Exam 2

Started: Nov 8 at 1:01am

Quiz Instructions

Question 1

3 pts

What is the principle of operation of electrochemical sensing portable instruments?

- (●) Chemical oxidation of the test gas
- ( ) Creates organic ions by passing a hydrogen gas through a flame and then measures the conductivity change in the flame as a concentration of the gas
- ( ) uses an ultraviolet lamp to ionize organic compounds to detect and quantify them
- ( ) Chemical reagent changes color

Question 2

3 pts

If you have a 1-L balloon of nitrogen gas at an initial temperature and pressure of 20 C and 760 mmHg and you take that balloon to the top of a mountain where the temperature and pressure are only 5 C and 650 mmHg, what is the new volume of nitrogen in the balloon in liters (assume no resistance to expansion from the balloon membrane)?

- (●) 1.11
- ( ) 0.29
- ( ) 1.23
- ( ) 0.81

Question 3

3 pts

If acetone has an SG of 0.79, how many mL does 2.0 g of acetone occupy?

- (●) 2.53
- ( ) 1.58
- ( ) Not enough information to answer
- ( ) No answer text provided.

Question 4

3 pts

According to a NIOSH analytical method, the limit of detection (LOD) for a chemical is 50 µg, the recommended exposure limit for this chemical is 1.0 mg/m^3. If the detection criteria is an exposure of 10% of the exposure limit, how many liters of air must be collected to obtain the minimum sample mass?

- ( ) 10
- ( ) 50
- ( ) 100
- (●) 500

Question 5

3 pts

Match the following terms to their definitions.

Pneumoconiosis	Generic name for a group
Fibrosis	Scaring of the lungs from
Metal Fume Fever	A complex acute allergic (

Question 6

3 pts

Match the following terms to their definitions.

Cyclone e.g. Dorr-Oliver Cyclone	A gas-solid separation de
Filter Cassette e.g. Three-stage cassette	A collection medium for tc
Rotameter	The main secondary calib

Question 7

3 pts

Match the following terms to their definition.

Mists	created by physical proce
Fogs	created by condensation (
Smokes	Complex mixtures of solid
Fumes	Solid aerosol particles prc
Fibers	Particles that have a leng
Dusts	Suspended particles in ai

Question 8

3 pts

Match the following terms to their definitions.

Sedimentation	The processes by which a
Impaction	Occurs when an aerosol t
Interception	Takes place when an aerc
Brownian Diffusion	The deposition of an aero

Question 9

3 pts

What are the three types of centrifugal fans?

- (●) Forward-curved, Backward-curved, Radial Blade Fan
- ( ) Squirrel cage, forward curve, backward curve
- ( ) Radial, Impeller, backward curve
- ( ) Tubeaxial, propeller, radial

Question 10

3 pts

What do we call the air movement at a given distance from the front of a hood that is necessary to overcome opposing air currents and cause a contaminant to flow into the hood?

- (●) Capture Velocity
- ( ) Face Velocity
- ( ) Duct Velocity

- ○ Slot Velocity

Question 11

3 pts

The velocity of air in a duct is 3,582 ft/min. What is the velocity pressure?

- ◉ 0.7999
- ○ 1.250
- ○ 239,700
- ○ 54.1
- ○ 1,800
- ○ 0.2

Question 12

3 pts

If it is recommended that a patient's hospital room have a minimum of 12 ACH and the room is 15x25x12 ft., what quantity of air needs to be supplied to (and exhausted from) the room in cfm? Assume perfect mixing, Kmix = 1.0

- ◉ 900
- ○ 54000
- ○ 375
- ○ Not enough information to determine

Question 13

3 pts

Match the gas and vapor removal mechanisms to their definitions.

Adsorption	retains the contaminant m
Absorption	retains the contaminant m
Catalyst	the contaminant molecule

Question 14

3 pts

Of the following respirator types, which is the only one acceptable for use in an IDLH atmosphere?

