Chapter 1

Multiple Choice Questions

1. Physiological vertigo occurs in normal individuals when:
   a. The brain is confronted with an intersensory mismatch among the three stabilising sensory systems like car sickness, height vertigo, visual vertigo
   b. The vestibular system is subjected to unfamiliar head movement to which it is unadapted like sea sickness
   c. Following a spin and unusual head/neck position like extreme extension when painting a ceiling
   d. All of the above
2. Electronystagmography (calorics) is a:
   a. Vestibular function test
   b. Noise test
   c. Vibration test
   d. None of the above
3. Benign paroxysmal positional vertigo which is due to the presence of degenerative material affecting the free flow of endolymph in the labyrinth (cupololithiasis)—it can be diagnosed by:
   a. Neurodiagnostic studies
   b. The Hallpike manoeuvre
   c. Electronystagmography
   d. None of the above
4. What is tension pneumothorax?
   a. It results from the progressive accumulation of air in the pleural-space, causing high intrathoracic pressures
   b. It results from the progressive accumulation of air in the alveoli, causing high intrathoracic pressures
   c. It results from the progressive accumulation of air in the bronchus, causing high intrathoracic pressures
   d. All of the above
5. What is hemothorax?
   a. The collection of blood in the alveoli
   b. The collection of blood in the pleural space
   c. The collection of blood in bronchus
   d. None of the above
6. The examples of successful prevention of occupational lung diseases by the use of following substitute materials except:
   a. Steel shot instead of quartz sand for abrasive blasting
   b. Non-silica moulding aggregates instead of quartz sand in foundries
   c. Magnesite bricks instead of silica-based refractory bricks for furnaces
   d. Blue asbestos instead white asbestos
7. The examples of successful prevention of occupational lung diseases by using of following substitute materials:
   a. Use of synthetic grinding wheels (e.g. silicon carbide) instead of sand-stone wheels
   b. Replacement of arsenicals by arsenic-free pesticides
   c. Substitute materials for asbestos
   d. All of the above

8. The basic elements of good housekeeping in relation to the control of respiratory hazards at the workplace are all except:
   a. Adequate and immediate disposal of the waste liable to become airborne
   b. Periodic cleaning of the workplace with vacuum cleaners or water in order to avoid accumulation of dust
   c. Manual dry cleaning of dusty floor
   d. Keeping all containers with volatile irritant chemicals tightly closed
9. Personal hygiene at work is always necessary including all except:
   a. Washing facilities
   b. Cloakroom facilities
   c. Safety showers facilities
   d. First aid facilities
10. The medical surveillance of the working environment should include all except:
   a. Identification and evaluation of the environmental factors which may affect workers' health
   b. Assessment of conditions of occupational hygiene and factors in the organisation of work which may give rise to risks for the health of the workers
   c. Assessment of control systems designed to eliminate or reduce exposure
   d. Assessment of process safety
11. Measurement of concentration of air pollutants of the industry may be necessary for the following main purposes except:
   a. To assess the compliance of the concentration of air pollutants with the established exposure limits
   b. To assess the possible effect of technological changes or control measures on the concentrations
   c. To identify the main sources of air-pollution
   d. To assess the level of exposure of the surrounding populations
12. Surveillance of workers' health shall include:
   a. Health assessment of workers before their assignment to specific tasks which may involve a danger to their health or that of others
   b. Health assessment at periodic intervals during employment which involves exposure to particular hazard to health
   c. Health assessment on resumption of work after a prolonged absence for health reasons for the purpose of determining its possible occupational causes
   d. All of the above
13. What is breath biopsy?
   a. A non-invasively collects and measures volatile organic compounds (VOC) biomarkers from a patient's breath
   b. Bronchoalveolar lavage (BAL)
   c. Swab test from throat
   d. None of the above
14. By sampling breathe for a minute or longer, even very low levels of systemic VOC biomarkers can be:
   a. Preconcentrated
   b. Collected
   c. Analyzed
   d. All of the above
15. What is liquid biopsy?
   a. Liquid biopsy is a test done on a sample of blood to look for cancer cells from a tumour that is circulating in the blood, or for pieces of DNA from tumour cells that are in the blood
   b. Biopsy through some liquid media
   c. Liquid guided biopsy
   d. None of the above
16. All are correct statements about the application of PFT except:
   a. In determining the type and extent of any lung disease process
   b. In following the progression of disease for changes in severity or in response to therapy

c. In developing further understanding between the functional, radiological and pathological changes
d. No use in legal and compensation purposes

17. Important process of respiration:
a. Ventilation
b. Diffusion
c. Perfusion
d. All of the above

18. What is ventilation?
a. The process of drawing into the atmospheric air to reach the alveoli (inspiration) and removal of gases back to atmosphere (expiration)
b. The process by which the gas transfers across the alveoli capillary membrane due to tension gradient O_2 passes from alveolar gas to pulmonary capillary blood and CO_2 from capillary blood to lung alveoli
c. The flow of adequate quantity of blood through the lungs so that the diffuse gases are carried away
d. All of the above

19. What is diffusion?
a. The process of drawing into the atmospheric air to reach the alveoli (inspiration) and removal of gases back to atmosphere (expiration)
b. The process by which the gas transfers across the alveoli capillary membrane due to tension gradient O_2 passes from alveolar gas to pulmonary capillary blood and CO_2 from capillary blood to lung alveoli
c. The flow of adequate quantity of blood through the lungs so that the diffuse gases are carried away
d. All of the above

20. What is perfusion?
a. The process of drawing into the atmospheric air to reach the alveoli (inspiration) and removal of gases back to atmosphere (expiration)
b. The process by which the gas transfers across the alveoli capillary membrane due to tension gradient O_2 passes from alveolar gas to pulmonary capillary blood and CO_2 from capillary blood to lung alveoli
c. The flow of adequate quantity of blood through the lungs so that the diffuse gases are carried away
d. All of the above

21. Relative contraindications for spirometry include:
a. Haemoptysis of unknown origin
b. Pneumothorax
c. Unstable angina pectoris
d. All of the above

22. Relative contraindications for spirometry include:
a. Recent myocardial infarction
b. Thoracic aneurysms
c. Abdominal aneurysms
d. All of the above

23. Relative contraindications for spirometry include:
a. Cerebral aneurysms
b. Recent eye surgery (within 2 weeks due to increased intraocular pressure during forced expiration)
c. Recent abdominal or thoracic surgical procedures
d. All of the above

24. Relative contraindications for spirometry include all except:
a. Patients with a history of syncope associated with forced exhalation
b. Patients with active tuberculosis
c. Perforation of nasal septum
d. Recent tympanoplasty

25. Following are the lung volumes except:
a. Tidal volume (TV)
b. Inspiratory reserve volume (IRV)
c. Expiratory reserve volume (ERV)
d. Rest volume (RV)

26. What is tidal volume (TV)?
a. The amount of gas inspired or expired with each breath
b. Maximum amount of additional air that can be inspired from the end of a normal inspiration
c. The maximum volume of additional air that can be expired from the end of a normal expiration

d. The volume of air remains in the lung after a maximal expiration

27. What is inspiratory reserve volume (IRV)?
    a. The amount of gas inspired or expired with each breath
    b. Maximum amount of additional air that can be inspired from the end of a normal inspiration
    c. The maximum volume of additional air that can be expired from the end of a normal expiration
    d. The volume of air remains in the lung after a maximal expiration
28. What is expiratory reserve volume (ERV)?
    a. The amount of gas inspired or expired with each breath
    b. Maximum amount of additional air that can be inspired from the end of a normal inspiration
    c. The maximum volume of additional air that can be expired from the end of a normal expiration
    d. The volume of air remains in the lung after a maximal expiration
29. What is residual volume (RV)?
    a. The amount of gas inspired or expired with each breath
    b. Maximum amount of additional air that can be inspired from the end of a normal inspiration
    c. The maximum volume of additional air that can be expired from the end of a normal expiration
    d. The volume of air remains in the lung after a maximal expiration
30. All are the lung capacities except:
    a. Total lung capacity (TLC)
    b. Vital capacity (VC)
    c. Functional residual capacity (FRC)
    d. Internal capacity (IC)
31. What is total lung capacity (TLC)?
    a. The volume of air contained in the lungs at the end of a maximal inspiration
    b. The maximum volume of air that can be forcefully expelled from the lungs following a maximal inspiration
    c. The volume of air remaining in the lung at the end of a normal expiration
    d. Maximum volume of air that can be inspired from end expiratory position
32. What is vital capacity (VC)?
    a. The volume of air contained in the lungs at the end of a maximal inspiration
    b. The maximum volume of air that can be forcefully expelled from the lungs following a maximal inspiration
    c. The volume of air remaining in the lung at the end of a normal expiration
    d. Maximum volume of air that can be inspired from end expiratory position
33. What is functional residual capacity (FRC)?
    a. The volume of air contained in the lungs at the end of a maximal inspiration
    b. The maximum volume of air that can be forcefully expelled from the lungs following a maximal inspiration
    c. The volume of air remaining in the lung at the end of a normal expiration
    d. Maximum volume of air that can be inspired from end expiratory position
34. What is inspiratory capacity (IC)?
    a. The volume of air contained in the lungs at the end of a maximal inspiration
    b. The maximum volume of air that can be forcefully expelled from the lungs following a maximal inspiration
    c. The volume of air remaining in the lung at the end of a normal expiration

d. Maximum volume of air that can be inspired from end expiratory position

35. For the assessment of ventillatory pulmonary functions, generally the following spirometers are used:
    a. Water sealed type
    b. Dry rolling type
    c. Dry bellows type
    d. All of the above
36. Which type of spirometer is very much convenient to use in the field study as well as in the laboratory?
    a. Water sealed type
    b. Dry rolling type
    c. Dry bellows type
    d. None of the above
37. What is forced expiratory flow (FEF 25–75%)?
    a. The volume of air exhaled during the middle of the forced expiratory spirogram
    b. It is the forced expiratory flow at 75–85% of the forced expiratory spirogram
    c. The volume of air exhaled per unit of time measured between 200 and 1200 ml of forced expiratory spirogram (FES)
    d. This is the maximum flow rate achieved by the patient during the forced vital capacity manoeuvre beginning after full inspiration and starting and ending with maximal expiration
38. What is peak expiratory flow rate (FEFR)?
    a. This is the maximum flow rate achieved by the patient during the forced vital capacity manoeuvre beginning after full inspiration and starting and ending with maximal expiration
    b. This value is determined by having the patient breathe in and out as rapidly and fully as possible for 12–15 seconds
    c. It is the forced expiratory flow at 75–85% of the forced expiratory spirogram
    d. None of the above
39. What is maximum voluntary ventilation (MVV)?
    a. This is the maximum flow rate achieved by the patient during the forced vital capacity maneuver beginning after full inspiration and starting and ending with maximal expiration
    b. This value is determined by having the patient breathe in and out as rapidly and fully as possible for 12–15 seconds
    c. It is the forced expiratory flow at 75–85% of the forced expiratory spirogram
    d. None of the above
40. The result of the following dynamic PFT test places patients in the following abnormal categories except:
    a. Obstructive disorder
    b. Restrictive disorder
    c. Combined (restrictive and obstructive)
    d. Pneumoconiotic disorder
41. What is obstructive index?
    a. $FEV_{1.0}$/FVC ratio
    b. Observed FVC/Pred. FVC ratio
    c. Both a and b
    d. None of the above
42. What is restrictive index?
    a. $FEV_{1.0}$/FVC ratio
    b. Observed FVC/Pred. FVC ratio
    c. Both a and b
    d. None of the above
43. Following are the characteristics of obstructive lung disorder except:
    a. FEV_1/FVC (%) is reduced
    b. FVC % of predicted value increased
    c. PEFR reduced
    d. Slop of FV curve increased
44. Following are the characteristics of restrictive lung disorder except:
    a. FEV_1/FVC (%) is normal or increased

b. FVC % of predicted value decreased
c. PEFR normal or reduced
d. Slop of FV curve decreased

45. Following are the characteristics of combined lung disorder:
a. FEV_1% of predicted value decreased
b. FVC % of predicted value decreased
c. Both a and b
d. None of the above

46. Spirometry can measure all except:
a. RV
b. FEV_1
c. FVC
d. $FEF_{200–1200}$

47. Reserve or residual volume (RV) can be measured by all except:
a. Body plethysmography
b. Spirometry
c. X-ray chest – PA and lateral views
d. Helium dilution method

48. Body plethysmography can measure:
a. RV
b. FEV_1
c. FVC
d. All of the above

49. Helium dilution method can measure following lung functions:
a. PEFR
b. RV
c. FEV_1
d. All of the above

50. Lung diffusing capacity is determined by:
a. Surface area of alveoli
b. Integrity of the alveolar membrane
c. The pulmonary vascular bed
d. All of the above

51. What does lung diffusing capacity indicate?
a. The measurement of diffusion capacity gives important information regarding the integrity and size of the alveolar blood membrane
b. It informs the alveolar gas exchange capacity
c. It indicates hypoxia
d. None of the above

52. Lung diffusing capacity is reduced in the following disorders except:
a. Pulmonary fibrosis
b. Pulmonary emphysema
c. Laryngitis
d. Pulmonary emboli

53. DLCOc is measured by using:
a. Carbon monoxide
b. Carbon dioxide
c. Oxygen
d. None of the above

54. What does perfusion indicate?
a. It provides important information on gas exchange and oxygen delivery to the tissues
b. It informs the alveolar gas exchange capacity
c. The measurement of diffusion capacity gives important information regarding the integrity and size of the alveolar blood membrane
d. None of the above

55. Type-1 respiratory failure is defined as:
a. When partial pressure of oxygen (PaO_2) <8 kPa with normal partial pressure of carbon dioxide ($PaCO_2$)
b. When hypoxia is accompanied by hypercapnia ($PaCO_2$ >6.5 kPa)
c. Both a and b
d. None of the above

56. Type 2 respiratory failure is defined as:
a. When partial pressure of oxygen (PaO_2) <8 kPa with normal partial pressure of carbon dioxide ($PaCO_2$)
b. When hypoxia is accompanied by hypercapnia ($PaCO_2$ >6.5 kPa)
c. Both a and b
d. None of the above

57. Causes of type 1 respiratory failure include:
a. Pneumonia
b. Pulmonary embolism
c. Both a and b
d. None of the above

58. Causes of type 2 respiratory failure include:
a. Respiratory muscle weakness
b. COPD

c. Both a and b
d. None of the above

59. Bronchial provocation (challenge) testing is done with the medicine called:
a. Methacholine
b. Steroid
c. Histamine
d. Atropine

