

PSA Oxygen Generation Plant

Submission of MCQ question Bank with answers topics wise for the assessment of trainees

1. In PSA Oxygen Generator, if pressure is 10 Bar, then pressure in PSI is
 - a) 10.197 PSI
 - b) 14.5 PSI
 - c) 145 PSI
 - d) 1450 PSI
2. Cooled air out let temperature refrigerant air dryer is 95 °F(Fahrenheit),then temperature in °C (Celsius) is
 - a) 35°C
 - b) 95°C
 - c) 113.4°C
 - d) 127°C
3. For Producing medical Oxygen in gaseous form
 - a) Cryogenic Technology
 - b) PSA Adsorption Technology
 - c) PSA Absorption Technology
 - d) None of these
4. 99% and above purity of Oxygen is produced by
 - a) Cryogenic Technology
 - b) PSA Adsorption Technology
 - c) PSA Absorption Technology
 - d) VPSA Adsorption Technology
5. For Producing Maximum 10 Liter Per Minute (LPM) gaseous Oxygen
 - a) Cryogenic Technology
 - b) PSA Adsorption Technology
 - c) PortableOxygen Concentrators
 - d) VPSA Adsorption Technology
6. Boiling point of Oxygen is
 - a) -79 Degree Centigrade
 - b) -183 Degree Centigrade
 - c) -186 Degree Centigrade
 - d) -194 Degree Centigrade
7. Which is the important gas used by human beings for breathing?
 - a) Nitrogen
 - b) Carbon dioxide
 - c) Oxygen
 - d) Carbon monoxide
8. Air compressor used in PSA Oxygen Plant is
 - a) Centrifugal Compressor
 - b) Helical screw Compressor
 - c) Reciprocating Compressor
 - d) Rotary Vane Compressor
9. To remove oil traces from compressed airis used
 - a) Carbon filter
 - b) Bacteria filter
 - c) Coalescing filter
 - d) 100 mesh screen

- 10. All pressuring vessels /tanks in PSA Oxygen gas plant are provided with at the top.**
- a) Safety valve
 - b) Relief valve
 - c) Pressure reducing valve
 - d) Rupturing disk
- 11. For measuring the % purity of product Oxygen gasis used.**
- a) Pressure Transmitter
 - b) Temperature Transmitter
 - c) Gas Analyser
 - d) Pressure Regulator
- 12. Adsorption of Nitrogen takes place in PSA Oxygen Generator takes place**
- a) High Pressure
 - b) Low Pressure
 - c) low temperature
 - d) High Temperature
- 13. The molecular sieve material used in Oxygen Generator /PSA Columns is**
- a) 3A Zeolite
 - b) 4A Zeolite
 - c) 5A Zeolite
 - d) 13X Zeolite
- 14. The fire triangle does not include**
- a) Oxygen
 - b) Fuel
 - c) Temperature
 - d) D) Heat
- 15. Most of the industrial accidents are**
- a) Unavoidable
 - b) Not preventable
 - c) Preventable
 - d) None of the above
- 16. will reduce Zeolite's efficiency and shorten its life.**
- a) Oxygen Gas
 - b) Nitrogen Gas
 - c) Argon Gas
 - d) Moisture and oil in air
- 17. Fire Extinguisher used for gaseous fire is**
- a) Water
 - b) Dry powder
 - c) Carbon Di-oxide
 - d) Wet chemical
- 18. While Starting PSA Oxygen Plant, first Machine is to be started**
- a) Screw air compressor
 - b) Refrigerated air drier
 - c) Oxygen Generators
 - d) Booster Compressor
- 19. Operation Manual /SOP must be available in PSA Oxygen Plant**
- a) Local Language
 - b) English
 - c) English and Hindi
 - d) Hindi only