- (●) SCBA
- ( ) Filtering Facepiece
- ( ) PAPR
- ( ) Full-Face Cartridge Respirator
- ( ) Half-Face Cartridge Respirator

Question 15

3 pts

All of the following are requirements of the OSHA respiratory protection program except:

- (●) Psychological Evaluation of employees using respirators
- ( ) Fit- testing of respirators
- ( ) Training and training procedures
- ( ) Procedures for when respirators are not required

Question 16

3 pts

All of the following are steps in the respirator fit-testing procedure except:

- (◉) Shouting
- ( ) Normal Breathing
- ( ) Talking
- ( ) Moving head up and down

Question 17

3 pts

All of the following are primary functions of the skin except:

- (◉) Bio-luminescence
- ( ) Provide a barrier to the environment
- ( ) Protect muscles and tissues
- ( ) Let necessary materials in
- ( ) Temperature control

Question 18

3 pts

All of the following are means of permeation of agents through the skin except:

- (◉) Via telekenetic action
- ( ) Travel on the intracellular lipid pathway
- ( ) Transcellular permeation
- ( ) Through appendages in the skin

Question 19

3 pts

All of the following are chemical factors that may increase chemical absorption and permeation through the skin except:

- (●) Broken skin
- ( ) Chemical volatility and vapor pressure
- ( ) Molecular weight
- ( ) Hydrophilic or lipophilic properties
- ( ) Specific chemical structure

Question 20

3 pts

All of the following are skin factors that may increase chemical absorption and permeation through the skin except:

- (●) Hydrophilic or lipophilic properties
- ( ) Anatomical location
- ( ) Skin thickness
- ( ) Metabolic rates
- ( ) Individual difference

Question 21

3 pts

Given the background oxygen concentration is air is 20.95%, if the concentration of a chemical in air is 6,500 ppm, what would you expect the oxygen concentration to read on an instrument?

- ( ) 20.30%

- ○ 3.25%
- ◉ 12.25%
- ○ Insufficient data to calculate
- ○ 20.10%

Question 22

3 pts

All of the following are advantages of colorimetric tubes except:

- ◉ High precision readings
- ○ Do not require calibration
- ○ Do not require batteries
- ○ They are inexpensive

Question 23

3 pts

When measuring the airborne concentration of Ethylbenzene with a PID equipped with a 10.6 eV lamp, the meter displays a value of 162 ppm. Using the correction factor of 0.47, what is the actual concentration of Ethylbenzene in ppm?

- ◉ 76
- ○ 83
- ○ 318
- ○ 59
- ○ 344
- ○ 59

Question 24

3 pts

If a combustible gas meter reads less than zero, what should you assume about the concentration of flammable vapors in the environment?

- (◉) The concentration is >UEL
- ( ) The concentration is <UEL
- ( ) The instrument needs calibration
- ( ) The instrument needs to be replaced

Question 25

3 pts

When collecting personal air samples, the inlet of the sampling device should be placed in the _____.

- (◉) Breathing Zone
- ( ) Work Zone
- ( ) Anywhere on the worker
- ( ) Anywhere in the work space

Question 26

3 pts

Using the table of the sampling results below, calculate the 8-hour TWA for the sample period in ppm assuming that the un-sampled time has the same concentration as the highest recorded concentration.

Sample No.	Time (min)	Concentration (ppm)
1	101	123
2	91	154
3	94	118

4	99	149

- ○ 136
- ○ 109
- ◉ 139
- ○ 118
- ○ 141

Question 27

3 pts

Using the table of the sampling results below, calculate the TWA for the sample period in ppm.