60. What is pulse oximetry?
a. Pulse oximetry is a tool to look at the oxygen levels in the blood-stream
b. To measure the pulse
c. To measure the relation of pulse and oxygen
d. None of the above

61. What is the meaning of oxygen saturation of blood?
a. Oxygen saturation tells us how much of the hemoglobin is loaded with oxygen in the bloodstream
b. How much oxygen is absorbed in theblood
c. Oxygen and CO_2 relation in blood
d. None of the above

62. How much is the normal oxygen saturation of blood?
a. 80% to 90%
b. 92% to 99%
c. 75% to 85%
d. 85% to 90%

63. What are the expected results of PFT in a case of occupational asthma?
a. FEV_1 is decreased
b. VC is decreased
c. FEV_1/FVC is decreased
d. All of the above

64. The ILO first published classification of chest X-ray on pneumoconiosis in the year:
a. 1945
b. 1950
c. 1960
d. 1965

65. The minimum capacity of X-ray generator to diagnose pneumoconiosis is:
a. More than 200 mA at 125 kv
b. More than 300 mA at 125 kv
c. More than 400 mA at 125 kv
d. More than 500 mA at 125 kv

66. Objectives of classification of ILO radiograph on pneumoconiosis are all except:
a. To codify the radiographic abnormalities of the pneumoconiosis in a simple, reproducible manner
b. The classification neither defines pathological entities nor takes into account of working capacity
c. It does not imply legal definitions of pneumoconiosis for compensation purposes
d. It set or imply a level at which compensation is payable

67. Uses of classification of ILO radiograph on pneumoconiosis are all except:
a. It is used internationally for epidemiological research
b. It is used for screening and surveillance of those in dusty occupations
c. It is not used for clinical purposes
d. It is used for better international comparability of data concerning the pneumoconiosis

68. Type of classification of ILO radiograph on pneumoconiosis may be:
a. Complete classification (with 22 X-ray chest PA view plates)
b. Abbreviated classification (with 14 X-ray chest PA view plates)
c. Complete classification (with 24 X-ray chest PA view plates)
d. Both a and b

69. Technical Quality of the X-ray plates in classification of ILO radiograph on pneumoconiosis are of the following types except:
a. Grade 1: Good
b. Grade 2: Acceptable, with no technical defect likely to impair classification of the radiograph for pneumoconiosis
c. Grade 3: Unacceptable, with some technical defect and not adequate for classification purposes
d. Grade 4: Unacceptable for classification purposes

70. Parenchymal abnormalities according to classification of ILO radiograph on pneumoconiosis may be:
    a. Small opacities
    b. Medium opacities
    c. Large opacities
    d. Both a and c
71. The category of the profusion in ILO radiograph is based on:
    a. The assessment of the concentration of small opacities by comparison with standard radiographs
    b. The assessment of the number of opacities by comparison with standard radiographs
    c. The assessment of the number of big opacities by comparison with standard radiographs
    d. None of the above
72. In ILO radiograph of pneumoconiosis, the profusion is classified into following number of categories:
    a. Two
    b. Four
    c. Three
    d. Five
73. A radiograph with profusion of small opacities judged to be similar in appearance to that depicted on a category 2/2 standard radiograph but category 1 was seriously considered as an alternative before deciding to classify it as category 2. What is the profusion sub-category?
    a. 2/2
    b. 2/1
    c. 1/2
    d. 2/3
74. A radiograph showing profusion much greater than that depicted on a subcategory 3/3 standard radiograph is classified as subcategory:
    a. 3/–
    b. 3/+
    c. 3/4
    d. 2/3
75. Each lung field is divided into three zones (upper, middle, lower) by:
    a. Horizontal lines drawn at approximately one-third of the vertical distance between the lung apices and the domes of the diaphragm
    b. Horizontal lines drawn at approximately one-third of the vertical distance between the lung apices and the CP angle
    c. Horizontal lines drawn at approximately one-third of the vertical distance between the lung apices and the cardiophrenic angle
    d. None of the above
76. Shape of the small opacities in classification of ILO radiograph on pneumoconiosis are subdivided into:
    a. Rounded
    b. Irregular
    c. Intermediate
    d. Both a and b
77. Small rounded opacities in Classification of ILO radiograph on pneumoconiosis are divided into all except:
    a. p
    b. q
    c. r
    d. s
78. Small irregular opacities in classification of ILO radiograph on pneumoconiosis are divided into all except:
    a. s
    b. t
    c. u
    d. q
79. What does 'p' mean in ILO radiograph on pneumoconiosis?
    a. Small rounded opacities with diameter up to about 1.5 mm
    b. Small rounded opacities with diameter exceeding about 1.5 mm andup to about 3 mm
    c. Small rounded opacities with diameter exceeding about 3 mm and up to about 10 mm
    d. Opacities with width up to about 1.5 mm
80. What does 'q' mean in ILO radiograph on pneumoconiosis?

a. Small rounded opacities with diameter up to about 1.5 mm
b. Small rounded opacities with diameter exceeding about 1.5 mm and up to about 3 mm
c. Small rounded opacities with diameter exceeding about 3 mm and up to about 10 mm
d. Opacities with width up to about 1.5 mm

81. What does 'r' mean in ILO radiograph on pneumoconiosis?
a. Small rounded opacities with diameter up to about 1.5 mm
b. Small rounded opacities with diameter exceeding about 1.5 mm and up to about 3 mm
c. Small rounded opacities with diameter exceeding about 3 mm and up to about 10 mm
d. Opacities with width up to about 1.5 mm

82. What does 's' mean in ILO radiograph on pneumoconiosis?
a. Small irregular opacities with width up to about 1.5 mm
b. Small irregular opacities with width exceeding about 1.5 mm and up to about 3 mm
c. Small irregular opacities with width exceeding about 3 mm and up to about 10 mm
d. Small rounded opacities with diameter up to about 1.5 mm

83. What does 't' mean in ILO radiograph on pneumoconiosis?
a. Small irregular opacities with width up to about 1.5 mm
b. Small irregular opacities with width exceeding about 1.5 mm and up to about 3 mm
c. Small irregular opacities with width exceeding about 3 mm and up to about 10 mm
d. Small rounded opacities with diameter up to about 1.5 mm

84. What does 'u' mean in ILO radiograph on pneumoconiosis?
a. Small irregular opacities with width up to about 1.5 mm
b. Small irregular opacities with width exceeding about 1.5 mm and up to about 3 mm
c. Small irregular opacities with width exceeding about 3 mm and up to about 10 mm
d. Small rounded opacities with diameter up to about 1.5 mm

85. What does'q/t' mean in ILO radiograph on pneumoconiosis?
a. 'q' is predominant (primary) and 't' is secondary
b. 'q' is secondary, and 't' is predominant (primary)
c. Both 'q' and 't' are secondary
d. Both 'q' and 't' are primary

86. What is a large opacity in ILO radiograph on pneumoconiosis?
a. A large opacity is defined as an opacity having the largest dimension exceeding 10 mm
b. A large opacity is defined as an opacity having the largest dimension exceeding 3 mm
c. A large opacity is defined as an opacity having the largest dimension exceeding 100 mm
d. A large opacity is defined as an opacity having the largest dimension exceeding 50 mm

87. One out of three categories of large opacities in ILO radiograph on pneumoconiosis is:
a. Category 'a'
b. Category 'p'
c. Category 's'
d. None of the above

88. What is a pleural plaque?
a. It is referred to thickening of the visceral pleura
b. It is a localised pleural thickening, generally of the parietal pleura
c. Both a and b
d. None of the above

89. How width of pleural plaque is measured?
a. It is made from the innermost margin of the rib to the innermost sharp margin of the plaque at the pleural-parenchymal boundary

b. It is the visible maximum width of a plaque
c. It is an imaginary width
d. None of the above

90. What is width 'a' in classification of ILO radiograph on pneumoconiosis?
a. about 3 mm up to about 5 mm
b. about 5 mm up to 10 mm
c. over about 10 mm.
d. None of the above

91. What is width 'b' in classification of ILO radiograph on pneumoconiosis?
a. about 3 mm up to about 5 mm
b. about 5 mm up to 10 mm
c. over about 10 mm.
d. None of the above

92. What is width 'c' in classification of ILO radiograph on pneumoconiosis?
a. about 3 mm up to about 5 mm
b. about 5 mm up to 10 mm
c. over about 10 mm.
d. None of the above

93. Chest wall pleural plaque in classification of ILO radiograph on pneumoconiosis is of following types:
a. Face-on
b. In-profile
c. Both a and b
d. None of the above

94. In-profile and face-on pleaural plaque in classification of ILO radiograph on pneumoconiosis are available in:
a. Chest wall
b. Diaphragmatic
c. Mediastinal
d. All of the above

95. Extent of pleural plaque in classification of ILO radiograph on pneumoconiosis is measured for:
a. Chest wall plaque
b. Diaphragmatic plaque
c. Mediastinal plaque
d. All of the above

96. Extent of the pleural plaque in classification of ILO radiograph on pneumoconiosis is:
a. Combined for both in-profile and face-on varieties
b. For only in-profile variety
c. For only face-on variety
d. None of the above

97. Extent of pleural plaque in classification of ILO radiograph on pneumoconiosis are of following types:
a. Extent 1
b. Extent 2
c. Extent 3
d. All of the above

98. Diffuse pleural thickening occurs in:
a. Parietal pleura
b. Visceral pleura
c. Mediastinal pleura
d. All of the above

99. The symbol 'ax' in classification of ILO radiograph on pneumoconiosis means:
a. Atherosclerotic aorta
b. Significant apical pleural thickening
c. Coalescence of small opacities
d. Cor pulmonale

100. The symbol 'aa' in classification of ILO radiograph on pneumoconiosis means:
a. Atherosclerotic aorta
b. Significant apical pleural thickening
c. Coalescence of small opacities
d. Cor pulmonale

101. The symbol 'at' in classification of ILO radiograph on pneumoconiosis means:
a. Atherosclerotic aorta
b. Significant apical pleural thickening
c. Coalescence of small opacities
d. Cor pulmonale

102. The symbol 'cp' in classification of ILO radiograph on pneumoconiosis means-
a. Atherosclerotic aorta
b. Significant apical pleural thickening
c. Coalescence of small opacities
d. Cor pulmonale

103. What is the meaning of DICOM in ILO (2011-D) standard digital images?
a. Digital imaging and communications in medicine
b. Digital image cum objective mechanism
c. Display and communication
d. None of the above

104. Examples of approaches not recommended for viewing soft copies in ILO (2011-D) standard digital images include all except:
   a. Displaying the images on a medical-grade flat-panel monitor designed for diagnostic radiology rather than on a personal computer screen
   b. Comparing the subject digital image to ILO (2000) standard radiographs displayed on a view box
   c. Viewing the subject digital image, or the ILO (2011-D) standard digital images (or both) in formats reduced to less than two-thirds of their full size
   d. Using images printed on paper for classification

105. What is a nanotechnology?
   a. Nanotechnology can be defined as the manipulation, precision placement, measurement, modelling or manufacture of sub-100 nm scale matter
   b. Very small particle used in engineering process
   c. A technique of engineering process
   d. None of the above

106. What is the size of a nanoparticle?
   a. 10 micrometers and below
   b. 5 micrometers and below
   c. 0.1 micrometers and below
   d. 1 micrometer and below

107. Nanoparticle of diesel exhaust can produce:
   a. Exacerbation of asthma
   b. COPD
   c. Lung cancer
   d. All of the above

108. Nanoparticles from welding fume can produce all except:
   a. Metal fume fever and bronchitis
   b. Airway irritation and chemical pneumonitis
   c. Flash eye
   d. Lung cancer

109. Following may be the application of nanotechnology:
   a. Carbon nanotubes
   b. Fullerenes
   c. Quantum dots
   d. All of the above

110. Nanoparticles can be absorbed through:
   a. Lung
   b. Skin
   c. Gut
   d. All of the above

111. Following may be the use of nanoparticles in medical technology:
   a. Nanomedicine
   b. Anti-ageing face cream
   c. Sunscreen
   d. All of the above

112. Following may be the advanced use of nanoparticles as potential medical nanoparticles:
   a. Carbon-based nanoparticles such as C60 and carbon nanotubes
   b. Liposomes
   c. Dendrimers
   d. Polymers

113. Following may be the pulmonary effect of nanoparticles:
   a. Intracellular oxidative stress and cell injury
   b. Lung inflammation and fibrogenicity
   c. Lung cancer
   d. All of the above

114. Nanoparticle-derived oxidative stress may result in toxicity such as:
   a. Inflammation
   b. Proliferation
   c. Genotoxicity
   d. All of the above

115. Following may be the effect of nanoparticles in cellular structure:
   a. Unusual toxicokinetics
   b. Unusual microtoxicokinetics
   c. Unusual macrotoxicokinetics
   d. None of the above

116. The main threats to life in fires are all except:
   a. Toxic gases
   b. Heat

c. Oxygen deficiency
d. Apprehension

117. Hydrogen cyanide is formed in many fires especially those involving:
a. Wool
b. Silk
c. Nylon and polyurethane products
d. All of the above

118. What does the pyrolysis mean?
a. Oxidative degeneration
b. Thermal decomposition
c. Hydrolysis
d. None of the above

119. Reactive airways dysfunction syndrome are caused by all except:
a. Hydrogen sulphide
b. Nitrogen dioxide
c. Carbon dioxide
d. Sulphur dioxide

120. Reactive airways dysfunction syndrome are caused by all except:
a. Sulphuric acid
b. Ammonia and chlorine
c. Ethylene oxide and phosgene
d. Methane

121. Following chemical can inhibit cellular respiration and induce histotoxic hypoxia:
a. Hydrogen cyanide
b. Hydrogen sulphide
c. Both a and b
d. None of the above

122. Normal oxygen content of atmosphere is (volume %):
a. 20.946
b. 21.00
c. 19.946
d. 22.123

123. Loss of consciousness with fainting or coma and rapidly fatal may occur if oxygen concentration is:
a) <6%
b. <10%
c. <16%
d. None of the above

124. Dizziness and shortness of breath on exertion; pulse rate accelerated and volume of breathing increased when oxygen concentration in atmosphere is:
a. 13–10%
b. 16–13%
c. 13– 6%
d. <16%

125. Hyperbaric oxygen therapy is a well-established treatment for all except:
a. Decompression sickness
b. Serious infections
c. Bronchial asthma
d. Wounds that would not heal as a result of diabetes or radiation injury

126. Side effects of hyperbaric oxygen therapy are all except:
a. Middle ear injuries, including leaking fluid and eardrum rupture, due to increased air pressure
b. Lung collapse caused by air pressure changes (barotrauma)
c. Seizures as a result of too much oxygen (oxygen toxicity) in central nervous system
d. Sudden death

