirable coal mine dust
  - b. a person certified to maintain and calibrate dust sampling equipment
  - c. MSHA
  - d. either a or b
  
5. During the preshift checks, the battery voltage of the dust sampling devices must be checked \_\_\_\_\_.
  - a. under actual load
  - b. with the pump in the "off" position
  - c. without a sampling head assembly
  - d. both b and c
  
6. A personal dust sampler unit having the battery-pack screws missing is \_\_\_\_\_.
  - a. acceptable
  - b. non-permissible
  - c. a cost saver
  - d. not calibrated
  
7. The hose of the sampling unit must be \_\_\_\_\_ feet in length.
  - a. 2 (24 inches)
  - b. 3 (36 inches)
  - c. 4 (48 inches)
  - d. 5 (60 inches)

8. After sampling is complete, the filter cassettes must be sent to the address \_\_\_\_\_.
  - a. published in the regulations or other address as directed by the District Manager
  - b. on the dust data card
  - c. on the dust control plan
  - d. on the sampling pump
  
9. Cassettes and their dust data cards must be in agreement regarding the cassette \_\_\_\_\_.
  - a. number
  - b. shape
  - c. color
  - d. size
  
10. A dust data card not properly completed will result in the dust sample being \_\_\_\_\_ by MSHA.
  - a. changed
  - b. weighed
  - c. voided
  - d. returned
  
11. The cut-off voltage for a nickel-cadmium cell in any of the approved respirable coal mine dust sampler battery packs is \_\_\_\_\_ volt(s).
  - a. 1.0
  - b. 1.25
  - c. 2.0
  - d. 2.5
  
12. An approved respirable coal mine dust sampler unit consists of \_\_\_\_\_.
  - a. pump, sampling head assembly, filter cassette, and battery pack
  - b. filter cassette, pump, and battery pack
  - c. pump, sampling head assembly, and battery charger
  - d. sampling head assembly, filter cassette, and battery charger
  
13. Attempting to charge a battery pack having a voltage reading of less than 1.0 volt per cell may cause the battery to \_\_\_\_\_.
  - a. melt
  - b. fail
  - c. explode
  - d. discharge
  
14. Testing and examinations of pumps and sampling assemblies immediately prior to the shift of use must be performed \_\_\_\_\_.
  - a. within 1 hour of the beginning of sampling
  - b. within 2 hours of the beginning of sampling
  - c. within 3 hours of the beginning of sampling
  - d. within 24 hours of the beginning of sampling



#### IV. Law, Regulation & Policy

1. A certified person (sampling) may have his/her certification removed by \_\_\_\_\_.
  - a. MSHA
  - b. a certified person
  - c. the state
  - d. none of the above
  
2. Damaged samples that may be voided by MSHA \_\_\_\_\_.
  - a. must be thrown away
  - b. must be submitted by the operator
  - c. should be kept for future reference
  - d. none of the above
  
3. A \_\_\_\_\_ shall complete, sign and include his/her certification number on the dust data card.
  - a. person directed by a certified person (sampling)
  - b. certified person (sampling)
  - c. certified person (maintenance and calibration)
  - d. person directed by a certified person (maintenance and calibration)
  
4. The maximum respirable dust limit for coal mines is \_\_\_\_\_ milligrams of respirable dust per cubic meter of air.
  - a. 2.0
  - b. 2.5
  - c. 3.0
  - d. 3.5
  
5. Approved personal respirable coal mine dust samplers shall operate at a flow rate of \_\_\_\_\_ liters of air per minute.
  - a. 0.5
  - b. 1.5
  - c. 2.0
  - d. 2.5
  
6. The operator shall deposit into the U.S. Postal or other mail system all respirable coal mine dust samples collected within \_\_\_\_\_ hours after the end of the sampling shift.
  - a. 8
  - b. 24
  - c. 36
  - d. 48

7. Any status change regarding the mining operation that affects respirable coal mine dust sampling must be reported in writing \_\_\_\_\_ to the appropriate MSHA office after the status change.
  - a. within 24 hours
  - b. as soon as possible
  - c. within 3 working days
  - d. within 5 working days
  
8. The regulations require \_\_\_\_\_ valid dust sample(s) from the designated occupation in each mechanized mining unit during each bimonthly period.
  - a. 1
  - b. 3
  - c. 5
  - d. 10
  