Sample No.	Time (hrs)	Concentration (ppm)
1	1.2	56
2	2.3	51
3	1.5	44
4	2.0	64

- ◉ 54.1
- ○ 47.3
- ○ 55.3
- ○ 23
- ○ 29

Question 28

3 pts

Using the Brief & Scala Formula provided below, calculate the adjustment factor for converting an 8-hr PEL into a 10-hr PEL and then determine the 10-hr PEL for

Acetonitrile that has an 8-hr PEL of 40 ppm.

$$Q = \frac{8}{h} x \frac{(24 - h)}{16}$$

- (●) 28
- ( ) 2
- ( ) 33
- ( ) 100
- ( ) 57
- ( ) 10

Question 29

3 pts

When taking air samples, you collect the pre and post calibration measurements from the sampling pump as given in the table below. What do you record for the flow rate of the sample pump?

Measurement	Pre-Cal	Post Cal
1	1.735	1.668
2	1.741	1.653
3	1.743	1.657
4	1.733	1.649
5	1.738	1.629

- (●) 1.651
- ( ) 1.695
- ( ) 1.743
- ( ) 1.629

Question 30

3 pts

If the 95UCL of a distribution of personal air samples is 178 ppm and the ACGIH TLV is 200 ppm, what AIHA exposure category would you assign to this exposure?

- ○ 2
- ○ 1
- ◉ 3
- ○ 4

Question 31

3 pts

Personal exposure monitoring for an employee gives a result of 280 ppm as an 8hr TWA. If the PEL is 250 ppm and the SAE for the sampling and analytical method is +/-9.5%, how would you classify this exposure with respect to OSHA compliance?

- ○ Possible Violation
- ◉ Violation
- ○ No Violation
- ○ No answer text provided.

Question 32

3 pts

A rectangular flammable liquids storage room has a floor that is 12 ft by 12 ft. Determine the volumetric flow rate of air in cfm necessary to ventilation the room in compliance with the OSHA 1910.106(d)(4)(iv).

- ◉ Not enough information to calculate

- ○ 168
- ○ 150
- ○ 120

Question 33

3 pts

You are performing Total Dust air monitoring for exposure to Particulates Not Otherwise Regulated (PNOR) per NIOSH Method 0500 that has a sampling and analytical error of 11.04%. Given the PEL for total dust is 15 mg/m^3, if your result was 15.57 mg/m^3, how would you classify this exposure?

- ○ Violation
- ◉ Possible Violation
- ○ No Violation

Question 34

3 pts

For an atmosphere containing Acetonitrile that has an 8hr TWA PEL of 40 ppm and an IDLH value of 137 ppm, what is the maximum use concentration for a full face powered air purifying respirator?

- ◉ <137 ppm
- ○ 40,000 ppm
- ○ 1,000 ppm
- ○ 2,000 ppm

Question 35

3 pts

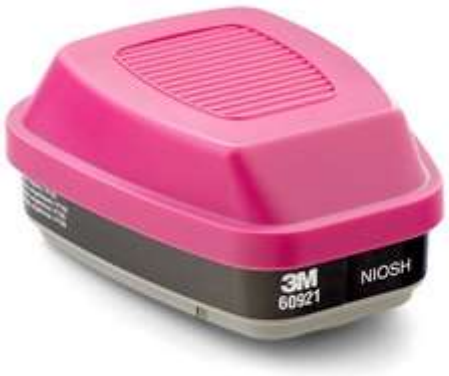
For an atmosphere containing vegetable oil mist that has an 8hr TWA PEL of 15 mg/m^3 and no established IDLH value, what is the maximum use concentration for a half face air purifying respirator?

- (●) 750 mg/m^3
- ( ) 150 mg/m^3
- ( ) 15,000 mg/m^3
- ( ) 375 mg/m^3

Question 36

3 pts

When performing a respiratory protection review at your workplace, you observe an employee in a paint booth spraying a paint that is organic solvent based. The worker is using a full face cartridge respirator with cartridges pictured below. Assuming that there is sufficient oxygen and that previous sampling indicates that a full face APR is appropriate, what is your course of action?