- 20. Air and oxygen leakage in PSA plant and connecting pipelines are checked by**
- Soap solution
 - Hand Sanitizer
 - By flame test
 - None of above
- 21. Oxygen is produce in the following equipment of PSA Plant?**
- Screw Compressor
 - Refrigerated dehumidified Air Dryer
 - Adsorption Twin Towers
 - Filter units
- 22. During regeneration phase tower reaching to**
- 7.5 Bar pressure
 - 10 Bar Pressure
 - Zero Bar Pressure
 - Between 7.5 Bar to 10 Bar pressure
- 23. ON-OFF Valve used in PSA Oxygen Plant's pipeline is**
- Globe Valve
 - Needle Valve
 - Ball Valve
 - Spring loaded safety valve
- 24. Colour code for medical Oxygen gas cylinder in India is**
- Gray body with black and white valve end
 - Full red
 - Black body with white valve end
 - Full gray
- 25. A systematic approach for maintenance is.....**
- Problem – Cause – Diagnosis – Rectification
 - Problem– Diagnosis – Cause – Rectification
 - Problem – Measure – Diagnosis – Rectification
 - Problem– Diagnosis – Measure – Rectification
- 26. Before refilling oxygen cylinders, the medical oxygen gas pressure in increase to 200 PSI by**
- Air compressor
 - Booster Compressor
 - Booster Pump
 - Blower
- 27. Medical Oxygen supplying to hospital through pipeline , Pressure should be set in oxygen regulator**
- 5 Bar
 - 8 Bar
 - 10 Bar
 - 15 Bar
- 28. Choose importance of regeneration to adsorbent.**
- Removal of adsorbent (Zeolite)
 - Removal of unknown particles
 - Removal of adsorbates (Nitrogen)
 - Educeactivation energy of reaction

29. Oxygen Gas become more explosive when Pressure is

- a) 130 PSI
- b) 150 PSI
- c) 175 PSI
- d) 200 PSI

30. Function of refrigerant used in Refrigerated air dryer is

- a) To heat compressed air
- b) To cool compressed air
- c) To remove dust from compressed air
- d) None of these

31. Pressure is measured in _____ unit?

- a) Bar
- b) liter
- c) kilometer
- d) All of the above

32. The composition mixer of gases 21% oxygen, 78% Nitrogen, 0.9% argon and 0.1% other gases is called _____

- a) Carbon air
- b) Compressed air
- c) Atmospheric air
- d) None of the above

33. Why mercury is used in Measurement of pressure?

- a) Easily available
- b) Stable, High density, hence column size of mercury barometer can be reasonable.
- c) Unstable
- d) none

34. Which of following Process is used in PSA plant?

- a) Adsorption
- b) Absorption
- c) Consumption
- d) All of the above

35. Full form of LPM related to oxygen plant?

- a) Liter per Minute
- b) loss per minute
- c) liquid per minute
- d) None

36. The purpose of flow meter is _____

- a) To check the voltage
- b) To check temperature
- c) To check the flow of the gases.
- d) None of the above

37. The valve used for safety to protect oxygen tanks when the pressure of gases reach more than the Capacity is _____

- a) Needle valve
- b) Relief valve
- c) Globe Valve
- d) None of the above

38. **The purpose of air dryer is _____**
- To compress the atmospheric air
 - To generate clean dry air from compressed air
 - To filter oil content from air
 - None of the above
39. **The type of compressor generally used in most of PSA oxygen generation plants is_**
- Reciprocating
 - Rotary
 - Screw type
 - None of the above
40. **The valve which ensures the product gas does not flow back is _____**
- Gate Valve
 - Globe valve
 - Check Valve
 - None of the above
41. **What is the life of zeolite?**
- 1year
 - 2year.
 - 10-year
 - 3 to 5year.
42. **In PSA Unit 1st cylinder is pressurised then 2nd cylinder is**
- Cooling down.
 - Removing nitrogen
 - Cleaning the air
 - Removing Oils
43. **The different types of zeolite are?**
- Type A & B
 - Type A & z
 - Type A & X
 - Type X & Z
44. **The adhesion of atoms, ions or molecules from a gas, liquid or dissolved solid to a surface is known as?**
- Absorption
 - Adsorption
 - Cohesion
 - Generation
45. **A band of _____ is displayed above a fire extinguisher that contains carbon dioxide.**
- Yellow
 - Red
 - Black
 - Cream
46. **O.E.M. stands for**
- Original equipment Manufacturer
 - Old Equipment Manufacturer
 - Old Equipment Maintenance
 - Original Equipment Maintenance