127. The examples of confined spaces are all except:
a. Trenches and pits
b. Sewers and tunnels
c. Submarines and space craft
d. Open cast mines

128. Death within the confined space is due to all except:
a. Asphyxia due to oxygen deficiency
b. Carbon monoxide
c. Heat stress
d. Hydrogen sulphide

129. In order to avoid gassing accidents in confine space, safe systems of work must be adhered to and these often require the use of following measure:
a. Electronic monitors or detector tubes to test for toxic, flammable and asphyxiating gases before initial entry to a confined space and while the work continues
b. The space should be well ventilated before entry
c. Appropriate breathing apparatus has to be worn
d. All of the above

130. What is black damp?
   a. It was the name given to the residual gas encountered in mines where the oxygen has been removed by natural chemical oxidative processes such as in the oxidation of coal, timber and iron sulphide
   b. Coal mines are called black damp
   c. Black water
   d. None of the above

131. The old flame safety lamps will automatically extinguish, indicating that miners must not enter that section of the mine when the oxygen concentration drop below:
   a. 12%
   b. 16%
   c. 10%
   d. 6%

132. What is fire damp?
   a. It is methane which is present under pressure in coal seams and may be given off with carbon dioxide and nitrogen accompanied by audible hissing noise during mining
   b. Petroleum product
   c. Hydrogen disulphide
   d. None of the above

133. Presence of methane in mines can be established by:
   a. Davy lamp
   b. Henry lamp
   c. Wilson lamp
   d. None of the above

134. Davy lamp for the detection of methane gas in mines was introduced in 1812 by:
   a. Sir Humph Davy
   b. Sir Humphrey Davy
   c. Sir Humphy Davy
   d. None of the above

135. What is rock gas?
   a. Nitrogen gas in mines
   b. Sulphur dioxide gas in mines
   c. Carbon dioxide gas in rock mines
   d. None of the above

136. What is stink damp?
   a. Carbon monoxide in mines
   b. Hydrogen sulphide in mines
   c. Nitrogen gas in mines
   d. None of the above

137. What is after damp?
   a. It is the mixture of gases remaining after an explosion of "fire damp" or methane and/or coal dust in the mines
   b. It is about the methane in mines
   c. It is the fresh area of mines beyond methane gas
   d. None of the above

138. Chemical responsible for the deaths of miners and rescuers in numerous mining disasters:
   a. Oxide of nitrogen
   b. Carbon dioxide
   c. Carbon monoxide
   d. Hydrogen cyanide

139. The main constituents of after damp in mines are all except:
   a. Carbon monoxide
   b. Oxide of nitrogen
   c. Acetylene
   d. Methane

140. Why is methylene chloride fume inhalation a rare cause of carbon monoxide poisoning?
   a. In the liver it is metabolised to carbon monoxide
   b. It contains carbon monoxide
   c. It converts carbon dioxide into carbon monoxide
   d. None of the above

141. Carbon monoxide has the following properties except:
   a. Colourless
   b. Odourless
   c. Tasteless
   d. Irritant

142. Carbon monoxide has the chemical property of:
   a. It is a chemical asphyxiant
   b. It combines with haemoglobin with an affinity some 250 times that of oxygen to form carboxy haemoglobin (COHb) in the blood
   c. Carbon monoxide also increases the oxygen affinity of haemoglobin and

causes the oxygen dissociation curve to shift to the left by impending the release of oxygen to the tissues
d. All of the above

143. Experimental studies suggest that carbon monoxide exerts a direct action by combining with other haem-containing proteins in cells such as:
a. Cytochrome oxidase
b. Myoglobin
c. Cytochrome P450
d. All of the above

144. The affinity of carbon monoxide for myoglobin is even greater than for haemoglobin. Binding to cardiac myoglobin causes:
a. Myocardial depression
b. Hypotension
c. Arrhythmias
d. All of the above

145. COHb level of heavy cigarette smokers is:
a. Above 10%
b. Above 5%
c. Above 20%
d. Above 15%

146. Why methylene chloride (dichloromethane) can enhance the COHb in blood?
a. It contains CO
b. Carbon monoxide is an important metabolite of dichloromethane and form COHb
c. It enhances the absorption of carbon monoxide
d. None of the above

147. Methylene chloride (dichloromethane) is widely used as:
a. Solvent
b. Main ingredient of commonly used removers of paint and varnish from wood
c. Both a and b
d. None of the above

148. Dichloromethane is rapidly absorbed through:
a. Skin contact
b. Lungs as a vapour
c. Both a and b
d. None of the above

149. Dichloromethane is metabolised in the:
a. Liver
b. Lungs
c. Spleen
d. Pancreas

150. The classical cherry pink colour of the skin in carbon monoxide toxicity if present suggests a carboxy haemoglobin level is over:
a. 50%
b. 40%
c. 30%
d. 20%

151. Correct statement about carbon monoxide poisoning is:
a. Venous blood frequently looks arterial
b. Arterial blood frequently looks venous
c. Cherry red colour of the skin
d. Fatal levels of COHb in healthy people are usually in excess of 20%

152. COHb levels in heparinised blood samples in CO toxicity are measured by:
a. Dedicated CO-oximeter
b. Spectrophotometry
c. Both a and b
d. None of the above

153. In postmortem blood of CO toxicity following may be the preferred method of analysis:
a. Gas chromatographic
b. Dedicated CO-oximeter
c. Spectrophotometry
d. Breath biopsy

154. In acute poisoning of carbon monoxide, following may be the common abnormalities of posture and tone:
a. Cogwheel rigidity
b. Opisthotonus
c. Flaccidity or spasticity
d. All of the above

155. In acute poisoning of carbon monoxide, adult with coronary heart disease may experience:
a. Angina
b. Arrhythmias
c. Myocardial infarction
d. All of the above

156. What is the correct statement about the biological half-life of COHb in carbon monoxide poisoning?
   a. It is normally about 4 hours
   b. Longer if induced by methylene chloride exposure
   c. Both a and b
   d. None of the above

157. Hyperbaric oxygen in CO toxicity should be considered for all except:
   a. Pregnant women and for patients who have evidence of a period of unconsciousness
   b. Neurological or psychiatric symptoms
   c. Breathlessness on exertion
   d. Cardiac complications and carboxy haemoglobin levels above 40%

158. Hyperbaric oxygen at 2.5 atmospheres (about 252 kPa) reduces the half-life of COHb in acute CO toxicity to:
   a. 60 minutes
   b. 2 hours
   c. 20 minutes
   d. 30 minutes

159. Carbon monoxide poisoning is unique in that neuropsychiatric signs can appear insidiously weeks after the patient appears to have recovered with:
   a. Vegetative state and a kinetic mutism
   b. Parkinsonism and agnosis
   c. Visual impairment and amnestic-confabulatory states
   d. All of the above

160. The patient of CO poisoning after a clear period of several days can develop changes in personality typified by:
   a. Increases irritability
   b. Verbal aggressiveness
   c. Violence, impulsiveness and moodiness
   d. All of the above

161. On computerised axial tomography or magnetic resonance imaging (MRI) in CO toxicity following abnormalities are seen in the brain:
   a. Bilateral necrosis of the globus pallidus
   b. Lesions in the basal ganglia, hippocampus and white matter
   c. Lesions in hippocampus and white matter
   d. All of the above

162. The neurological examination of subacute CO toxicity should include tests of fine movement and balance such as:
   a. Finger-nose movement
   b. Romberg's test
   c. Heel-toe walking
   d. All of the above

163. Chronic exposure of carbon monoxide in pregnancy causes:
   a. Growth retardation
   b. Fetal distress and death
   c. Fetal death
   d. All of the above

164. How is iron pentacarbonyl, $Fe(CO)_5$ is formed?
   a. Whenever carbon monoxide at a high partial pressure comes in contact with iron or steel such as might occur in steel cylinders containing carbon monoxide
   b. Whenever iron is heated without oxygen
   c. Whenever iron ores is extracted
   d. None of the above

165. Following may be the property of iron pentacarbonyl, $Fe(CO)_5$:
   a. It is a highly toxic flammable liquid
   b. Liquid carbon pentacarbonyl has been used as an antiknocking agent in some gasolines
   c. Exposed workers develop the immediate onset of dyspnea, headache, vomiting and giddiness and death may occur between 4 and 11 days after exposure, resulting from pulmonary consolidation and degenerating changes in the central nervous system
   d. All of the above

166. Synonyms of hydrogen cyanide (HCN) are all except:
   a. Hydrocyanic acid
   b. Prussic acid
   c. Acrylo nitrile
   d. Formo nitrile

167. Hydrogen cyanide is a:
   a. Irritant gas
   b. Simple asphyxiant
   c. Chemical asphyxiant
   d. None of the above

168. Hydrogen cyanide at higher concentrations causes:
   a. Facial nerve fatigue
   b. Olfactory fatigue
   c. Radial nerve fatigue
   d. None of the above

169. Acrylonitrile and methyl methacrylate are produced by:
   a. Sodium cyanide
   b. Potassium cyanide
   c. Hydrogen cyanide
   d. None of the above

170. Mechanism of action of cyanide:
   a. Cyanide paralyses mitochondrial respiration by binding reversibly with enzymes containing ferric ions, in particular cytochrome aa3, thereby blocking intracellular respiration
   b. Its direct action on respiratory centre may also induced respiratory failure
   c. Both a and b
   d. None of the above

171. Skin contact with a solution of cyanide salts can cause:
   a. Itching
   b. Discolouration
   c. Corrosion
   d. All of the above

172. Skin contact with a solution of cyanide salts can cause itching, discolouration, or corrosion, which most likely is due to:
   a. Alkalinity of the solution
   b. Acidity of the solution
   c. Sensitisation of the solution
   d. None of the above

173. Exposure to cyanides may, in principle, be monitored from:
   a. Blood concentrations of cyanides
   b. Urinary concentration of thiocyanates
   c. Plasma/blood concentration of thiocyanates
   d. All of the above

174. Thiocyanate is the metabolite of:
   a. Cyanide
   b. Acrylonitrile
   c. Acetonitrile
   d. All of the above

175. Dicobalt edetate is a chelating agent that combines with cyanide to form an inert complex known as:
   a. Cobalticyanide
   b. Cyanmethaemoglobin
   c. Thiocyanate
   d. None of the above

176. Inhalation of amyl nitrite for cyanide treatment can produce:
   a. Methaemoglobin
   b. Myoglobin
   c. Foetal haemoglobin
   d. None of the above

177. Mathaemoglobin binds with cyanide in the blood as:
   a. Cyanglobulin
   b. Cyanmethaemoglobin
   c. Cyanmyoglobulin
   d. None of the above

178. Thiosulphate can cause detoxification of cyanide by assisting in its conversion to non-toxic:
   a. Thiocyanate
   b. Thioacetate
   c. Thiocitrate
   d. None of the above

179. Hydroxycobalamin which reacts with cyanide to form:
   a. Cobalamine
   b. Cyanocobalamin (vitamin B_{12})
   c. Hydroxycyanide
   d. None of the above

180. What is the adverse effect of amyl nitrite or sodium thiosulphate for the treatment of cyanide for fire casualties in hospital?
   a. They reduce blood oxygenation by displacing oxygen from carboxyhaemoglobin, and so may add to the oxygen-depriving effects of carbon monoxide
   b. It requires special technique
   c. It has antagonistic effect with CO
   d. None of the above

181. The cyanide kit for the initial treatment of cyanide in the cyanide plant should contain:
   a. Cobalt edetate
   b. Amylnitrite
   c. Sodium thiosulphate
   d. Hydroxycobalamine

182. Occupation associated with hydrogen sulphide exposure include all except:
   a. Carbon disulphide production
   b. Viscous rayon production
   c. Sewer and tunnel work
   d. Chlorine manufacturing cell process

183. Hydrogen sulphide's characteristic smell of rotten eggs is normally readily detected below the concentration of:
   a. 1 ppm
   b. 2 ppm
   c. 3 ppm
   d. 0.5 ppm

184. Why the workers have little, if any, warning of the presence of hydrogen sulphide at dangerous concentrations though there is rotten egg smell of the gas?
   a. The workers are ignoring the smell
   b. The sense of smell is soon lost at over 20 ppm
   c. At high concentration rotten egg smell is lost
   d. None of the above

185. A leading cause of sudden death in the workplace due to toxic effect of:
   a. Hydrogen sulphide
   b. Hydrogen cyanide
   c. Carbon monoxide
   d. Chlorine

186. With overwhelming exposure, the cause of sudden death from hydrogen sulphide is:
   a. Haemolysis
   b. Respiratory arrest
   c. Brain damage
   d. Myocardial infarction

187. What is knock down of hydrogen sulphide exposure?
   a. Loss of consciousness without warning can occur on sudden exposure to a high concentration after only one or two breaths
   b. Sudden death
   c. Vomiting
   d. Convulsion

188. The following chemical asphyxiant is also a pulmonary irritant and brief exposure may cause acute non-cardiogenic pulmonary oedema:
   a. Cyanide
   b. Carbon monoxide
   c. Hydrogen sulphide
   d. Aniline

189. Hydrogen sulphide keratoconjunctivitis is usually a feature of subacute intoxication by the gas that may arise after prolonged exposure with the symptoms of all except:
   a. Blepharitis and irritant conjunctivitis
   b. Lacrimation and photophobia
   c. Sensation of grittiness of eyes or pain in the eyes are associated with superficial punctuate corneal erosions
   d. Flash eye

190. The more reliable diagnostic test for hydrogen sulphide:
   a. Blood and urine thiosulphate
   b. Blood sulphide concentration
   c. Sulphhaemoglobin
   d. None of the above

191. Hydrogen sulphide is especially dangerous when it occurs in:
   a. Low-lying areas
   b. Confined work spaces
   c. When it exists in high concentrations under pressure
   d. All of the above

192. Methane is released from all except:
   a. Coal mining
   b. Biomass burning
   c. Burning of PVC
   d. Leakage of natural gas from the earth

193. Methane is a:
   a. Simple asphyxiant gas
   b. Greenhouse gas
   c. Highly flammable gas
   d. All of the above

194. Marsh gas contains:
   a. Methane gas
   b. Hydrogen
   c. Carbon dioxide and nitrogen
   d. All of the above

195. One minute it darted like a kingfisher, and the next it entirely disappeared. At times it grew as big as an ox's head, and then straightway shrank to a cat's eye ..... finally ..... it returned to frisk in the needs: It was told by George Sand in 1848 about:
   a. Marsh gas
   b. Methane gas
   c. Carbon disulphide gas
   d. Methyl alcohol