9. The designated occupation for a conventional mining section using a cutting machine is the \_\_\_\_\_.
  - a. coal driller
  - b. loading machine operator
  - c. cutting machine operator
  - d. laborer
  
10. The designated occupation for a continuous mining section, other than auger-type, is the \_\_\_\_\_.
  - a. continuous mining machine operator helper
  - b. continuous mining machine operator
  - c. roof drill operator
  - d. brattice person
  
11. If one bimonthly designated area sample exceeds the applicable limit, the operator is required to take \_\_\_\_\_ valid sample(s) from the designated area within 15 calendar days.
  - a. 1
  - b. 3
  - c. 5
  - d. 7
  
12. The \_\_\_\_\_ is responsible for collecting and submitting respirable coal mine dust samples to MSHA.
  - a. state
  - b. mine operator
  - c. authorized representative
  - d. contractor

13. A normal production shift is a shift during which the amount of material produced in a mechanized mining unit is at least \_\_\_\_\_ percent of the average production reported for the last set of five valid samples.
- 50
  - 60
  - 40
  - 15
14. Upon the request of the \_\_\_\_\_, the operator shall submit the date on which collecting any respirable coal mine dust samples will begin.
- miners' representative
  - District Manager of MSHA
  - state mine inspector
  - certified person (sampling)
15. After a citation for a violation of a respirable dust standard is issued, the operator must \_\_\_\_\_.
- sample any five shifts during the time for abatement
  - sample any combination of maintenance or production shifts
  - sample on five consecutive Tuesdays
  - sample each production shift after corrective action has been taken and before the time for abatement expires until 5 valid samples have been submitted
16. A \_\_\_\_\_ shall collect and submit respirable coal mine dust samples.
- person directed by any certified person (sampling)
  - certified person (sampling)
  - certified person (maintenance and calibration)
  - state enforcement agency
17. When the respirable coal mine dust standard is changed due to the presence of quartz, respirable dust sampling of a mechanized mining unit shall begin \_\_\_\_\_.
- with the next production shift
  - immediately
  - on the first production shift of the next bimonthly period
  - when sampling equipment becomes available
18. On a continuous mining section other than auger-type, the sampling device can either be worn by the continuous mining machine operator or may be placed on the continuous mining machine within \_\_\_\_\_ inby the normal working position.
- 36 inches
  - 48 inches
  - 60 inches
  - 72 inches

19. On a longwall mining section, the dust sampling device can either be worn by the miner who works nearest the return air side of the longwall working face or along the working face on the return side within \_\_\_\_\_ of the corner.
- 36 inches
  - 48 inches
  - 60 inches
  - 42 inches
20. The four digit identification number assigned by MSHA to a mechanized mining unit shall \_\_\_\_\_.
- remain with that unit wherever that unit relocates within the mine
  - be retired whenever that unit relocates within the mine
  - change with each operating crew
  - both b and c
21. Each mine operator shall take \_\_\_\_\_ valid respirable coal mine dust sample(s) from each designated area during each bimonthly period.
- 10
  - 5
  - 3
  - 1
22. The designated area locations of the mine are shown in the \_\_\_\_\_.
- District Manager's quarterly fatality report
  - approved roof control plan
  - approved ventilation system and methane and dust control plan
  - company production report
23. Respirable coal mine dust samples received by MSHA in excess of those required for bimonthly sampling cycles shall be considered \_\_\_\_\_.
- invalid samples
  - for the next bimonthly sampling cycle
  - only for quartz concentration
  - extra valid samples for the current sampling cycle
24. When quartz is present in a respirable coal mine dust sample in an amount greater than \_\_\_\_\_%, the respirable dust standard will be lowered by MSHA.
- 1
  - 2
  - 3
  - 5
25. The potential penalty for tampering with respirable coal mine dust samples includes \_\_\_\_\_.
- a civil monetary penalty and/or imprisonment
  - a criminal monetary penalty and/or imprisonment
  - imprisonment only
  - a civil monetary penalty only