- (●) Stop work and issue the worker cartridges with a green band and magenta cap
- ( ) Stop work and issue the worker cartridges with an olive band
- ( ) Continue, the worker has selected the correct cartridge
- ( ) Allow the work to continue, but inform the supervisor to have the worker change cartridges after the next break

Question 37

3 pts

OSHA's silica standard for construction 1926.1153 - Respirable crystalline silica, Appendix A calls for the use of NIOSH Method 7602 for the analysis of silica samples. The LOD for NIOSH 7602 is 5 µg/sample. If the flow rate of the cyclone is 2.2 lpm, what is the minimum detectable TWA concentration in air for an 8-hour shift as a percentage of the PEL of 50 µg/m^3?

- (●) 9.5%
- ( ) 0.0095%
- ( ) 1056%
- ( ) 36.2%
- ( ) 12.3%

Question 38

3 pts

Upon reporting your results to your client for lead dust sampling that gave a result of 28 ug/m^3, the client asks you to convert your answer to ppm. What is your answer? Note: the molecular weight of lead is 207.2 g/mol.

- ( ) This conversion cannot be calculated
- (●) 0.0033 ppm
- ( ) 3.3 ppm
- ( ) 1.5E6 ppm

Question 39

3 pts

One mole of substance that is a liquid at NTP (25 C and 760 mmHg) that evaporates will occupy how many liters?

- (●) 24.45
- ( ) 22.04
- ( ) 25.6
- ( ) 24.04

Question 40

3 pts

In industrial hygiene, when using the term ppm to describe chemical exposures in air, ppm is a ration of what basis?

- (●) volume/volume
- ( ) mass/mass
- ( ) mass/volume
- ( ) volume/mass

Question 41

3 pts

The acronym PNOR stands for:

- [x] Particulates Not Otherwise Regulated
- [ ] Protection for No Other Regulation
- [ ] Particulates Not Often Recognized
- [ ] Particulates in-Need of Regulation

Question 42

3 pts

Match the following aerosol size fractions with their descriptions:

Inhalable	Will be inhaled; generally
Thoracic	Get past the larynx; gener
Respirable	Reaches alveoli; generall

Question 43

3 pts

Match the following terms to their definitions:

Dusts	solid particles chemically
Mists	liquid droplets chemically
Fogs	liquid droplets chemically
Fumes	solid particles chemically

Question 44

3 pts

A traffic light (stop light) is an example of what type of control?

- (●) Administrative
- ( ) Engineering
- ( ) Elimination
- ( ) PPE

Question 45

3 pts

Process Automation is an example of what type of control?

- (●) Engineering
- ( ) Administrative
- ( ) PPE
- ( ) Substitution

Question 46

3 pts

Random variations in sampling equipment e.g. fluctuations in pump flow, effect:

- (●) Precision
- ( ) Accuracy
- ( ) No answer text provided.
- ( ) No answer text provided.

Question 47

3 pts

What type of respirator is pictured below?

- (●) Powered Air-Purifying Respirator
- ( ) Half-Face Cartridge Respirator
- ( ) Full-Face Cartridge Respirator
- ( ) Self-Contained Breathing Apparatus

Question 48

3 pts

After an employee has received proper BBP training, the employer shall provide a Hepatitis B Vaccination (unless declined by the employee, or the employee has previously received the vaccination) within how many days?

- (●) 10 working days
- ( ) 10 calendar days
- ( ) 7 working days
- ( ) 7 calendar days

Question 49

3 pts

Quantitative fit testing is required when the necessary APF exceeds:

- (●) 100
- ( ) 50
- ( ) 1000
- ( ) 25

Question 50

3 pts

All of the following are exposure pathways for chemicals to the skin except:

- (●) Ingestion
- ( ) Immersion
- ( ) Splashes
- ( ) Deposition
- ( ) Contact with contaminated surfaces

Quiz saved at 1:59am

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