196. Carbon dioxide is encountered in numerous ways, like all of the following except:
   a. Refrigerant
   b. Fire extinguishers
   c. Manufacture and use of dry ice
   d. CO treatment

197. Carbon dioxide is:
   a. An irritant gas
   b. Chemical asphyxiant gas
   c. Simple asphyxiant gas
   d. Flammable gas

198. A working or living area should be immediately evacuated when concentration of CO_2 exceeds:
   a. 10% by volume
   b. 1.5% by volume
   c. 20% by volume
   d. 25% by volume

199. Carbon dioxide exerts following action at higher concentrations except:
   a. Narcotic
   b. Simple asphyxiant
   c. Bradycardia
   d. Tachypnea

200. Chlorine is produced commercially by:
   a. Electrolysis of brine
   b. Electrolysis of fused sodium chloride
   c. Oxidation of chlorides
   d. All of the above

201. Chlorine is widely used for:
   a. Manufacture of chemicals
   b. Bleaching of pulp and paper
   c. Disinfecting water and for waste treatment
   d. All of the above

202. The most frequently encountered severe effect of chlorine:
   a. Toxic pneumonitis with interstitial oedema
   b. Impairment of gas diffusion
   c. Hypoxaemia
   d. All of the above

203. A combine (restrictive and obstructive) defect of chlorine toxicity in lung function may be due to:
   a. Bronchospasm
   b. Interstitial oedema
   c. Both a and b
   d. None of the above

204. After acute gassing incidents with chlorine, following may be the delayed effect:
   a. Persistent reactive airways dysfunction syndrome
   b. Bronchial hyper-responsiveness
   c. Both a and b
   d. None of the above

205. Chlorine dioxide (ClO_2) is used for:
   a. For odour and taste control of drinking water
   b. As a biocide in the food preparation industry to control "slime" formation
   c. As a disinfectant
   d. All of the above

206. At low concentration phosgene smells like:
   a. New-mown hay
   b. Pungent
   c. Garlic
   d. None of the above

207. Synonyms of phosgene include all except:
   a. Carbonyl chloride
   b. Carbonoxy chloride
   c. Carbontetra chloride
   d. Chloriformyl chloride

208. Phosgene is used in many organic synthesis requiring chlorination, such as in the manufacture of:
   a. Isocyanates
   b. Polyurethane
   c. Polycarbonate resins
   d. All of the above

209. In fires, polystyrene may burn to form:
   a. Phosgene
   b. Chlorine
   c. Cyanide
   d. Both a and b

210. Delayed onset of pulmonary oedema due to phosgene toxicity is characterised by:
   a. Cough with abundant 'foamy' sputum
   b. Progressive dyspnoea
   c. Severe cyanosis
   d. All of the above

211. Following overexposure to phosgene, surveillance or monitoring of the patient by a physician or by trained paramedical personnel is required for at least:
   a. 12 hours
   b. 24 hours
   c. 48 hours
   d. 72 hours

212. Inhalation of HCl gas can cause all except:
   a. Choking and coughing
   b. Laryngeal oedema
   c. Pneumoconiosis
   d. Non-cardiogenic pulmonary oedema

213. Chronic, elevated exposures to the HCl mist can give rise to:
   a. Discolouration and erosion of teeth, particularly the incisors
   b. Erosion of teeth bones
   c. Discolouration of nail
   d. Cataract

214. Acid rain may be caused by:
   a. Hydrogen cyanide
   b. Hydrogen chloride
   c. Ammonia
   d. Phosgene

215. Why there are concerns about co-exposure of hydrogen chloride and formaldehyde that may enhance the known carcinogenicity of formaldehyde?
   a. By the formation of bis (chloromethyl) ether (BCME)
   b. By potentiating the effect of formaldehyde
   c. By additive effect of both
   d. None of the above

216. Chronic exposure to the HCl mist may cause:
   a. Pulmonary fibrosis
   b. Pulmonary emphysema
   c. Chronic bronchitis
   d. All of the above

217. Sulphate is much more soluble than the sulphur dioxide gas and readily forms fine sulphuric acid aerosols or combines with rainwater and cloud droplets to produce:
   a. Acid rain
   b. Sulphurous acid
   c. Acid storm
   d. All of the above

218. Occupational exposure to sulphur dioxide may occur in:
   a. Petroleum refining
   b. Smelting and preserving industries
   c. Utility companies and paper making
   d. All of the above

219. Smelter disease is characterised by:
   a. Dyspnoea
   b. Diarrhoea and colicy pain
   c. Muscle pain and dermatitis
   d. All of the above

220. Smelter disease is due to:
   a. Sulphur dioxide
   b. Mercury fume
   c. Sulphuric acid
   d. All of the above

221. Smelter disease is recognised to the workers during:
   a. Replacing pipes in sulphuric acid manufacturing plants
   b. Replacing pipes in sulphur dioxide manufacturing plants

c. Both of a and b
d. None of the above

222. Although ammonia is lighter than air, it can behave paradoxically, as in an accidental release from storage in liquid form under pressure by undergoing rapid cooling to form a dense cloud that:
a. Hugs the ground
b. Hugs the trees
c. Hugs the mountain
d. Hugs the cloud of the sky

223. Occupational exposure to ammonia may occur in a number of industries, including all except:
a. Fertiliser manufacturing
b. Explosives manufacturing
c. Phosgene manufacturing
d. Coke making and commercial refrigerator repair

224. Ammonia is used:
a. As a food additive
b. In detergents
c. In insecticides
d. All of the above

225. The clearly established effect arising from exposure to low concentrations of ammonia in humans:
a. Irritation of the skin
b. Irritation of the eyes
c. Irritation of upper respiratory tract
d. All of the above

226. Although spasm of the glottis due to exposure of high concentration of ammonia that could persist long enough to induce asphyxia and the spasm would normally relax during:
a. Unconsciousness
b. Coughing
c. Hypoxia
d. All of the above

227. Following is a frequent cause of death in ammonia gassing accidents:
a. Asphyxia
b. Laryngeal spasm
c. Bronchospasm
d. None of the above

228. Ophthalmic sequelae of ammonia exposure include all except:
a. Corneal opacities
b. Cataract
c. Flash eye
d. Glaucoma

229. Some individuals who have survived an acute gassing accident of ammonia may go onto develop permanent respiratory disability with the following complications except:
a. Progressive airway obstruction
b. Diminishing diffusion capacity
c. Bronchiolitis obliterans and bronchiectasis
d. Pneumoconiosis

230. Consideration should be given to hospitalisation and observation for 72 hours in case of ammonia exposure for:
a. Delayed onset of pulmonary oedema
b. Delayed onset of laryngeal oedema
c. Delayed onset of brobchial oedema
d. All of the above

231. Ozone is formed by the reaction of:
a. Volatile organic compounds (VOC) with sunlight
b. Nitrogen oxides (NO_2) with sunlight
c. Both a and b
d. None of the above

232. Exposure with moderately elevated levels of following irritant gas causes a measurable fall in FEV_1 and FVC associated with symptoms in susceptible with an inflammatory bronchiolitis causing reflex inhibition of respiration:
a. Ammonia
b. Chlorine
c. Ozone
d. Hydrogen sulphide

233. Ground-level ozone should not be confused with the stratospheric 'ozone layer' 2 to 7 miles above the earth surface, which provides a shield from:
a. Sun's ionising rays
b. Sun's ultraviolet rays
c. Sun's EMF
d. All of the above

234. Following may produce ozone at atmosphere except:
   a. Arc welding in confined space
   b. Poor ventilation electrostatic photocopiers and old model laser printers
   c. Motor vehicles exhaust
   d. Coke formation

235. If substantial exposure of ozone has occurred or is suspected, hospitalisation is advisable because of:
   a. Delayed onset of pulmonary oedema
   b. Delayed onset of laryngeal oedema
   c. Delayed hypoxia
   d. All of the above

236. Mechanism of chlorofluorocarbons for depletion of ozone layer in atmosphere:
   a. They remain stable and reach the atmosphere where, over the course of 50 to 150 years, they breakdown, releasing chlorine that reacts with the ozone
   b. They directly destroy ozone layer
   c. They combine with ozone to inactivate
   d. None of the above

237. Fermentation of silage will produce high concentrations of gas within two days of silo filling and exposure to farmers entering the confined silo space may give rise to acute fatalities or the respiratory effects of exposure to nitrogen dioxides known as:
   a. Silo filler disease
   b. Silo makers disease
   c. Silo disease
   d. All of the above

238. People who are believed to have received significant exposure of nitrogen dioxide should be admitted to hospital and placed under observation for 48 hours because of:
   a. Delayed laryngeal oedema
   b. Delayed pulmonary oedema
   c. Delayed alveolitis
   d. None of the above

239. What is cold blast furnace syndrome?
   a. This is due to the maintenance work inside blast furnace
   b. Symptoms attributed to high levels of nitrogen dioxide have been reported in blast furnace workers when the slag in under cooling conditions
   c. Scaling of blast furnace wall during maintenance
   d. None of the above

240. Synonym of phosphine (PH_3) gas:
   a. Hydrogen phosphide
   b. Phosphorated hydrogen
   c. Phosphorus trihydride
   d. All of the above

241. Phosphine has chiefly gained notoriety through its use as a:
   a. Fumigant against insects and rodents in grain stores
   b. In grain elevators
   c. On board shops
   d. All of the above

242. Aluminium phosphide is a common poison in suicide in India where it is used to fumigate stored grains. When consumed, it reacts with hydrochloric acid in the stomach to liberate:
   a. Phosphorus
   b. Phosphide
   c. Phosphine
   d. Aluminium chloride

243. The main hazard of phosphine which usually occurs within 24 hours, but may be delayed for up to two days:
   a. Pulmonary oedema
   b. Laryngeal oedema
   c. Haemoptysis
   d. All of the above

244. Central nervous system signs and symptom of phosphine is progressing to all except:
   a. Convulsion
   b. Coma
   c. CVA
   d. Death

245. If it is known that phosphine has been inhaled, immediate hospitalisation is recommended for observation for up to 72 hours to guard against:
   a. Delayed cerebral oedema
   b. Delayed myocardial infarction

c. Delayed pulmonary oedema
d. None of the above

246. In Bhopal disaster by methyl isocyanate, death was mostly from:
a. Bronchial necrosis
b. Pulmonary oedema
c. Both a and b
d. None of the above

247. Eye reaction of methyl isocyanate in Bhopal disaster was also prominent, and included:
a. Severe watering and photophobia
b. Eyelid oedema
c. Corneal ulceration
d. All of the above

248. Respiratory involvement by methyl isocyanate in Bhopal disaster was the most common serious health problem, with many victims suffered from all of the following except:
a. Breathlessness and cough
b. Throat irritation or choking
c. Chest pain and haemoptysis
d. Abdominal pain

249. Both short-term high exposures and long-term moderate exposures sulphuric acid have been associated with the occurrence of respiratory disease like all of the following except:
a. Bronchitis
b. Emphysema
c. Fibrosis
d. Lipoid pneumonia

250. Erosion of the teeth is a well-documented problem associated with long-term exposure to:
a. Ammonia
b. Hydrogen sulphide
c. Sulphuric acid
d. Phosphine

251. Sodium hydroxide is also known as:
a. Caustic soda
b. Soda lyme
c. White caustic
d. All of the above

252. A unique identification system is provided to the organic chemicals by CAS registry numbers. Often, it is easiest to find information on a specific chemical by searching databases using the CAS number. What is the full form of CAS?
a. Chemical abstracts service
b. Chemical absolute service
c. Chemical abstracts support
d. Chemistry of abstracts service

253. What is the main natural source of benzene?
a. Sea water
b. Burning of trees
c. Crude oil
d. Smoke

254. Following are the sources of benzene except:
a. Motor fuel
b. Coal tar
c. Beer
d. Cigarette smoking

255. Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterised exhilaration, nervous excitation, and/or giddiness, followed by a period of:
a. Depression
b. Drowsiness
c. Fatigue
d. All of the above

256. Following are the signs and symptoms of severe exposure of benzene except:
a. Sensation of tightness in the chest accompanied by breathlessness
b. Loss of consciousness
c. Leukaemia
d. Tremors, convulsions and death may follow from respiratory paralysis or circulatory collapse in a few minutes

257. What is Benzol Jag?
a. The inhalation of high concentration of benzene (i.e. 3000 ppm for 0.1 to 1.0 hour) may cause a state of excitation and euphoria
b. Run amok by cannabis Indica
c. Madness due to benzine exposure
d. The inhalation of high concentration of benzine cause a state of excitation and euphoria

258. Benzene is absorbed through:
   a. Inhalation
   b. Skin
   c. Both a and b
   d. None of the above

259. The onset of haematologic effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased and that include all except:
   a. Depression of white and red blood cell counts
   b. Aplastic anaemia
   c. Leukaemia
   d. Methemoglobinaemia

260. The most sensitive reaction in humans to long-term benzene exposure:
   a. Lymphocytopenia
   b. Lymphocytosis
   c. Leukaemia
   d. Aplastic anaemia

261. Benzene is classified by IARC as a group-1 carcinogen because of its ability to cause:
   a. Leukaemia
   b. Aplastic anaemia
   c. Lung cancer
   d. Liver cancer

262. There is an association between chronic benzene exposure and haematological malignancies, such as:
   a. Leukaemia
   b. Multiple myeloma
   c. Non-Hodgkin's lymphoma
   d. All of the above

263. Mechanisms behind benzene haematotoxicity and leukaemia are still unclear, but may include oxidative stress induced by benzene metabolites, which may result in DNA damage in bone marrow cells and they are:
   a. Phenolic metabolites
   b. Benzene oxide
   c. Trans, transmucon aldehyde
   d. All of the above

264. Sensitivity of different individuals to benzene toxicity depends on genetic differences in benzene-metabolising enzymes especially:
   a. CYP2E1
   b. Cytochrome P-450
   c. Cytochrome aa3
   d. None of the above

265. Why alcohol consumption can enhance benzene toxicity?
   a. It has been shown that oxidative metabolism of CYP2E1 is need for the induction of haematotoxic and genotoxic effects of benzene and ethanol is able to induce CYP2E1
   b. Synergistic effect between these two
   c. Additive effect between these two
   d. Potentiating effect between these two

266. The main metabolites of benzene measured in urine include all except:
   a. S-phenyl mercapturic acid
   b. Trans, transmuconic acid (t,t-muconic acid)
   c. Phenol and phenolic metabolites
   d. Hippuric acid