26. A designated work position (DWP) must be sampled by the mine operator at least \_\_\_\_\_ time(s) during a bimonthly sampling period.
- 5
  - 2
  - 1
  - 3
27. Withdrawal of a DWP from sampling status will be based in part on the respirable coal mine dust samples collected during the past \_\_\_\_\_ year(s).
- 1
  - 2
  - 3
  - 4
28. Personal dust samplers must bear the approval labels issued by MSHA and \_\_\_\_\_ .
- NIOSH (or HHS)
  - Casella
  - Mine Safety Company
  - Bureau of Mines
29. An occupation code contains \_\_\_\_\_ digits.
- 2
  - 3
  - 5
  - 6
30. Once a citation for overexposure to dust is received, the operator must take corrective action and then collect \_\_\_\_\_ valid, normal production shift samples.
- 1
  - 2
  - 3
  - 5
31. Bimonthly sampling periods begin on the \_\_\_\_\_ day of the first month of the period.
- 15th
  - 20th
  - 10th
  - 1st
32. Dust control plans, other than those for Part 90 miners, must be posted on the mine \_\_\_\_\_ .
- bulletin board
  - foreman's desk
  - change room wall
  - man trip

33. Except for Part 90 miners, computer dust reports from MSHA must be posted on the mine bulletin board for at least \_\_\_\_\_ days.
- 10
  - 17
  - 20
  - 31
34. Respirable coal mine dust samples received by MSHA in excess of those required shall be considered \_\_\_\_\_ samples.
- ready-to-use
  - invalid
  - stored-for-later-use
  - required
35. The \_\_\_\_\_ initially establish the designated occupation on a mechanized mining unit.
- regulations
  - mine operator
  - inspector
  - state
36. A designated area for sampling may be established based on MSHA samples where quartz exceeds \_\_\_\_\_ percent.
- 1
  - 2
  - 4
  - 5
37. The \_\_\_\_\_ may waive the rain restriction and permit rainy-day samples to be processed as normal-production samples.
- certified person (sampling)
  - District Manager
  - inspector
  - plant operator
38. For designated occupations (DO) and designated work positions (DWP), any sample with a concentration of greater than \_\_\_\_\_ milligrams/cubic meter will be considered valid regardless of the production reported by the operator.
- 1.0
  - 1.5
  - 2.0
  - 2.5

39. The standard for respirable coal mine dust in the section intake air is \_\_\_\_\_ milligram(s) of dust per cubic meter of air.
- 1.0
  - 1.5
  - 2.0
  - 2.5
40. The respirable coal mine dust regulations for underground mines are found in Title 30 CFR \_\_\_\_\_.
- Part 18
  - Part 70
  - Part 71
  - Part 72
41. The respirable coal mine dust regulations for surface mines are found in Title 30 CFR \_\_\_\_\_.
- Part 18
  - Part 70
  - Part 71
  - Part 75
42. The clamping, tightness and positioning of all sampler components are \_\_\_\_\_ by the regulations in Parts 70, 71 and 90.
- required
  - not required
  - not mentioned
  - not discussed
43. The mine operator shall not open or \_\_\_\_\_ with the seal of any filter cassette.
- play
  - write
  - tamper
  - shave
44. The dust regulations refer to three different statuses that can exist for the mine, including producing, non-producing, and \_\_\_\_\_.
- mined out
  - abandoned
  - flooded
  - collapsed
45. Mine status changes affecting any respirable coal mine dust sampling must be reported by \_\_\_\_\_ within three working days.
- the mine operator
  - the state inspector
  - the foreman's wife
  - the truck drivers

46. The Secretary will provide the mine operator with a \_\_\_\_\_ regarding the samples collected for all DOs, DAs and DWPs.
- note
  - computer report
  - letter
  - book
47. Designated work positions (DWPs) are established by the \_\_\_\_\_.
- inspector
  - District Manager
  - mine operator
  - superintendent
48. The initial respirable coal mine dust standard under the 1969 Act was established at \_\_\_\_\_ milligrams of dust per cubic meter ( $\text{mg}/\text{m}^3$ ) of mine air.
- 4.5
  - 4.0
  - 3.5
  - 3.0
49. The final respirable coal mine dust standard under the 1969 Act and continuing to the present is \_\_\_\_\_.
- $3.5 \text{ mg}/\text{m}^3$
  - $3.0 \text{ mg}/\text{m}^3$
  - $2.0 \text{ mg}/\text{m}^3$
  - $1.5 \text{ mg}/\text{m}^3$
50. To ensure the integrity of the mine operators' respirable coal mine dust sampling program, the Mine Safety and Health Administration \_\_\_\_\_.
- monitors samples to detect irregularities and investigates possible causes
  - provides the operators with dust cassettes
  - transports the operators' cassettes to the weighing laboratory
  - permits operators to submit only "good" samples
51. The Mine Safety and Health Administration has prosecuted and will continue to prosecute persons charged with \_\_\_\_\_ respirable coal mine dust samples.
- tampering with
  - removing dust from
  - falsifying
  - a, b, and c above
52. If quartz [silica] is found in the respirable dust in an amount greater than 5 percent, a \_\_\_\_\_ will be imposed by the Mine Safety and Health Administration.
- hiring limit
  - reduced dust standard
  - closure order
  - spot inspection schedule