47. _____ Maintenance is regular period planned maintenance which eliminates breakdowns and outages.
- a) Routine
 - b) Preventive
 - c) Corrective
 - d) operation
48. With the increase in cost of preventive maintenance, the breakdown maintenance cost will _____
- a) Decreases
 - b) Increases at a faster rate
 - c) No Change
 - d) Increases
49. What type of maintenance is most effective?
- a) Shutdown Maintenance
 - b) Corrective Maintenance
 - c) Breakdown maintenance
 - d) Preventing Maintenance
50. Maintenance that involves a system of periodic inspection and maintenance designed to keep machine in operation is called
- a) Preventive maintenance
 - b) Total productive maintenance
 - c) Predictive maintenance
 - d) Breakdown maintenance
51. What are the health hazards of cryogenic liquids?
- a) Extreme Cold Hazard
 - b) Asphyxiation Hazard
 - c) Toxic Hazards
 - d) All of Above
52. The component which used for joining the set of oxygen cylinders to fill the compressed air is _____
- a) Hose pipe
 - b) Nozzle
 - c) Compressor
 - d) Manifold
53. Generally pressure of compressed air is....
- a) 5 Bar
 - b) 7 to 7.5 Bar
 - c) 10 Bar
 - d) Above 10 Bar
54. What is the use of oxygen booster?
- a) To clean the air
 - b) To creating pressure for bottling purpose.
 - c) To suck the air
 - d) To Check the oxygen qualities
55. The oxygen analyser is used for.....
- a) To check the oxygen purity
 - b) To remove the bacteria.
 - c) To remove the nitrogen
 - d) To check the oxygen pressure

56. What is unit of pressure?

- a) Meter
- b) N/m^2
- c) c.kg
- d) N

57. Why mercury is used in Measurement of pressure.

- a) Easily available
- b) Stable, High density, hence column size of mercury barometer can be reasonable.
- c) Unstable
- d) None

58. Which of the following is law related to pressure.

- a) Ampere law
- b) Gauss law
- c) Boyles Law
- d) none

59. Which of the following represents a constant process?

- a) $p=k$
- b) $p=kt^2$
- c) $P=k +t$
- d) None

60. Liquid oxygen can be obtained at which temp?

- a) 37 degree
- b) 0 degree
- c) 187 degree
- d) 100 degree

61. What is the percentage share of oxygen in atmosphere?

- a) 10%
- b) 21%
- c) 71%
- d) 40%

62. One mole of Oxygen contains how many molecules?

- a) 10^{10}
- b) 6.02×10^{29}
- c) 6.02×10^{23}
- d) 6.02×10^{50}

63. Mass of One mole of oxygen?

- a) 12g
- b) 5g
- c) 32g
- d) 100g

64. What is adsorption?

- a) Process of mixing of particles in gases
- b) Process of mixing of particles in liquid.
- c) Process of attachment of particles on solid surface.
- d) None

65. Atomic number of oxygen?

- a) 8
- b) 32
- c) 4
- d) 16

66. Major use of oxygen in which industry?

- a) Steel
- b) Coal Gasification
- c) Medical
- d) All

67. Purity of oxygen is highest in the following Process?

- a) PSA
- b) Cryogenic
- c) Distillation
- d) None

68. PSA Plant should comply with which ISO standard?

- a) ISO 13485,ISO 9001
- b) ISO 14000
- c) ISO 26000
- d) None

69. Oxygen is Flammable?

- a) yes
- b) May be
- c) Not flammable but Facilitates Burning.
- d) None

70. Which of following Process is used in PSA plant?

- a) Adsorption
- b) Absorption
- c) C. Consumption
- d) All of the above

71. Purity of medical grade Oxygen.

- a) Greater than 40%
- b) Greater than 60%
- c) Greater than 70%
- d) Greater than 85%

72. 1 atmospheric pressure is equal to -----?