267. Why smoking is one of the confounding factors in the interpretation of biomonitoring results of benzene?
   a. Cigarette smoke contains benzene
   b. Nicotin of cigarette smoke has same metabolites of benzene
   c. Cigarette smoke interfere benzene metabolism
   d. None of the above

268. Measurement of urine excretion of phenol is the traditional method of biological monitoring of benzene uptake. The inter-individual and intra-individual variation in the urinary concentration of phenol is large because:
   a. Genetic factors are responsible
   b. Metabolism is variable
   c. Phenol may be formed or taken into the body from sources other than inhaled benzene
   d. All of the above

269. The best way to estimate uptake of benzene in the body is the determination of the concentration of benzene in the blood. This can be performed accurately and precisely using:

a. Head-space chromatography with photoionisation detection
b. Gas chromatography detection
c. Sphectrophotometric detection
d. None of the above

270. If acute myeloid leukaemia (AML) has been diagnosed, the classical circumstances that might support benzene as a potential cause are all except:
a. Occurrence of certain forms of myelodysplastic syndrome
b. Defects in chromosome 5 or 7
c. A substantial exposure history with a cumulative dose of at least 40 ppm- year during the preceding ten years
d. A good response to anti-leukaemic chemotherapy

271. Benzene may also be measured in:
a. Exhaled air
b. Sweat
c. Breast milk
d. Bowel

272. Toluene is used as a raw material for the production of:
a. Toluene diisocyanate (TDI)
b. Phenol and benzyl alcohol and other benzyl derivatives
c. Nitrotoluenes (particularly TNT), vinyl toluene and saccharin
d. All of the above

273. Acute high exposures of toluene result in:
a. CNS depression, headache and dizziness
b. Lassitude, drowsiness and drunkenness
c. Incoordination and staggering gait
d. All of the above

274. Individuals who inhale or sniff substances containing toluene have experienced:
a. Hepatotoxic and nephrotoxic effects
b. Hyperchloremic acidosis
c. Hypokalaemia, and hypocarbonatemia
d. All of the above

275. Sudden sniffing death because of cardiac arrhythmias may be due to:
a. Benzene
b. Toluene
c. Styrene
d. None of the above

276. Long-term low-level exposure of the following toxic agent causes chronic neurotoxicity, which may become evident as so-called 'chronic solvent encephalopathy' (CSE) or 'chronic toxic encephalopathy' (CTE):
a. Toluene
b. Styrene
c. Xylene
d. All of the above

277. Symptoms related to chronic toxic encephalopathy due to exposure of toluene are all except:
a. Fatigue
b. Poor memory and difficulties in concentration
c. Emotional lability and depression
d. Erethism

278. Pregnant women sniffing toluene showed:
a. Low birth weight and neurological dysfunction in their offspring
b. Stillbirth
c. Abortion
d. None of the above

279. Toluene exposure can be monitored by measuring:
a. Blood toluene levels and hippuric acid levels in urine
b. Blood toluene and hippuric acid levels
c. Toluene and hippuric acid levels in urine
d. All of the above

280. The main target organ for xylene:
a. Central nervous system
b. Respiratory system
c. Cardiovascular system
d. GI system

281. Long-term low-level exposure to xylene may cause:
a. Chronic neurotoxicity
b. Ototoxicity
c. Dermatitis
d. All of the above

282. Absorbed xylenes are excreted mainly as its metabolites in urine:
   a. Methylhippuric acid
   b. Hippuric acid
   c. t, t muconic acid
   d. Phenol

283. Following can interferes with xylene metabolism and thus leads to reduced formation of methylhippuric acid:
   a. Alcohol
   b. Toluene
   c. Benzene
   d. Styrene

284. Xylene is also used in the production of co-polymerase like:
   a. Acrylonitrile-butadiene-styrene
   b. Styrene-acrylonitrile
   c. Methyl-methacrylate-butadiene-styrene
   d. All of the above

285. IARC has classified styrene as:
   a. Group 2A carcinogen
   b. Group 2B carcinogen
   c. Group 1 carcinogen
   d. None of the above

286. Noise-exposed workers who were also exposed to styrene may show the following incident higher:
   a. Sensorineural hearing loss
   b. Conductive hearing loss
   c. Mixed type of hearing loss
   d. All of the above

287. Carbon disulphide is mainly used in:
   a. Production of viscous fibre
   b. Production of cellophane film
   c. Manufacture of carbon tetrachloride and sodium sulphite
   d. All of the above

288. Acute high exposures (200 to 500 ppm) of carbon disulphide result in:
   a. Narcosis
   b. Respiratory failure
   c. Death
   d. All of the above

289. Single or long-term exposure to levels of carbon disulphide lead to the recognition of chronic carbon disulphide intoxication, characterised by all of the following except:
   a. Psychoses
   b. Polyneuropathy of the lower extremities
   c. Gastrointestinal disturbances
   d. Footdrop

290. Atherosclerotic vasculoencephalopathy may be caused by the single or long-term exposure of:
   a. Carbon disulphide
   b. Hydrogen sulphide
   c. Carbon tetrachloride
   d. All of the above

291. Target organ for carbon disulphide-induced toxicity is:
   a. Peripheral and central nervous systems
   b. Respiratory system
   c. Urinary system
   d. GI system

292. Carbon disulphide exposure also leads to:
   a. Elevate serum cholesterol levels and blood pressure
   b. Potentiate the effect of noise in hearing loss and induces ophthalmologic effects, including those on colour vision
   c. Damage to the blood vessels of the retina
   d. All of the above

293. Carbon disulphide is absorbed through:
   a. Lung
   b. Skin
   c. GI tract
   d. All of the above

294. Carbon disulphide is extensively metabolized and the main metabolites are all of the following except:
   a. Thiocarbamide
   b. Thiothiazolidine carboxylic acid (TTCA)
   c. 2-thio-5-thiozolidine
   d. Methylhippuric acid

295. Carbon disulphide biomonitoring is done by:
   a. Blood analysis of carbon disulphide
   b. Urine analysis of thiothiazolidine carboxylic acid (TTCA)

c. Blood analysis of thiothiazolidine carboxylic acid (TTCA)
d. All of the above

296. Acrylonitrile is used in the production of:
a. Nitrile-butadiene rubber
b. Acrylonitrile-butadiene-styrene
c. Styrene-acrylonitrile polymers
d. All of the above

297. Symptoms of acrylonitrile or acetonitrile poisoning resemble that of:
a. Cyanide poisoning
b. Carbon disulphide poisoning
c. Isocyanate poisoning
d. Carbon monoxide poisoning

298. Oxidative metabolism of acrylonitrile leads to the formation of genotoxic 2-cyanoethylene oxide, which is then conjugated with glutathione to form:
a. Cyanide
b. Thiocyanate
c. Both a and b
d. None of the above

299. Acrylonitrile can be absorbed through:
a. Inhalation
b. Eye and skin
c. Ingestion
d. All of the above

300. Acrylonitrile or acetonitrile poisoning patients have to be followed up for sufficiently long times, because of:
a. Long biological half-life
b. Slow release of cyanide ions
c. Delayed pulmonary oedema
d. All of the above

301. Following antidote may be used in acrylonitrile or acetonitrile poisoning:
a. Amyl nitrite and sodium thiosulphate
b. Hydroxycobalamine
c. Dicobalt edetate
d. All of the above

302. Chemical agent that can produce Methaemoglobinaemia:
a. Benzene
b. Toluene
c. Aniline
d. Carbon disulphide

303. Aniline is used mainly for the production of:
a. Methylene dianiline (MDA)
b. Rubber chemicals
c. Dyes
d. All of the above

304. Aniline is absorbed through:
a. Inhalation
b. Skin
c. Ingestion
d. All of the above

305. What is methaemoglobinaemia?
a. It is caused by the oxidation of the iron in the haem group of the haemoglobin molecule from the ferrous state to ferric state resulting in inability of haem to transport oxygen effectively
b. It is methylated haemoglobin
c. When haemoglobin % is more
d. None of the above

306. The victims of poisoning are referred to as 'blue boys' caused by intense cyanosis due to the poisoning of:
a. Aniline
b. Cyanide
c. Carbon monoxide
d. Carbon disulphide

307. In aniline poisoning, urine is dark in colour owing to the presence of:
a. Methaemoglobin
b. Haemoglobin
c. Haematuria
d. Proteinuria

308. The IARC has categorised aniline as:
a. Group 3 human carcinogen
b. Group 1 human carcinogen
c. Group 2A human carcinogen
d. Group 2B human carcinogen

309. Occupational exposure to aniline can be biomonitored by measuring post-shift samples of:
a. Urinary aniline
b. Blood aniline
c. Urinary hippuric acid
d. Urinary methyl hippuric acid

310. Treatment of methaemoglobinaemia is based on the intravenous administration of methylene blue because:

a. It acts as antidote
b. It acts as a reducing agent converting oxidised iron in haem from ferric back to its normal ferrous state
c. It neutralise methaemoglobin
d. None of the above

311. Methyl isocyanate is used for:
a. Synthesis of carbamate pesticides
b. Production of rubbers
c. Adhesives
d. All of the above

312. One of the most common chemical causes of occupational asthma:
a. Diisocyanates
b. Chlorine
c. Ammonia
d. Hydrogen sulphide

313. Analysis of specific IgE in isocyanate-induced asthma has:
a. High sensitivity, but low specificity
b. High specificity, but low sensitivity
c. High specificity, and high sensitivity
d. None of the above

314. The most common and toxicologically relevant aliphatic halogenated hydrocarbons are tri- and tetra-chloroethenes, methylene chloride, chloroform, carbon tetrachloride and vinyl chloride. They may generate highly toxic gas when heated and it is:
a. Hydrogen disulphide
b. Isocyanate
c. Phosgene
d. Phosphine

315. Vinyl chloride is not known to occur naturally, but is present in:
a. Cigarette smoke
b. Beer
c. Food preservative
d. None of the above

316. Vinyl chloride has low acute toxicity, but long-term exposure causes severe effects including a specific type of cancer known as:
a. Liver angiosarcoma in humans
b. Squamous cell carcinoma in lung
c. Bladder cancer
d. None of the above

317. When exposure levels in PVC production exceed 1000 ppm, a specific syndrome is described in workers with symptoms of headache, dizziness, earache, blurred vision, fatigue, nausea, sleeplessness, breathlessness, stomach ache, pain in the liver/spleen area, pain and tingling sensation in the arms and legs, cold sensation in the extremities, loss of appetite, loss of libido, and weight loss. It is known as:
a. Vinyl chloride sickness
b. Vinyl chloride illness
c. Vinyl chloride toxicity
d. Vinyl chloride hazard

318. Specific findings in the skin and bones caused by vinyl chloride include:
a. Acro-osteolysis
b. Scleroderma-like changes in the fingers and peripheral circulatory changes resembling Raynaud's disease
c. Both a and b
d. None of the above

319. Acro-osteolysis caused by vinyl chloride is due to:
a. Decalcification of the terminal phalanges of the hands and feet
b. Calcification of the terminal phalanges of the hands and feet
c. Pathological fracture of the terminal phalanges of the hands and feet
d. None of the above

320. Following toxic effect caused by vinyl chloride is reversible after cessation of exposure:
a. Acro-osteolysis
b. Raynaud's disease
c. Both a and b
d. None of the above

321. Vinyl chloride effects preceding angiosarcoma of liver include:
a. Subcapsular fibrosis
b. Progressive portal fibrosis
c. Borderline increase of intralobular connective tissue
d. All of the above

322. The IARC concluded in 2009 that vinyl chloride causes angiosarcoma of the

liver and hepatocellular carcinoma. The mechanism of liver cancer caused by vinyl chloride are all except:
a. Metabolic activation to form chloroethylene oxide
b. DNA binding of the chloroethylene oxide to form exocyclic etheno adducts
c. Ability to these adducts to cause base mutations
d. There is no effect of such mutations on proto-oncogenes/tumour suppressor genes at the gene and gene product levels

323. Following may be the feature of "degreaser's flush":
a. The consumption of alcohol following exposure to trichloroethene may cause "degreaser's flush"
b. This is a transient redness of the face and neck
c. Chest discomfort and dyspnoea
d. All of the above

324. Long-term exposure to trichloroethene or tetrachloroethelene has been suggested to cause chronic solvent encephalopathy like all of the following except:
a. Toluene
b. Xylene
c. Benzene
d. Styrene

325. Because of the strong animal evidence and the evidence of the genotoxicity of its main metabolites, the IARC has classified tetrachloroethelene as:
a. Group 2A human carcinogen
b. Group 2B human carcinogen
c. Group 1 human carcinogen
d. None of the above

326. Following is commonly used to assess exposure totrichloroethene:
a. Urine trichloroacetic acid
b. Urine trichloroethene
c. Blood trichloroethene
d. Blood trichloroacetic acid

327. Following metabolite of trichloroethene is responsible for kidney cancer:
a. Dichloroacetic acid (DCA)
b. S-(1,2-dichlorovinyl)-L-cysteine (DCVC)
c. Trichloroacetyldehyde
d. None of the above

328. Following metabolite of trichloroethene is responsible for liver cancer:
a. Dichloroacetic acid (DCA)
b. S-(1,2-dichlorovinyl)-L-cysteine (DCVC)
c. Trichloroacetyldehyde
d. None of the above

329. Important source of formaldehyde exposure:
a. Tobacco smoke and engine exhausts
b. Release from urea-formaldehyde foam insulation
c. Formaldehyde-containing disinfectants
d. All of the above

330. How formaldehyde is used in foundry work?
a. It is used as a 'binder' in making cores and molds
b. It is used to protect from heat
c. It is used to make the final product shiny
d. All of the above

331. Extremely high concentration of formaldehyde (50 to 100 ppm) may result in:
a. Pulmonary oedema, inflammation and pneumonia
b. Haemorrhage
c. Death
d. All of the above

332. The odour threshold of formaldehyde has been reported as low as:
a. 0.05 ppm
b. 0.5 ppm
c. 5 ppm
d. 1.5 ppm

333. IARC has classified formaldehyde as:
a. Group 2A human carcinogen
b. Group 2B human carcinogen
c. Group 1 human carcinogen
d. None of the above

334. Phenol can cause serious poisoning by:
a. Skin absorption
b. Inhalation of vapours
c. Ingestion
d. All of the above

335. The sensation of pain due to local exposure to phenol may be diminished leading to less awareness of contact with the chemical and thus resulting in higher degree of local damage. This is due to:
a. Analgesic properties of phenol
b. Less hazardous
c. Less toxic
d. All of the above

336. Phenol is used for the production of:
a. Paints and lacquers
b. Adhesives and impregnating agents
c. Biocides
d. All of the above