53. Materials mined during a normal production shift include:
- a. rock
  - b. coal
  - c. clean coal
  - d. a. and b.

## V. Part 90 Miners

1. Miners showing evidence of pneumoconiosis as the result of a chest x-ray will be offered an opportunity to \_\_\_\_\_.
  - a. quit
  - b. retire
  - c. transfer to a less dusty area
  - d. go to lunch
  
2. A mine operator has \_\_\_\_\_ days to transfer a miner (initial transfer) under provisions of Part 90.
  - a. 5
  - b. 9
  - c. 10
  - d. 20
  
3. Once a Part 90 transfer is made, the mine operator must submit \_\_\_\_\_ valid respirable coal mine dust sample(s) for that miner within 15 days.
  - a. 1
  - b. 2
  - c. 5
  - d. 10
  
4. A respirable dust control plan will be required from the mine operator for a Part 90 miner if a (an) \_\_\_\_\_ for the miner's overexposure has been issued.
  - a. order
  - b. citation
  - c. act
  - d. respirator
  
5. The computer dust reports for Part 90 miners shall be posted for \_\_\_\_\_ days.
  - a. 0
  - b. 5
  - c. 10
  - d. 31
  
6. The \_\_\_\_\_ of the Part 90 miner must be entered on the dust data card.
  - a. name
  - b. age
  - c. address
  - d. identification number
  
7. A mine operator must pay a Part 90 miner \_\_\_\_\_.
  - a. \$10 per hour
  - b. no less than his/her previous rate
  - c. monthly
  - d. on Tuesdays

8. A Part 90 miner has received a transfer because he/she \_\_\_\_\_.
  - a. is a hard worker
  - b. worked at least 90 days at the mine
  - c. shows evidence of pneumoconiosis on a chest x-ray
  - d. lives close to the mine
  
9. Transfer provisions under Part 90 apply \_\_\_\_\_.
  - a. only to miners 50 years of age and older
  - b. only to miners employed at a surface coal mine
  - c. only to miners employed at an underground mine or the surface area of an underground mine
  - d. only to miners who have joined a bargaining unit
  
10. The maximum respirable coal mine dust standard for a Part 90 miner is \_\_\_\_\_ mg/m<sup>3</sup>.
  - a. 1.0
  - b. 1.5
  - c. 2.0
  - d. 2.5
  
11. The respirable coal mine dust regulations for miners who have exercised their option to transfer to a less dusty area of the mine are found in Title 30 CFR \_\_\_\_\_.
  - a. Part 48
  - b. Part 77
  - c. Part 90
  - d. Part 100
  
12. The operator may not reduce the \_\_\_\_\_ of a Part 90 miner.
  - a. tonnage
  - b. rate of pay
  - c. dinner break
  - d. travel time
  
13. Who is responsible for notifying a miner that he/she is eligible to exercise their option to work in an area of the mine where the average concentration of respirable coal mine dust is maintained to a level at or below 1.0 mg/m<sup>3</sup>?
  - a. NIOSH
  - b. mine operator
  - c. MSHA
  - d. company physician
  
14. Samples for evaluating a Part 90 miner's exposure to respirable coal mine dust must be collected \_\_\_\_\_.
  - a. while the Part 90 miner is performing normal work duties
  - b. only during daylight hours
  - c. on the 15th of every month
  - d. twice a year