- a) 5 bar
- b) 6 bar
- c) 1.01325 bar
- d) None

73. Dimension of pressure.

- a) $[L^{-1}MT^{-2}]$
- b) $[L^{-3}M^1T^{-2}]$
- c) $[L^{-2}M^1T^{-2}]$
- d) None

74. As per Boyls Law How Pressure is related to Volume? (P= pressure, K=Constant, V=volume)

- a) $P = (k/V)$
- b) $P = K*V$
- c) $P = K*V^2$

75. Heart of PSA plant?

- a) Compressor
- b) De humidifier
- c) Solenoid Valve
- d) Storage tank.

76. Type of compressor used in Oxygen Plant?

- a) Low pressure Compressor Less than 10 bar
- b) Medium pressure Compressor between 10 bar to 70 bar
- c) High Pressure Compressor Greater than 70 bar
- d) All of the above

77. Full form of LPM related to oxygen plant?

- a) Liter per Minute
- b) loss per minute
- c) liquid per minute
- d) None

78. What is the name of Pressure measuring instrument?

- a) Thermometer
- b) Nanometer
- c) Barometer
- d) Ammeter

79. Unit of power?

- a) Watt
- b) Ampere
- c) meter
- d) Pascal

80. 1 Horse Power is equal to?

- a) 746 watt
- b) 786 watt
- c) 800 watt
- d) 736 watt

81. Standard Line voltage and frequency of power supply in India?

- a) 415 v, 30 hz
- b) 415, 60 hz
- c) 230, 50 hz
- d) 415, 50 hz

82. Zeolites are used in PSA to adsorb?

- a) Oxygen
- b) Nitrogen
- c) CO₂
- d) Moisture

83. What is role of dehumidifier?

- a) Absorb CO₂
- b) Absorb Moisture
- c) Add moisture
- d) Absorb oil & Moisture

84. What is role of muffler in oxygen plant?

- a) To reduce noise.
- b) To increase noise
- c) To release oxygen
- d) All of the above.

85. Valve used in oxygen separator unit is?

- a) Manual
- b) Solenoid
- c) Both
- d) None

86. What is transducer?

- a) converts one form of energy to other form
- b) Filter
- c) Purifier
- d) None

87. Full form of PSA?

- a) Pressure swing Adsorption
- b) Pressure swing Absorption
- c) Pressure swing Acceleration
- d) Power swing Adsorption

88. 1 Liter of liquid oxygen is equal to ?

- a) 861 liter of oxygen gas
- b) 1 liter of oxygen gas
- c) 100 liter of oxygen gas
- d) 500 liter of oxygen gas

89. Adsorption process is?

- a) Physical
- b) Chemical
- c) Electrical
- d) None

90. Oxygen plant with highest purity?

- a) PSA
- b) VPSA
- c) Cryogenic
- d) All

91. PSA Oxygen plant uses coalescing filter for?

- a) Oil and moisture separation
- b) Oxygen separator
- c) Water separator
- d) None

92. Planned maintenance is known as?

- a) Proactive
- b) Reactive
- c) Breakdown
- d) None

93. Compressing atmospheric air is necessary in a PSA plant?

- a) To purify more oxygen
- b) Efficiency of zeolite is pressure dependent
- c) To purify Air
- d) None

94. Which of the following checks needs to be done daily in an oxygen plant?

- a) Oxygen Purity
- b) Function of drain valve
- c) Both a & b
- d) Nitrogen purity & b.