337. What is ochronosis of skin due to prolong phenol exposure?
a. Deposition of a dark pigment in the skin
b. Deposition of a red pigment in the skin
c. Gangrene of skin
d. None of the above

338. Clinical features of phenol poisoning include all except:
a. Shock, collapse, coma
b. Convulsions, cyanosis
c. Damage to internal organs
d. Recovery within 72 hours

339. Urinary excretion of phenol, as measured with a specific method, reflects exposure of phenol during the preceding 24 hours. It is done by:
a. Gas chromatographic method
b. Liquid chromatographic method
c. Both a and b
d. None of the above

340. Phenol-induced skin damage is minimised effectively by:
a. Polyethylene glycol (PEG)
b. Isopropyl alcohol
c. Antibiotic
d. Both a and b

341. Methylene chloride is metabolised through the main route of metabolism mediated by cytochrome P450 in the body at low dose to:
a. CO_2
b. CO
c. Inorganic chloride
d. All of the above

342. Methylene chloride is absorbed through:
a. Inhalation
b. GI tract
c. Dermal absorption
d. All of the above

343. Fatal poisonings are considered to be due to the ..... of methylene chloride rather than directly due to carbon monoxide poisoning:
a. Narcotic effects
b. CVA
c. Cardiac arrest
d. Respiratory failure

344. At high absorption rates of methylene chloride, the metabolised fraction of carbon monoxide as well as COHb% decreases due to:
a. Immediate exhalation of CO
b. Saturation of the metabolism
c. Neutralisation of metabolites
d. None of the above

345. IARC classify methylene chloride as:
a. Group 2A human carcinogen
b. Group 2B human carcinogen
c. Group 1 human carcinogen
d. Group 3 human carcinogen

346. At high-dose levels of methylene chloride ($\geq$ 1800 mg/m^3) the main route of metabolism is saturated and the metabolism is transferred to involved glutathione transferase (GST) resulting in the formation of:
a. Formaldehyde
b. Formate
c. Carbon dioxide
d. All of the above

347. Methylene chloride can be monitored by measuring:
a. The solvent itself in exhaled air
b. Carbon monoxide in exhaled air

c. Carboxyhaemoglobin (COH b) in blood
d. All of the above

348. Following statements are correct about methylene chloride except:
a. It is also known as dichloromethane
b. It is mostly used as paint remover
c. It cannot absorb through skin
d. It has a characteristic ether-like odour

349. Most of the hospitals gas sterilisers are automatic general purpose sterilisers and many of these used ethylene oxide, the gas being mixed with the following chemical agent to reduce the flammability and explosion risk:
a. Dichlorodifluoro methane
b. Tetra ethyl lead
c. Benzene
d. None of the above

350. Acute exposure of ethylene oxide may cause all except:
a. Muscular weakness
b. Sleeplessness and diarrhoea
c. Peripheral neuropathy
d. Irreversible acute encephalopathy

351. Ethylene oxide is used mainly as a chemical intermediate in the production of:
a. Ethylene glycol
b. Polyester fibres and detergents
c. Sterilising agent for medical supplies
d. All of the above

352. Pure liquid form of ethylene oxide may cause frostbite because of:
a. Rapid vapourisation
b. Low temperature
c. Mixed with ice
d. None of the above

353. International Agency for Research on Cancer (IARC) has recognised ethylene oxide as following human carcinogen:
a. Group 2A (probably carcinogenic to humans)
b. Group 1 (confirmed human carcinogen)
c. Group 2B (possibly carcinogenic to humans)
d. None of the above

354. Occupational asthma associated with measurable IgE antibodies to ethylene oxide used to sterilised latex gloves and adsorbed onto the glove powder has been reported in healthcare worker because:
a. It can stimulate bronchospasm
b. Ethylene oxide is a potent sensitising agent
c. It can induce histamine
d. All of the above

355. Warm or hot potential skin irritants such as dishwashing detergents can increase their irritant potentials to develop contact dermatitis because:
a. They transfer heat to the stratum corneum, enhances their own permeability
b. Direct action of detergent
c. Allergic action of detergent
d. None of the above

356. Following are the keratin solvents that dissolve the keratin as primary irritant of skin except:
a. Alkais
b. Soap
c. Turpentin
d. Sulphides

357. Following are the fat solvents that dissolve or emulsify the essential oil of the skin as primary irritant except:
a. Turpentine
b. Petroleum product
c. Alkaline detergents
d. Soap

358. Following are the dyschromia inducing agents that produce leucoderma like lesions by their action on pigment cell layer, and inhibiting its activity as primary irritants of skin except:
a. Hydroquinone
b. H_2SO_4
c. Paracresol
d. Orthophenylphenol

359. Following are the keratogenic agents that stimulate the keratin forming cells and cause acne like lesions and sometimes new growths as primary irritant of skin except:

a. Coal tar
b. Petroleum product
c. Chlorinated hydrocarbon
d. Chromic acid

360. The most potentially skin irritating solvents are all except:
a. Carbondisulphide
b. Petroleum distillates (diesel, gasoline, kerosene)
c. Coal tar solvents (xylol, toluene)
d. Benzene

361. The development of allergic contact dermatitis requires that the affected individual first become immunologically sensitised to the offending substance. The sensitisation process involves delayed hypersensitivity mechanism which requires a period of 1 to 3 weeks following first exposure before sensitisation can occur. Find out the odd one in this matter:
a. Hapten-protein conjugate
b. Cutaneous Langerhans' cells
c. Circulating T-lymphocytes
d. Phagocytes

362. Common metallic compounds developing occupational allergic contact dermatitis are all except:
a. Nickel
b. Chromate
c. Inorganic lead
d. Mercury

363. Common plastic resin causing occupational allergic contact dermatitis:
a. Epoxy resin
b. Phenolic resin
c. Acrylic resin
d. All of the above

364. Bichromate and chromic acid producing chrome ulcer as:
a. Skin irritant
b. Skin sensitiser
c. Corrosive
d. None of the above

365. Bichromate and chromic acid producing perforation of nasal septum as:
a. Skin irritant
b. Skin sensitiser
c. Corrosive
d. None of the above

366. Burns from hydrofluoric acid (HF) typically cause intense pain and erythema which may not become clinically apparent for several hours following cutaneous exposure. Extensive tissue destruction occurs in part from the high affinity of the fluoride ion for:
a. Calcium
b. Chloride
c. Sodium
d. All of the above

367. Following chemical can produce chemical burn of the skin except:
a. Hydrofluoric acid
b. Alkyl mercury
c. Tetraethyl lead
d. Phenol (carbolic acid)

368. Contact dermatitis from cement usually results from skin irritation secondary to the following property of the cement:
a. Alkaline
b. Hygroscopic
c. Abrasive properties
d. All of the above

369. Occasionally, allergic contact dermatitis results from allergic sensitisation to the following agent present in the cement:
a. Water soluble hexavalent chromium
b. Water insoluble trivalent chromium
c. Pentavalent chromium
d. All of the above

370. Fibreglass may produce a mechanical irritation which results in severe skin itching. The intensity of the symptoms is:
a. Inversely proportional to fibre length
b. Directly proportional to fibre diameter
c. Both a and b
d. None of the above

371. The oleoresins found in poison oak (Toxicodendron diversilobum) and poison ivy (Toxicodendron radicans) are powerful skin:
a. Irritants
b. Sensitisers

c. Corrosives
d. All of the above

372. Chemicals that may produce leukoderma are all except:
a. Hydroquinone
b. Monobenzyle ether of hydroquinone
c. Monomethyl ether of hydroquinone (4-hydroxyanisole, 4-methoxyphenol)
d. Toluene

373. Secondary acne or comedonal acne can be caused by:
a. Greasy cosmetics
b. Occupational exposure to oils and tars
c. Chlorinated hydrocarbons
d. All of the above

374. Following are the features of chloracne except:
a. It is always a symptom of systemic absorption and may be associated with systemic morbidity
b. Many substances causing chloracne may also cause hepatotoxicity
c. Chloracne and secondary acne are same
d. The most potent chloracnegenic agent known as 2,3,7,8-tetrachlorodibenzo-p-dioxin

375. The main occupational causes of skin ulceration:
a. Hexavalent chromium compounds
b. Wet cement
c. Both a and b
d. None of the above

376. Articaria (hives) is caused by:
a. Localised dermal oedema secondary to a temporary increased in capillary permeability
b. Irritation of some chemicals
c. Traumatic injury
d. Helmenthiasis

377. Following are correct statements of articaria (hives) except:
a. Articaria present for less than 6 months is considered to be acute, and chronic if it continues for more than 6 months
b. The causes of acute and chronic articaria: autoimmune diseases, allergens (foods, medications and inhalants), drugs, physical (heat, cold, pressure, sunlight, sweat and water), infection (intestinal parasites), and SLE
c. This is a wheal-and-flare reaction usually within 20–30 minutes of contact between certain substances and the skin surface
d. The most frequent occupational cause currently is immunological (type I) contact urticaria from natural rubber latex, the main at-risk group being healthcare professionals who wear rubber gloves

378. Clinical symptoms of type-1 allergy to natural rubber latex may extend to:
a. Contact articaria
b. Conjunctivitis and rhinitis
c. Asthma and anaphylaxis
d. All of the above

379. Confirmation of the diagnosis of the immunological contact urticaria is done by:
a. Prick tests
b. RASTs (Allergosorbent testing)
c. Both a and b
d. None of the above

380. What is protein contact dermatitis?
a. Food handlers and those working closely with animals may have hand dermatitis due to foodstuffs or animal products
b. It is due to intake of specific proteins
c. It is due to indigenous protein
d. None of the above

381. Rubber industry workers exposed may experience severe flushing reactions of skin and headaches, along with nausea and vomiting, if alcohol is ingested shortly after work. This is due to:
a. Tetramethyl thiuram
b. Tetraethyl thiuram disulphide (disulfiram; antabuse)
c. Both a and b
d. None of the above

382. Vibration–induced white finger disease must be differentiated from Raynaud's phenomenon which is associated with:
   a. Underlying connective tissue disease and occlusive vascular disease
   b. Brachial artery compression syndromes
   c. Dysglobulinaemia, and neurogenic disorders
   d. All of the above

383. Sun bath exposure is also a risk for:
   a. Non-melanoma skin cancer (NMS C)
   b. Melanoma
   c. Both a and b
   d. None of the above

384. Patch testing is based on:
   a. The dilution of potential concentrate allergens to below their threshold for either induction of contact sensitivity or for contact irritancy under the conditions of the test
   b. Down to a level at which they nevertheless remain capable of an elicitation reaction in an already sensitised patient
   c. Both a and b
   d. None of the above

385. The reaction of patch test represents:
   a. Cell mediated delayed hypersensitivity (type-IV) response
   b. Type II hypersensitivity reaction
   c. Type I hypersensitivity reaction
   d. None of the above

386. The main elements of multidimensional approach to prevent dermatoses are all except:
   a. Recognition of potential cutaneous irritants and allergens
   b. Engineering controls or chemical substitution to prevent skin exposure
   c. Personal protection with appropriate clothing or barrier creams
   d. Maintaining domestic hygiene

387. What is the full form of IARC?
   a. International Agency for Research on Cancer
   b. International Association for Research on Cancer
   c. International Agency for Report on Cancer
   d. None of the above

388. A chemical is considered to be carcinogen if:
   a. It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen
   b. It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Programme (NTP) (latest edition)
   c. It is regulated by OSHA as carcinogen
   d. All of the above

389. According to the IARC groups of carcinogenicity: Group 1 means:
   a. The agent, mixture, or exposure circumstance is probably carcinogenic to humans
   b. The agent, mixture, or exposure circumstance is carcinogenic to humans
   c. The agent, mixture, or exposure circumstance is possibly carcinogen to humans
   d. None of the above

390. The total number of substances or mixtures that have been evaluated by IARC as Group 1 (definitive human carcinogen):
   a. 21
   b. 16
   c. 34
   d. 116

391. The total number of substances or mixtures that have been evaluated by IARC as Group-2A (probable human carcinogen):
   a. 21
   b. 16
   c. 34
   d. 116

392. Following may be the features of an initiator in a carcinogenic process:

a. An initiator is a chemical that induces the carcinogenic process in a cell or tissue
b. It initiates that change in the cell that irreversibly converts it to a cancerous or precancerous state
c. This is considered to be a mutational change that ultimately alters the phenotypic expression of the cell
d. All of the above

393. Following are the correct statements about promoter in a carcinogenic process:
a. A promoter is a chemical that can increase the response to a carcinogen previously administered or shorten the latency period for the carcinogenic response
b. It 'promotes' or stimulates the growth of the carcinogenic response induced or initiated by another chemical
c. Both a and b
d. None of the above

394. What is genotoxic carcinogen?
a. Chemicals thought to act by directly altering DNA or genetic expression and they are initiators
b. They are promoters
c. They are responsible for congenital carcinogen
d. None of the above

395. What is healthy worker effect (HWE)?
a. It is related to increased productivity
b. The workers have a lower mortality rate than the general population
c. Accident is less within healthy workers
d. All of the above

396. Known and suspected lung carcinogen are all except:
a. Asbestos
b. Arsenic
c. Hexavalent chromium
d. Trivalent chromium

397. Known and suspected lung carcinogen are all except:
a. Silicon dioxide
b. Beryllium
c. Alluminium
d. Cadmium

398. Features of benign solitary mesothelioma of pleura are all except:
a. The benign solitary type remains localised, although it may become large and compress neighbouring thoracic structures
b. This tumour has not been associated with asbestos exposure
c. It is a benign tumour arising from fibroblast and other connective-tissue elements in the alveolar submesothelial cell layers of the pleura
d. It is occupational in origin

399. Features of diffuse malignant mesothelioma are all except:
a. It arises from either the pluripotential messenchymal cell or the primitive submesothelial mesenchymal cell
b. It remains the ability to form epithelial or connective-tissue elements
c. It is not occupational in origin
d. This tumour has been associated with asbestos exposure

400. All are the bladder carcinogens except:
a. 2-Naphthylamine
b. Orthotoluidine
c. Benzine
d. Benzidine

401. Ionising radiation is associated with:
a. Nonlymphocytic leukaemia
b. Multiple myeloma
c. Non-Hodgkin's lymphoma
d. All of the above

402. Non-Hodgkin's lymphoma has been associated with exposure of following chemicals:
a. Phenoxy acid herbicides
b. Benzene
c. Some chlorinated organic compounds, such as trichloroethylene, tetracholoethylene
d. All of the above

403. Physical findings of chronic benzene exposure are all except:

a. Hepatospenomegaly
b. Enlarged lymph nodes
c. Swollen gums
d. Methaemoglobinaemia