15. A copy of the computer dust sample report from MSHA for each Part 90 miner \_\_\_\_\_.
- a. must be posted on the mine bulletin board for 31 days
  - b. must be provided to all miners at the mine by the mine operator
  - c. must be provided only to the Part 90 miner by the mine operator
  - d. must be mailed to the state mine inspector
16. Within 15 days following termination of a citation where the mine operator has been cited for violating a Part 90 miner respirable coal mine dust standard, the mine operator is required to \_\_\_\_\_.
- a. file a Part 90 miner dust control plan for approval by the District Manager
  - b. transfer the miner again
  - c. collect a Part 90 miner sample every work day for an entire month
  - d. close the area of the mine where the Part 90 miner normally works

## **VI. Dust Data Card**

You are the certified person (sampling) for respirable coal mine dust at Lunar Creek No. 1 mine of the Jenco Mining Company (mine ID no. 55-91741). You have just collected a respirable dust sample from Joe Smith (SSN 900-88-1955), the continuous miner operator (occupation code 036), which is the designated occupation in mechanized mining unit 004-0. The mechanized mining unit produced 1380 tons of coal during the shift. The personal sampler operated for a total of 8 hours. The sample was collected on today's daylight shift which started at 0800 hours.

Given the above information, properly complete the dust data card.

Performance Criteria. Each applicant will:

1. Perform checks for the MSA Escort ELF<sup>®</sup> and any other approved sampling device.
  - a. Test the voltage of each battery pack while under actual load.
  - b. Examine the cyclone(s) for cleanliness.
  - c. Examine the inner surface of the cyclone for scoring.
  - d. Examine external tubing for leaks, cleanliness, and proper length.
  - e. Examine the clamping and positioning of the cyclone, vortex finder, and cassette to insure they are rigid in alignment, and firmly in contact.
2. Check the airflow rate on the MSA Escort ELF<sup>®</sup> and any other approved sampling device.
3. Correctly place the MSA Escort ELF<sup>®</sup> and any other approved sampling device on another class member or on the instructor.

Instructor's evaluation of the applicant's performance:

\_\_\_\_\_ Battery pack testing

\_\_\_\_\_ Cyclone examination - cleanliness

\_\_\_\_\_ Cyclone examination – scoring

\_\_\_\_\_ External Examination of tubing

\_\_\_\_\_ Assembly and examination of sampling head

\_\_\_\_\_ Examination of flowrate

\_\_\_\_\_ Placement of sampling train on person to be sampled

\_\_\_\_\_ Total Score

## Answers

### Section I

1. C
2. A
3. A
4. B
5. B
6. B
7. C
8. A
9. B
10. C
11. D
12. B
13. D
14. D
15. A
16. B
17. B
18. D
19. B
20. D
21. D
22. C
23. C
24. C
25. D
26. A
27. D
28. D
29. A
30. A
31. B

### Section II

1. B
2. A
3. C
4. C
5. C
6. A
7. A
8. D
9. A

### Section III

1. C
2. A
3. C
4. D
5. A
6. B
7. B
8. A
9. A
10. C
11. A
12. A
13. C
14. C

**Section IV**

- 1. A
- 2. B
- 3. B
- 4. A
- 5. C
- 6. B
- 7. C
- 8. C
- 9. C
- 10. B
- 11. C
- 12. B
- 13. A
- 14. B
- 15. D
- 16. B
- 17. C
- 18. A
- 19. B
- 20. A
- 21. D
- 22. C
- 23. A
- 24. D
- 25. B
- 26. C
- 27. A
- 28. A
- 29. B
- 30. D
- 31. D
- 32. A
- 33. D
- 34. B
- 35. A
- 36. D

**Section IV (Continued)**

- 37. B
- 38. D
- 39. A
- 40. B
- 41. C
- 42. A
- 43. C
- 44. B
- 45. A
- 46. B
- 47. B
- 48. D
- 49. C
- 50. A
- 51. D
- 52. B
- 53. D

**Section V**

- 1. C
- 2. D
- 3. C
- 4. B
- 5. A
- 6. D
- 7. B
- 8. C
- 9. C
- 10. A
- 11. C
- 12. B
- 13. A
- 14. A
- 15. C
- 16. A



# Maintenance and Calibration for Respirable Coal Mine Dust Certification Examination

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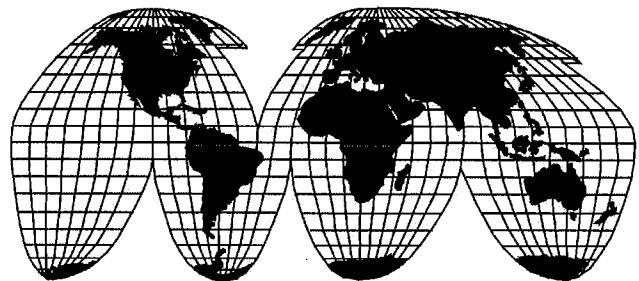