95. Life of adsorbent depends on?

- a) Purity of input air
- b) Quality of adsorbent material.
- c) Both a & b
- d) None

96. What is oxygen Concentrator

- a) Self contained device
- b) Large oxygen Plant
- c) Component of PSA plant
- d) None

97. Oxygen in liquid form can Cause -----?

- a) Severe skin and eye irritation and burns as well as frostbite
- b) Not Harmful
- c) Poisonous
- d) None

98. Cryogenic Containers must be held in ----- Position?

- a) UP right
- b) Any position
- c) None
- d) Rolling type

99. Impurities in compressed air by compressor

- a) Oil
- b) Moisture
- c) Dust and Aerosols
- d) All of the above

100. The dry-bulb temperature (DBT) is the temperature of air measured by a thermometer freely exposed to the air, but

- a) Shielded from radiation and moisture
- b) Open to radiation and moisture
- c) Open to radiation and shielded from Moisture
- d) Shielded to radiation and open to moisture

101. At 100% relative humidity, the wet-bulb temperature is -----the air temperature (dry-bulb temperature)

- a) Equal to
- b) Greater than
- c) Lesser than
- d) Can't determine

102. If the flowing air is saturated, relation between Dry Bulb Thermometer (DBT) and Wet Bulb Thermometer (WBT) temperature

- a) Same
- b) $DBT > WBT$
- c) $WBT > DBT$
- d) No relation

103. The temperature at which the air becomes saturated with water when it is cooled at constant pressure is called

- a) Boiling Point
- b) Freezing Point
- c) Dew Point
- d) Triple point

104. The process of compressing air

- a) Raises Temperature
- b) Concentrates contaminants
- c) Raises water vapour concentration
- d) All of the above

105. Condensate moisture causes

- a) Corrosion, form emulsions with lubricants and greases
- b) Wash out lubricating oils from pneumatic tools
- c) Damage paints and surfaces
- d) All of the above

106. Air dryers are characterized by

- a) Operating Dew Point Temperature
- b) Flow rate in Standard CFM
- c) Both a & b
- d) Independent of a & b

107. Refrigerated dryers remove water from the air stream by cooling the stream to approximately

- a) 20 Degree C
- b) 40 Degree C
- c) 0 Degree C
- d) 3 Degree C

108. Usually there are ----- heat exchangers which are employed in the dryer units

- a) Two
- b) Three
- c) One
- d) Five

109. Heat exchangers are devices that facilitate the exchange of heat between two fluids that are at ----- temperatures while ----- with each other

- a) Different, allowing mixing
- b) Same, Allowing mixing
- c) Different, Keeping them from mixing
- d) Same, Keeping them from mixing

110. Identify the correct statements

- a) Parallel flow: hot and cold fluid enter from the same side
- b) Counter flow: hot and cold fluid enter from different ends
- c) Counter flow configuration is generally better
- d) All of the above

111. Identify correct statements

- a) Oxygen vigorously accelerated the burning of combustible materials
- b) To reduce the risk of fire or explosion keep gasoline, oil, combustible materials away from Oxygen Plant.
- c) Post "No Smoking sign" near oxygen generator.
- d) All of the above

112. Identify the correct statement

- a) To prevent electrical shocks keep oxygen plant indoor away from rain and moisture
- b) Take extreme care to keep oxygen pipeline clean
- c) Check all oxygen pipeline from leaks
- d) All of the above

113. Which of the following process results in bodily injury, damage the oxygen plant or reduce it's performance

- a) Improper installation
- b) Improper Operation
- c) Proper repair
- d) A & B only

114. Steps to follow which attempting maintenance

- a) Disconnect power supply before servicing oxygen generator
- b) Do Not disconnect protective earth
- c) Before attempting any servicing don't read the instructions manual
- d) A& b only

115. 1 bar =?

- a) 10^2 Pascal
- b) 10^3 Pascal
- c) 10^4 Pascal
- d) 10^5 Pascal

116. 1 bar =?