404. Higher incidence of cancer in the scrotum among chimney sweeps due to their exposure to soot was discovered in the late eighteenth century by:
a. Percival Pott
b. Ramazini
c. Hippocrates
d. Galen

405. A high-risk of sinonasal cancer has been identified among workers exposed to all of these except:
a. Wood dusts
b. Lead oxide
c. Formaldehyde
d. Hexavalent chromium compounds

406. What is sympathetic ophthalmia?
a. If the uveal tract, i.e. the iris, ciliary body, or choroid of one eye is injured, the uninjured (sympathising) eye may show inflammation
b. If there is lacrymation from one eye, secretion from another eye will start
c. Injury to one eye but effect to another eye
d. None of the above

407. In general, light has been associated with following different types of ocular injury except:
a. Thermal
b. Photochemical
c. Photophysical
d. Structural damage from pressure-induced changes (sonic transients) associated with the operation of certain types of lasers

408. Perhaps the most familiar photochemical ocular response in ultraviolet keratitis (arc eye or flash eye). What is the characteristic feature of it?
a. The corneal epithelium strongly absorbs ultraviolet radiation shorter than 295 nm
b. Exposure to this type of radiation has been shown to cause direct photochemical changes in epithelial cell nucleic acids and aromatic amino acids, as well as indirect damage from the generation of free radicals
c. Histopathologically, inhibition of epithelial cell mitosis, nuclear fragmentation, and loosening of the epithelium can be seen
d. All of the above

409. What is welding arc maculopathy?
a. Photic retinopathy may occur, due to photochemical damage by the blue light component of the welding arc, to individuals welding without eye protection
b. Effects of UV rays of arc welding on eye
c. Effects of fumes of arc welding on eye
d. None of the above

410. X-ray, β-rays, and other radiation sources in adequate doses can cause ocular injury like:
a. Loss of lashes and scarring can lead to inversion or eversion (entropion or ectropion) of the lid margins and prevent adequate lid closure
b. Dryness of the eyes
c. Lenticular opacities or cataracts
d. All of the above

411. Visible light has a spectrum of 400–750 nm. If the wavelength of the spectrum penetrates fully to the retina, they can cause:
a. Thermal injuries
b. Mechanical injuries
c. Photic injuries
d. All of the above

412. What is retinopathia sulphocarbonica?
a. The central vision defect associated with chronic carbon disulphide exposure
b. The central vision defect associated with chronic carbon monoxide exposure
c. The central vision defect associated with chronic hydrogen sulphide exposure
d. None of the above

413. Following are the features of Minamata disease except:
   a. Methylmercury is responsible for the disease
   b. Most victims show bilateral concentric constriction of visual fields with preservation of central vision
   c. The disease is due to the eating of pork meat
   d. Pupillary reflexes remain normal, but eye movements (recorded by electrooculogram) are abnormal, with distinct muscular incoordination and 'jerky' pursuit

414. A well recognised Vision Conservation Programme for an industy includes all components except:
   a. Screening the vision of the individual worker
   b. Determining the vision requirements of different jobs among the worker
   c. Encouraging the wearing of basic eye protective equipment at all times by every worker who enters the area potentially hazardous to the eye
   d. Detailed assessment of the hazards of the jobs with special reference to the face and the general working environment

415. A compact instrument for industry to screen acuity of vision (both distant and near), field of vision, muscle balance (in both the planes), binocular vision and colour vision is:
   a. A vision tester
   b. An orthorator
   c. An Ishihara chart
   d. Both a and b

416. The uses of pesticides are all except:
   a. Prevention of vectorborne diseases
   b. Controlling insects in the domestic environment
   c. As plant protection product or agrochemical
   d. Use to increase the taste of food

417. According to the US Federal Insecticide Fungicide and Rodenticide Act (FIFRA) pesticide is defined as:
   a. Any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest (insect, rodent, nematode, fungus, weed, other forms of terrestrial or aquatic plant of animal life or viruses, bacteria or other living animals)
   b. It is defined as a plant protection product or agrochemical
   c. It is defined as a substance intended for use as a plant regulator
   d. None of the above

418. Biopesticides are those derived from natural materials, such as animals, plants, bacteria, and some minerals. They fall into the following major classes except:
   a. Microbial pesticides
   b. Plant pesticides
   c. Biochemical pesticides
   d. Animal pesticide

419. Classifications of pesticide according to their target organ are all except:
   a. Fungicide
   b. Herbicide
   c. Insecticide
   d. Suicide

420. Following are insecticide except:
   a. Anticholinesterase
   b. Organochlorines
   c. Bipyridil derivatives
   d. Pyrithrins and synthetic pyrethroids

421. All are true about herbicid except:
   a. They are designed and selected to kill plants with different degree of specificity
   b. As a general rule, the greater the specificity, the lower the mammalian toxicity
   c. They are commonly known as weed killers
   d. They are not human poison

422. A fumigant is a substance or mixture of substances that produces a gas, vapour, fume, or smoke intended to destroy insects, bacteria, or rodents. The examples are all except:
   a. Acrylonitrile
   b. Calcium cyanide

c. Organophosphorus compound
d. Carbon disulphide

423. Following are correct about anticholinesterase insecticides except:
a. They comprise the esters of phosphoric or phosphorothioic acid and those of carbamic acid (carbamates), and share a common mechanism of toxic action
b. They inhibit acetylcholine esterase (AChE), the enzyme responsible for the destruction of the neurotransmitter acetylcholine
c. This inhibition leads to the accumulation of free acetylcholine at the ending of all cholinergic nerves which results in a prolonged stimulation of electrical activity
d. Carbamic acid (carbamates) anticholinesterase insecticide is also an organophosphorus compound

424. The inhibition of acetylcholinesterase by organophosphorus insecticide leads to the accumulation of free acetylcholine at the ending of all cholinergic nerves which results in a prolonged stimulation of electrical activity at muscarinic receptors of the parasympathetic autonomic nervous system, with:
a. Increased secretions and bronchoconstriction
b. Miosis
c. Gastrointestinal cramps, diarrhoea, micturition and dehydration
d. All of the above

425. The inhibition of acetylcholinesterase by organophosphorus insecticide leads to the accumulation of free acetylcholine at the ending of all cholinergic nerves which results in a prolonged stimulation of electrical activity at nicotinic junctions between nerves and muscles, with:
a. Tachycardia and hypertension
b. Muscle fasciculation and tremors
c. Muscles weakness and flaccid paralysis
d. All of the above

426. The inhibition of acetylcholinesterase by organophosphorus insecticide leads to the accumulation of free acetylcholine at the ending of all cholinergic nerves which results in a prolonged stimulation of electrical activity at central nervous system, with:
a. Restlessness and emotional liability
b. Ataxia, lethargy, mental confusion and memory loss
c. Convulsion and coma
d. All of the above

427. Feature of organophosphorus pesticide-induced delayed polyneuropathy:
a. It is characterised by initial flaccidity (second motor neuron syndrome)
b. In some cases, spasticity, hypertonicity, hyper-reflexia and clonus indicative of a damage to the pyramidal tract
c. It is accompanied by a Wallerian dying-back degeneration of large diameter axons
d. All of the above

428. The chronic toxic effects of organophosphorus pesticide are all except:
a. Impaired memory and concentration
b. Delayed neuropathy
c. Miosis
d. Acute psychosis

429. Following acetylcholinesterase (AChE) may be clinically significant:
a. True acetylcholinesterase: found principally on the nervous system and RBC
b. Pseudo or butyryl-cholinesterase: found in the plasma, liver and the nervous system
c. Both a and b
d. None of the above

430. The level of depression of the RBC cholinesterase is a more reliable indicator for clinically significant reduction of cholinesterase activity. The measurement is done by:
a. Michel method
b. Method of rapid field determination of ChE

c. Both a and b
d. None of the above

431. According to the method of rapid field determination of cholonesterase, 25% to 0% of cholinesterase activity due to organophosphorus pesticide toxicity means:
a. Very serious and dangerous overexposure
b. Serious overexposure
c. Overexposure probable
d. Normal

432. According to the method of rapid field determination of cholonesterase, 50% to 25% of cholinesterase activity due to organophosphate pesticide toxicity means:
a. Very serious and dangerous overexposure
b. Serious overexposure
c. Overexposure probable
d. Normal

433. According to the method of rapid field determination of cholonesterase, 75% to 50% of cholinesterase activity due to organophosphorus pesticide toxicity means:
a. Very serious and dangerous overexposure
b. Serious overexposure
c. Overexposure probable
d. Normal

434. According to the method of rapid field determination of cholonesterase, 100 to 75% of cholinesterase activity due to organophosphorus pesticide toxicity means:
a. Very serious and dangerous overexposure
b. Serious overexposure
c. Overexposure probable
d. Normal

435. What is "ageing phenomenon" in organophosphorus pesticide treatment?
a. Pralidoxime, the antidote of OP poisoning is far less effective if used later when the phosphorylation of the enzyme cholinesterase is strengthened by the loss of one organophosphate alkyl group, a phenomenon known as 'ageing'
b. Survival rate is less to old age group in OP poisoning
c. Atropin and pralidoxime are less effective in old age group for the treatment of OP poisoning
d. None of the above

436. Carbamates are derivatives of carbamic acid, differing from the chlorinated hydrocarbon and organophosphate insecticides by:
a. The absence of chlorine and phosphorus respectively
b. The absence of phosphorus and chlorine respectively
c. The absence of carbon and phosphorus respectively
d. None of the above

437. The clinical manifestations of inorganic lead nephropathy are all except:
a. Acute lead nephropathy
b. Chronic progressive renal failure
c. Renal tubular dysfunction
d. Secondary hypotension

438. The possible mechanisms linking lead and hypertension include:
a. Increase intracellular calcium and inhibition of the Na^+, K^+ - adenosine triphosphatase (ATPase) system
b. Direct vasoconstriction
c. Alteration in the rennin-angiotensin-aldosterone axis
d. All of the above

439. The presence of early markers of disturbed tubular function due to exposure of cadmium is:
a. Urinary N-acetyl-β-D-glucosaminidase (NAG)
b. B_2-microglobulin (β_2M)
c. Both a and b
d. None of the above

440. The chelation and elimination through bile are used in practice to remove cadmium from the liver. One of the most effective chelating agents for removing cadmium from the liver and kidneys is:

a. Penicilamine
b. BAL
c. Sodium N-(4-methoxybenzyl)-D-glucamine dithiocarbamate
d. None of the above

441. Crystaline free silica can produce the following disease/disorders except:
a. Silicosis
b. Necrotising glomerulonephritis
c. Lung cancer
d. Silica wart

442. Porphyria cutanea tarda (PCT) usually presents with increased uroporphyrine excretion in the urine along with photosensitive skin lesions, including:
a. Bullae
b. Hypertrichosis
c. Hyperpigmentation
d. All of the above

443. Porphyria cutanea tarda (PCT) is inherited in an autosomal dominant fashion and is characterised by a deficiency of uroporphyrinogen decarboxylase (UROD) in the liver, erythrocytes and other tissues, with a secondary elevation of aminolevulinic acid synthetase (ALAS). Clinical presentation is precipitated by:
a. Alcohol
b. Oestrogen
c. Hepatitis C
d. All of the above

444. Perkinsonism like syndrome may develop due to the exposure of:
a. Manganese
b. Carbon monoxide
c. Methanol
d. All of the above

445. Myeloneuropathy may develop due to the exposure of all except:
a. Nitrous oxide
b. Organophosphates
c. Hydrogen sulphide
d. n-hexane

446. Long-term exposure of carbon disulphide may cause extrapyramidal findings such as:
a. Cogwheel rigidity
b. Bradykinesis
c. Dyskinesis
d. All of the above

447. Encephalopathy and reduced IQ may be due to the exposure of:
a. Organic lead
b. Inorganic lead
c. Mercury
d. CO

448. Specific chelating agent used for the treatment of chronic arsenic poisoning:
a. Dimercaptosuccinic acid (DMSA)
b. Penicillamine
c. BAL
d. None of the above

449. Acute intravascular haemolysis with methaemoblobinaemia is known to follow exposure to a highly toxic gas produced by the contact of acid with metals containing arsenic:
a. Arsine gas
b. Arsenic
c. Arsenic oxide
d. Arsenicals

450. Chronic exposure of ultrasound (USG technician) for many years may develop haemolytic anaemia with the following mechanism:
a. Ultrasound has an affinity to disintegrate the cellular structure and RBC is the target cell
b. Ultrasound has indirect effect on RBC to break it down by other indigenous agents
c. Ultrasound reduces the lifespan of RBC
d. None of the above

451. Aplastic anaemia is produced by the chronic exposure of all except:
a. Benzine
b. Ionising radiation
c. Paratoluene diamine
d. Arsenicals

452. The feature of myelodysplastic syndrome:
a. It is a group of acquired genetic disorders of the blood-forming cells
b. Characterised by ineffective haematopoiesis, clinically resulting in anaemia, neutropenia, thrombo-

cytopaenia, or a combination of cytopoenias
c. Benzene and ionising radiation have been implicated in the development of myelodysplastic syndrome
d. All of the above

453. Occupational risk factors of chemical agents for cardiovascular disorder are all except:
a. CO
b. Lead oxide
c. CS_2
d. Tetramethyl lead

454. Occupational risk factors of physical agents for cardiovascular disorder are all except:
a. Noise
b. Heat and cold
c. UV rays
d. Vibration

455. What is sick building syndrome?
a. Health hazards due to old building
b. It is a condition associated with complaints of discomfort including headache; nausea; dizziness; dermatitis; eye, nose, throat and respiratory irritation; coughing; difficulty concentrating; periods of occupancy and often disappear after the worker leaves the work site
c. Sickness due to household work
d. None of the above

456. What is ventilation pneumonitis?
a. The disease is caused by thermophilic actenomycetes growing in reservoirs of humidification systems where water recirculates at temperatures which are sufficient to permit their growth
b. The disease is caused by poor ventilation
c. The disease is caused by CO_2 due to inadequate ventilation
d. None of the above

457. Following may be the feature of humidifier fever:
a. It is associated with humidification systems whose reservoir of water is cold
b. The symptoms of humidifier fever have a characteristic periodicity: they occur on the first day back at work after a weekend or holiday absence and improve, despite continuing exposure during the working week (Monday morning fever)
c. Outbreaks have been reported in relation to bioaerosol exposure from contaminated humidifier water in offices and printing houses, but this disease differs from EAA in the disease mechanism seems to be a toxic alveolitis, usually due to bacterial endotoxins
d. All of the above