U.S. Department of Labor  
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Instruction Guide Series  
IG 101

2007

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# Maintenance and Calibration for Respirable Coal Mine Dust Certification Examination

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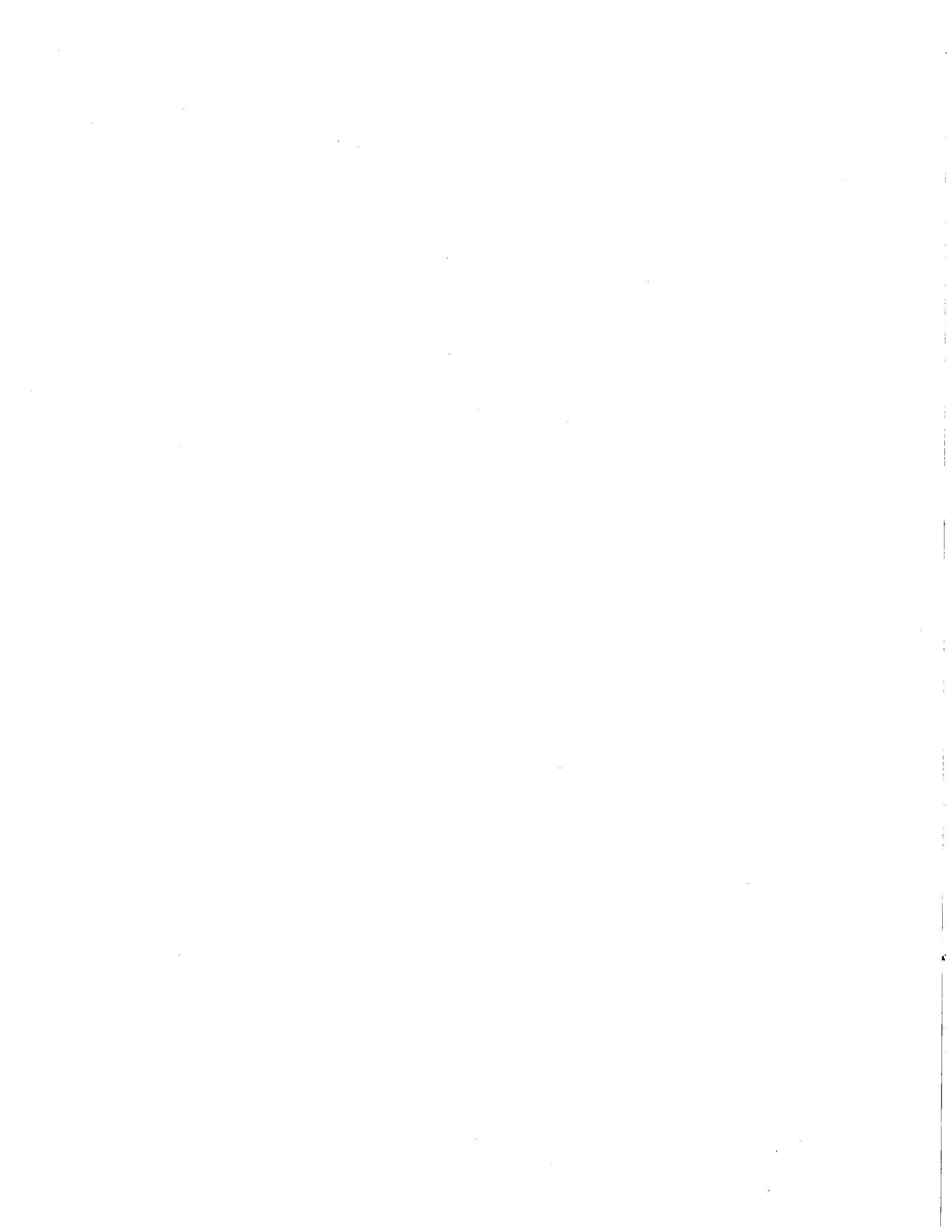