- a) 12.504 PSI
- b) 13.504 PSI
- c) 14.504 PSI
- d) 15.504 PSI

117. At Constant Volume and Amount of Air Temperature is inversely proportional to pressure

- a) Temperature is universally proportional
- b) Temperature is directly proportional to pressure
- c) Constant
- d) None of the above

118. Boiling Point of Nitrogen is

- a) -186°C
- b) -183°C
- c) -196°C
- d) -172°C

119. Release of Nitrogen molecule from Zeolite molecular Shieves in PSA type Oxygen Plant is called

- a) Adjurations
- b) Regeneration
- c) Decantation
- d) Flushing

120. Purity of Oxygen in Cryogenic type Oxygen Plant is

- a) 89 – 96%
- b) 99%
- c) 100%
- d) 70%

121. Purpose of Oil used in Screw type Compressor is

- a) Cooling
- b) Sealiy
- c) Lubrication oil
- d) All of the above

122. In PSA type Oxygen Plant air dryer used is generally

- a) Refrigerant type air dryer
- b) Desiccant type air dryer
- c) Deliquescent type dryer
- d) Membrane type air dryer

123. Micron & submicron filter removes particles and micro-organism depending on

- a) Type of material
- b) Pore size
- c) Electrical conductivity
- d) Magnetic property

124. For rate of oxygen flow going in to oxygen tank is measured by

- a) Barometer
- b) Oxygen analyser
- c) Rotameter
- d) Anemometer

125. In a PSA type Oxygen plant -Oxygen is obtained by

- a) Chemical decomposition
- b) Physical Separation
- c) Refrigeration
- d) Condensation

126. In PSA type Oxygen Plant Zeolite Replacement interval is

- a) 5 year
- b) 7 year
- c) 10 year
- d) 15 year

127. Leakage of Oxygen in pipes are found out by

- a) Smelling
- b) Burning Match-stick
- c) Soap water Applying
- d) Listening leakage sound

128. A Coalescing filter is used to remove

- a) Dust particle
- b) Water and oil aerosols from compressed air
- c) Remove Nitrogen for air
- d) All of these

129. Foam fire extinguisher is used for

- a) Class A fire
- b) Class B fire
- c) Class C fire
- d) Class A & B fire

130. Preventive Maintenance is used for

- a) Fixing problem before they happen
- b) When break down occur
- c) For upgrading equipment
- d) All of these

131. When we start compressor, then AC motor first starts in....

- a) Star mode
- b) Delta mode
- c) Either A & B
- d) None of the above

132. Filter inspection is carried out in

- a) Daily Maintenance
- b) Monthly Maintenance
- c) Half yearly Maintenance
- d) Yearly Maintenance

133. All maintenance history of PSA type Oxygen Generator is recoded in

- a) Log book
- b) Record book
- c) Cash book
- d) Maintenance book

134. All basic parameter of PSA type Oxygen Plant are given

- a) Training Manual
- b) OEM Manual
- c) log book
- d) Invoice book

135. Liquid Oxygen is transported in

- a) Stainless steel tank
- b) Cast steel tank
- c) Iron tank
- d) Double wall cylinder made of aluminium with insulator between two walls

136. In PSA type Plant we can collect gases in

- a) Liquid state only
- b) Gaseous state only
- c) Liquid & Gaseous both
- d) Solid State

137. Oxygen cylinder are filled with the use of

- a) High pressure Oxygen booster compressor
- b) Screw type Compressor
- c) Reciprocating Compressor
- d) Hydraulic Compressor

138. A Patient is given Oxygen Via

- a) High Pressure regulator
- b) Low Pressure regulator
- c) Medium Pressure regulator
- d) Adjustable valve with flow meter