458. Legionella pneumophila is a bacterial microorganism that is found widely in nature in wet surroundings and it is capable of colonising cooling towers and hot water systems. Infection presents in following form:
a. Legionnaires' disease
b. Pontiac fever
c. Both a and b
d. None of the above

459. The following have been shown to be the potential sources of the epidemics of legionellosis except:
a. Domestic hot water systems in large buildings and cooling water systems used in air conditioning
b. Industrial coolants used for grinding and machine lubrication
c. Big pond's water
d. Respiratory therapy equipment

460. Correct statements about outbreaks of pontiac fever are all except:
a. It is an acute self-limiting influenza-like illness
b. The incubation period is 24–48 hours and the attack rate of the exposed seems to be as high as 90%
c. The symptoms include malaise, myalgias, fever, chills and headache, non-productive cough and nausea
d. There is pneumonia in this form of Legionella pneumophila infection

461. Following diseases are caused by indoor air pollution except:
   a. Legionnaires' disease
   b. Humidifier fever
   c. Heat syncope
   d. Sick building syndrome

462. What is industrial hygiene?
   a. The science and art of recognising, evaluating and controlling occupational health hazards
   b. Industrial cleanliness
   c. Work environment monitoring
   d. None of the above

463. The TLVs currently have been categorised as all of the follows except:
   a. Threshold limit value—long-term exposure limit (LTEL)
   b. Threshold limit value—short-term exposure limit (STEL)
   c. Threshold limit value—stag (TLV-S)
   d. Threshold limit value-concentration (TLV-C)

464. There is no threshold limit value (TLV) has been assigned for:
   a. Irritant gases
   b. Asphyxiants
   c. Human carcinogens
   d. Solvents

465. While conducting an industrial hygiene study, the evaluation of the industrial environment is undertaken broadly:
   a. To determine levels of exposure among workmen to various atmospheric contaminants
   b. To determine the effectiveness of control measure
   c. To investigate complaints and for research purposes
   d. All of the above

466. Usual size of mists is:
   a. 50.0 to 100 microns
   b. 1.0 to 50.0 microns
   c. .001 to 100 microns
   d. None of the above

467. The US atomic energy commission has defined the respirable fraction of dust in term of sampling efficiency curve which passes through the following point:
   a. 100% efficiency at 2 microns
   b. 50% efficiency at 2.5 microns
   c. 0% efficiency at 10 microns
   d. All of the above

468. Chemical analytical methods used for the determination of the contaminants are all except:
   a. Colorimetric method
   b. Ion exchange method
   c. Gravimetric method
   a. Gas chromatograph

469. Physical analytical methods used for the determination of the contaminants are all except:
   b. Emission spectroscopy, infrared and ultraviolet spectroscopy, infrared and ultraviolet spectroscopy
   c. Gas chromatograph
   d. Atomic absorption spectrophotometry
   d. Colorimetric method

470. Principles of occupational health hazards prevention are all except:
   a. Substitution
   b. Segregation
   c. Observation
   d. Enclosures

471. Principles of occupational health hazards prevention are all except:
   a. Exhaust ventilation
   b. General ventilation
   c. Wet methods (hydroblasting)
   d. Dry method

472. Sandblasting is substituted by:
   a. Hydroblasting
   b. Snowblasting
   c. Shotblasting
   d. None of the above

473. Following may be the wet method applied in industrial process:
   a. As a direct method of controlling dust by spray or other means
   b. As a method of preventing dust arising by handling materials in the industry

c. As an ancillary precaution of dust exposure where other measure relied upon as a main precaution
d. All of the above

474. Handling of materials in paste form instead of as a powder is a wet method. Following are the examples of these methods except:
a. In paint industry white lead mixed with oil
b. Application of talc in rubber industry, by dipping the material in water suspension of talc
c. Dry abrasives used for cleaning castings
d. In pottery ground wet may be kept as suspension instead of drying it in pottery factories

475. To protect from hazardous gases following respiratory personal protective equipment are used except:
a. Chemical cartridge respirator
b. Canister gas masks
c. Mechanical filter
d. Self contained breathing apparatus (oxygen or air)

476. The objective of health education in occupational health promotion through improvement of personal hygiene:
a. To educate the people in the principle of environmental health with a view to bring about desired changes in health practice
b. To secure adoption, wide use and maintenance of occupational health practice
c. To promote active participation of the people to improve the personal and occupational health
d. All of the above

477. Industrial ventilation has following function:
a. To supply sufficient quantity of fresh air
b. To distribute the air satisfactorily throughout the workplace
c. To maintain reasonable conditions of comfort for the operators
d. All of the above

478. Dedicated smoking areas should be configured so that migration of smoke into nonsmoking areas will not occur and such area should:
a. have floor-to-ceiling walls of tight construction
b. be under negative pressure relative to adjacent areas
c. be exhausted outside the building and not re-circulated
d. All of the above

479. After a particular level of work, if the work is increased, the Vo_2 will not increase and after V_2MAX the linear presentation will show a:
a. Platue
b. Upward projection
c. Downward projection
d. None of the above

480. Physical fitness index is related to:
a. Harvard step test
b. Functional aerobic impairment
c. Pulmonary function test
d. Classification of ILO radiograph on pneumoconiosis

481. What is fatigue?
a. Tiredness is called fatigue
b. Fatigue can be described as a state which is characterised by a feeling of tiredness combined with a reduction or undesired variation in the performance of the activity
c. Tiredness followed by weakness is fatigue
d. None of the above

482. The fatigue symptoms can be divided into following categories except:
a. Physiological: It results in physiological reactions like increased heart rate
b. Behavioural: It decreases the performance parameter like increasing errors when solving certain tasks
c. Psychophysical: It increases the feeling of exertion and deterioration
d. Psychosocial

483. Following are the correct statements of lifting index except:

a. It is defined as the actual weight lifted divided by the recommended weight limit (RWL)
b. It gives a relative indication of the risk of injury associated with various lifting tasks
c. The NIOSH perspective is that it is likely that tasks with a LI > 1.0 pose an increased risk of lifting related injury
d. It has no effect on low back injury

484. Ergonomics has been successfully applied in all except:
a. Design of furniture, seats, rests and steps for operators
b. Design of jigs and fixtures
c. Reduction of betterment of health and safety standards
d. Improvement in working conditions and environments

485. Ergonomics has been successfully applied in:
a. Selection, training and placement of personnel
b. Motivation of workers
c. Fatigue reduction
d. All of the above

486. Work with visual display terminals (VDTs) is associated with the disorder of all except:
a. Vision
b. Musculoskeletal disorders
c. Monday morning fever
d. Adverse reproductive outcomes due to electromagnetic fields

487. Back disorders result from exceeding the capability of the muscles, tendons, discs, or the cumulative effect of following contributor:
a. Poor posture
b. Reaching while lifting
c. Twisting while lifting
d. All of the above

488. Back disorders result from exceeding the capability of the muscles, tendons, discs, or the cumulative effect of following all contributors excepts:
a. Bending while lifting
b. Heavy lifting
c. Lifting without forceful movement
d. Fatigue

489. What is correct about strain index (SI)?
a. Strain index (SI) = Job demands/ Worker's capacity
b. Over exertion injury (musculo-skeletal low-back injury) was the result of job demands that exceeded a worker's capacity to lift
c. This was characterised by the strain index, with tasks associated with ratio in excess of 1.0 having the potential for overexertion injury
d. All of the above

490. All are cumulative trauma disorders except:
a. Carpal tunnel syndrome (CST)
b. Tendonitis/Tenosynovitis
c. Epicondylitis
d. White finger

491. Carpal tunnel syndrome is caused by:
a. It is caused by the injury to the median nerve in the wrist
b. It is caused by the injury to the ulnar nerve in the wrist
c. Both a and b
d. None of the above

492. Evidence of work relatedness—a history of job involving one or more of the following activities before the development of symptoms of carpal tunnel syndrome:
a. Frequent, repetitive use of the same or similar movements of the hand or wrist on the affected side(s)
b. Regular tasks requiring the generation of high force by the hand on the affected side(s)
c. Regular or sustained tasks requiring awkward hand positions on the affected side(s)
d. All of the above

493. Following are the occupational zoonotic diseases except:
a. Rabies
b. Q fever
c. Brucellosis
d. Anthracosis

494. Example of occupational zoonotic diseases are all except:
   a. Brucellosis
   b. Leptospirosis
   c. Chlamydophilia
   d. Bagassosis

495. Example of occupational zoonotic disease are all except:
   a. Hantavirus infection
   b. Camphylobacteriosis
   c. Tularaemia
   d. Byssinosis

496. What is mental fatigue at work?
   a. Mental fatigue can be defined as a process of time-reversible decrement of behavioural stability of performance, mood and activity after prolong working time
   b. Psychological exhaustion
   c. Psychosocial disbalance
   d. All of the above

497. What is the meaning of absenteeism in industry?
   a. Absent from duty
   b. Absence from work or absenteeism is defined as nonattendance when expected to work, for any reason at all, medical or other
   c. Absent from work against prior permission
   d. None of the above

498. What is the meaning of presenteeism in industry?
   a. It is a situation where an employee has a disorder, but nevertheless goes to work and may underperform
   b. Present at work
   c. Present for overtime
   d. None of the above

499. What is correct about burnout?
   a. It is a form of mental stress
   b. It is a process defined as a feeling of progressive deterioration and exhaustion and an eventual depletion of energy
   c. It is an overload that tends during the course of time to affect attitudes, mood and general behaviour
   d. All of the above

500. What is correct about somatisation?
   a. Somatisation is a common reflection of emotional distress and presents with a preoccupation with and unconscious exaggeration of physical symptoms
   b. It is a somatic disorder due to mental stress
   c. It is a somatic disorder due to physical stress
   d. None of the above

ANSWERS

1. d	2. a	3. b	4. a	5. b	6. d	7. d	8. c	9. d	10. d	11. d	12. d
13. a	14. d	15. a	16. d	17. d	18. a	19. b	20. c	21. d	22. d	23. d	24. c
25. d	26. a	27. b	28. c	29. d	30. d	31. a	32. b	33. c	34. d	35. d	36. c
37. a	38. a	39. b	40. d	41. a	42. b	43. d	44. d	45. c	46. a	47. b	48. d
49. d	50. d	51. a	52. c	53. a	54. a	55. a	56. b	57. c	58. c	59. a	60. a
61. a	62. b	63. d	64. b	65. b	66. d	67. c	68. d	69. c	70. d	71. a	72. b
73. b	74. b	75. a	76. d	77. d	78. d	79. a	80. b	81. c	82. a	83. b	84. c
85. a	86. a	87. d	88. b	89. a	90. a	91. b	92. c	93. c	94. a	95. a	96. a
97. d	98. b	99. c	100. a	101. b	102. d	103. a	104. a	105. a	106. c	107. d	108. c
109. d	110. d	111. d	112. a	113. d	114. d	115. b	116. d	117. d	118. b	119. c	120. d
121. c	122. a	123. a	124. b	125. c	126. d	127. d	128. c	129. d	130. a	131. b	132. a
133. a	134. b	135. a	136. b	137. a	138. c	139. d	140. a	141. d	142. d	143. d	144. d
145. a	146. b	147. c	148. c	149. a	150. d	151. a	152. c	153. a	154. d	155. d	156. c
157. c	158. c	159. d	160. d	161. d	162. d	163. d	164. a	165. d	166. c	167. c	168. b
169. c	170. c	171. d	172. a	173. d	174. d	175. a	176. a	177. b	178. a	179. b	180. a
181. b	182. d	183. a	184. b	185. a	186. b	187. a	188. c	189. d	190. a	191. d	192. c
193. d	194. d	195. a	196. d	197. c	198. b	199. c	200. d	201. d	202. d	203. c	204. c
205. d	206. a	207. c	208. d	209. d	210. d	211. b	212. c	213. a	214. b	215. a	216. d
217. a	218. d	219. d	220. b	221. a	222. a	223. c	224. d	225. d	226. a	227. b	228. c
229. d	230. d	231. c	232. c	233. b	234. d	235. a	236. a	237. a	238. b	239. b	240. d
241. d	242. c	243. a	244. c	245. c	246. c	247. d	248. d	249. d	250. c	251. d	252. a
253. c	254. c	255. d	256. c	257. a	258. c	259. d	260. a	261. a	262. d	263. d	264. a
265. a	266. d	267. a	268. c	269. a	270. d	271. a	272. d	273. d	274. d	275. b	276. d
277. d	278. a	279. a	280. a	281. d	282. a	283. a	284. d	285. b	286. a	287. d	288. d
289. d	290. a	291. a	292. d	293. d	294. d	295. b	296. d	297. a	298. c	299. d	300. b
301. d	302. c	303. d	304. d	305. a	306. a	307. b	308. a	309. a	310. b	311. d	312. a
313. b	314. c	315. a	316. a	317. b	318. c	319. a	320. c	321. d	322. d	323. d	324. c
325. a	326. a	327. b	328. a	329. d	330. a	331. d	332. a	333. c	334. d	335. a	336. d
337. a	338. d	339. c	340. d	341. d	342. d	343. a	344. b	345. b	346. d	347. d	348. c
349. a	350. d	351. d	352. a	353. b	354. b	355. a	356. c	357. d	358. b	359. d	360. d
361. d	362. c	363. d	364. a	365. c	366. a	367. c	368. d	369. a	370. c	371. b	372. d
373. d	374. c	375. c	376. a	377. a	378. d	379. c	380. a	381. c	382. d	383. c	384. c
385. a	386. d	387. a	388. d	389. b	390. c	391. a	392. d	393. c	394. a	395. b	396. d
397. c	398. d	399. c	400. c	401. d	402. d	403. d	404. a	405. b	406. a	407. c	408. d
409. a	410. d	411. d	412. a	413. c	414. d	415. d	416. d	417. a	418. d	419. d	420. c
421. d	422. c	423. d	424. d	425. d	426. d	427. d	428. c	429. c	430. c	431. a	432. b
433. c	434. d	435. a	436. a	437. d	438. d	439. a	440. c	441. d	442. d	443. d	444. d
445. c	446. d	447. a	448. a	449. a	450. a	451. a	452. d	453. d	454. c	455. b	456. a
457. d	458. c	459. c	460. d	461. c	462. a	463. c	464. c	465. d	466. a	467. d	468. d
469. d	470. c	471. d	472. c	473. d	474. c	475. c	476. d	477. d	478. d	479. a	480. a
481. b	482. d	483. d	484. c	485. d	486. c	487. d	488. c	489. d	490. d	491. a	492. d
493. d	494. d	495. d	496. a	497. b	498. a	499. d	500. a				