U.S. Department of Labor  
Elaine L. Chao  
Secretary

Mine Safety and Health Administration  
Assistant Secretary

Instruction Guide Series  
IG 101

2007



# Certification Maintenance and Calibration for Respirable Coal Mine Dust Examination Question Pool

## I. General Knowledge

1. The purpose of the \_\_\_ is to separate respirable and non-respirable dust.
  - a. vortex finder
  - b. tubing
  - c. grit pot
  - d. nylon cyclone
  
2. The purpose of the filter cassette is to collect the \_\_\_.
  - a. respirable dust
  - b. methane
  - c. non-respirable dust
  - d. moisture
  
3. A \_\_\_ is required on all personal dust samplers to smooth out the flow rate.
  - a. vortex finder
  - b. length of tubing
  - c. 10mm nylon cyclone
  - d. pulsation dampener
  
4. The flow rate of all properly calibrated personal dust samplers is \_\_\_ liters of air per minute.
  - a. 1.7
  - b. 2.0
  - c. 1.9
  - d. 2.5
  
5. The grit pot of a 10mm nylon cyclone of a personal dust sampler traps \_\_\_.
  - a. non-respirable dust
  - b. respirable dust
  - c. methane
  - d. moisture
  
6. The cutoff voltage of a nickel-cadmium battery is \_\_\_ volts per cell.
  - a. 1.0
  - b. 2.0
  - c. 1.3
  - d. 1.2

## II. Pre-sampling Preparation and Sampling Train Assembly

1. Immediately prior to the sampling shift, the voltage of the battery \_\_\_ must be checked with the pump running.
  - a. under actual load
  - b. taken out of the case
  - c. with DC power source attached
  - d. all of the above
2. Sampling head assemblies of personal dust samplers must be cleaned \_\_\_\_\_.
  - a. hourly
  - b. monthly
  - c. weekly
  - d. after each use
3. Approved dust sampling devices shall be tested and examined \_\_\_ each sampling shift.
  - a. after
  - b. by MSHA
  - c. immediately before
  - d. none of the above
4. The pre-shift checks of the dust sampling devices must be performed by \_\_\_\_\_.
  - a. a Certified Person (Sampling)
  - b. a Certified Person (Maintenance/Calibration)
  - c. MSHA
  - d. either a or b
5. During the pre-shift checks of the MSA Escort ELF<sup>®</sup> personal dust sampler, the battery voltage shall not be less than \_\_\_\_\_.
  - a. 6.25 volts
  - b. 3.75 volts
  - c. 4.80 volts
  - d. 6.0 volts
6. Which of the following is **not** included in the report of respirable dust sampling results to the operator?
  - a. The mine identification number
  - b. The concentration of respirable dust expressed in mg/m<sup>3</sup>
  - c. The reason for voiding any samples
  - d. none of the above

7. Testing and examinations of pumps and sampling assemblies immediately prior to the shift of use must be performed \_\_\_\_\_.
- a. within 1 hour of the beginning of sampling
  - b. within 2 hours of the beginning of sampling
  - c. within 3 hours of the beginning of sampling
  - d. within 24 hours of the beginning of sampling

### III. Calibration

1. The wet test meter must be \_\_\_\_.
  - a. at a 90° angle
  - b. in a level position
  - c. at a 45° angle
  - d. none of the above
  
2. When calibrating a personal dust sampler with a 1 liter, soap-film calibrator, it is necessary to record the average time of \_\_\_\_ readings.
  - a. 2
  - b. 4
  - c. 5
  - d. 6
  
3. When calibrating a personal dust sampler with a wet test meter, it is necessary to record the time of \_\_\_\_ complete revolutions.
  - a. 5
  - b. 3
  - c. 1
  - d. 2
  
4. The water manometer should indicate at least \_\_\_\_ inch(es) of water pressure differential for all personal dust sampling devices.
  - a. 0.5
  - b. 1.0
  - c. 3.0
  - d. 4.0
  
5. Before calibrating, the inside of the soap-film calibrator should be coated with \_\_\_\_\_.
  - a. clear water
  - b. soap film
  - c. oil to make the soap slide easily
  - d. none of the above
  
6. The cutoff voltage of a nickel-cadmium battery is \_\_\_\_ volts per cell.
  - a. 1.0
  - b. 2.0
  - c. 1.3
  - d. 1.2



7. The battery voltage of the Escort ELF<sup>®</sup> personal dust sampler under actual load must be at least \_\_\_\_ volts times the number of nickel-cadmium cells in the battery pack. (Escort ELF<sup>®</sup>)
- 1.2
  - 1.0
  - 1.25
  - 2.35
8. All personal dust samplers must be calibrated every \_\_\_\_ operational hours.
- 160
  - 200
  - 240
  - 320
9. During calibration of any personal dust sampling device, a low reading on the water manometer would indicate \_\_\_\_.
- high barometer
  - high voltage peak
  - system air leak
  - excessive air flow
10. The water manometer should indicate less than \_\_\_\_ inch(es) of water pressure differential for all personal dust sampling devices.
- 0.5
  - 1.0
  - 3.0
  - 2.0
11. A \_\_\_\_ shall calibrate and maintain respirable dust sampling equipment.
- a person directed by a Certified Person
  - Certified Person (Sampling)
  - Certified Person (Maintenance/Calibration)
  - state enforcement agency
12. To become a Certified Person Maintenance and Calibration, the applicant must \_\_\_\_.
- petition the state
  - pass an exam conducted by MSHA
  - attend a course given by the state
  - also be certified for sampling
13. Coal mine dust personal sampling units shall be calibrated in accordance with \_\_\_\_.
- NIST
  - state regulations
  - Informational Report No. 1240
  - company policy

14. MSHA will accept the use of a fast response calibrator for calibrating respirable dust pumps if they meet what requirements? \_\_\_
- a. have an LCD
  - b. average repetitive runs
  - c. have a volumetric tube traceable back to the National Institute of Standards and Technology
  - d. MSHA does not accept fast response calibrators
15. When calibrating any respirable dust sampler, the flow rate shall be 2.0 LPM plus or minus \_\_\_.
- a. 0.1 LPM
  - b. 0.2 LPM
  - c. 0.4 LPM
  - d. 0.3 LPM
16. When calibrating a personal dust sampler with an approved fast response calibrator it is necessary to obtain and average the results of \_\_\_ readings.
- a. 1
  - b. 3
  - c. 5
  - d. 7
17. To be considered suitable for compliance sampling, the respirable dust pump must be properly calibrated and the appropriate approval labels must be affixed to the exterior of the pump.
- a. True
  - b. False

## IV. Maintenance

1. The \_\_\_ of the cyclone should be examined for scoring.
  - a. inner surface
  - b. outer surface
  - c. grit pot
  - d. none of the above
  
2. If an attempt is made to charge a battery with less than \_\_\_ volts per cell, cell polarity may reverse.
  - a. 2.0
  - b. 1.0
  - c. 1.25
  - d. 1.2
  
3. During calibration of any personal dust sampling device, a high reading on the water manometer would indicate \_\_\_\_\_.
  - a. system obstruction
  - b. excessive air flow
  - c. low barometer
  - d. either a or b
  
4. Scratches or cuts on the inside of the sampling head's nylon cyclone are called \_\_\_\_\_.
  - a. scoring
  - b. bruising
  - c. scratches
  - d. marking
  
5. There are \_\_\_ nickel-cadmium cells in the battery pack of the MSA Escort ELF<sup>®</sup> personal dust sampler.
  - a. 3
  - b. 4
  - c. 5
  - d. 6
  
6. A \_\_\_ shall calibrate and maintain respirable dust sampling equipment.
  - a. a person directed by a Certified Person
  - b. Certified Person (Sampling)
  - c. Certified Person (Maintenance/Calibration)
  - d. state enforcement agency

7. It is acceptable to repair respirable dust pumps and battery packs with parts equivalent to those provided by the manufacturer.
  - a. True
  - b. False

## Answers

### Section I

1. D
2. A
3. D
4. B
5. A
6. A

### Section II

1. A
2. D
3. C
4. D
5. C
6. D
7. C

### Section III

1. B
2. A
3. B
4. B
5. B

### Section III (Continued)

6. A
7. A
8. B
9. C
10. C
11. C
12. B
13. C
14. C
15. A
16. B
17. A

### Section IV

1. A
2. B
3. D
4. A
5. B
6. C
7. B