139. In a gas distribution system the provision that serves to bring many junction in single channel is called

- a) Union Junction
- b) 'T' Junction
- c) Many fold
- d) All of these

140. A cylinder is considered thin when the ratio of inner diameter to wall thickness is more than 5.

- a) True
- b) False

141. Tangential stress in a cylinder is given by [symbols have their usual meanings].

- a) $PD/2t$
- b) $2PD/t$
- c) $PD/4t$
- d) $4PD/t$

142. Longitudinal stress in a cylinder is given by [symbols have their usual meanings].

- a) $PD/2t$
- b) $2PD/t$
- c) $PD/4t$
- d) $4PD/t$

- 143. A seamless cylinder of storage capacity of 0.03m^3 is subjected to an internal pressure of 21MPa . The ultimate strength of material of cylinder is 350N/mm^2 . Determine the length of the cylinder if it is twice the diameter of the cylinder.**
- 540mm
 - 270mm
 - 400mm
 - 350mm
- 144. A seamless cylinder of storage capacity of 0.03m^3 is subjected to an internal pressure of 21MPa . The ultimate strength of material of cylinder is 350N/mm^2 . Determine the thickness of the cylinder if it is twice the diameter of the cylinder.**
- 12mm
 - 4mm
 - 8mm
 - 16mm
- 145. Cylinder having inner diameter to wall thickness ratio less than 15 are**
- Thin cylinders
 - Thick Cylinders
 - Moderate cylinders
 - None of the listed
- 146. Lamé's equation used to find the thickness of the cylinder is based on maximum strain failure.**
- True
 - False
- 147. Lamé's equation is generally used for ductile materials.**
- True
 - False
- 148. The piston rod of a hydraulic cylinder exerts an operating force of 10kN . The allowable stress in the cylinder is 45N/mm^2 . Calculate the thickness of the cylinder using Lamé's equation. Diameter of the cylinder is 40mm and pressure in cylinder is 10MPa .**
- 2.05mm
 - 4.2mm
 - 5.07mm
 - None of the listed
- 149. The piston rod of a hydraulic cylinder exerts an operating force of 10kN . The allowable stress in the cylinder is 70N/mm^2 . Calculate the thickness of the cylinder using Clavarino's equation. Diameter of the cylinder is 240mm , $\mu=0.3$ and pressure in cylinder is 15MPa .**
- 35mm
 - 30mm
 - 27mm
 - None of the listed
- 150. Design of thin cylinder is based on a**
- Hoop stress
 - Longitudinal stress
 - Bending stress
 - Shear stress
- 151. Hoop stress (circumference stress) in thin cylindrical shell is.....**
- Longitudinal stress
 - Radial stress
 - Compressive stress
 - Circumference tensile stress

- 152. Pressure vessel is known (called) as thin shell when it is made of thin sheets.**
- True
 - False
- 153. Lame's theory is associated for a .**
- Thick cylinder
 - Thin cylinder
 - Both of cylinder
 - None of these
- 154. A Maximum tangential (shear) stress in a thick cylindrical shell is greater than internal pressure action on the shell**
- True
 - False
- 155. Cylindrical Pressure vessel is known as thin shell when a , ratio of wall thickness of the vessel to its diameter is 1/10.**
- Smaller than
 - Greater than
 - Equal to
 - Does not say
- 156. When diameter of pressure vessel is 15 times wall thickness, then vessel is called as thin shell.**
- True
 - False
- 157. Hoop stress in a thick cylinder shell is maximum at the outer radius.**
- True
 - False
- 158. Hoop stress in a thick cylinder shell is maximum at the inner radius.**
- True
 - False
- 159. Lame's theory is associated for thin cylindrical shell.**
- True
 - False
- 160. Which of the following is not the name of physical quantity?**
- Kilogram
 - Density
 - Impulse
 - Energy
- 161. The weight of a body is 12g. This statement is not correct because**
- The correct symbol for the unit of weight has not been used.
 - The correct symbol for gram is gm.
 - The weight should be expressed in kg.
 - Of some reason other than those given above.
- 162. The density of a liquid is 13.6 g cm⁻³. Its value in S.I. is**
- 13.6 kgm⁻³
 - 136 kgm⁻³
 - 13600 kgm⁻³
 - 1360 kgm⁻³
- 163. If the unit of force and length are doubled, the unit of energy will be**
- 1/2 times
 - 2 times
 - 4 times
 - 1/4 times

164. Which of the following have the same dimensions as v^2r Where v is the speed of the particle describing a circular path of radius r .

- a) Force
- b) Impulse
- c) Acceleration
- d) Momentum

165. Which of the following have the same dimensions as Plank's constant?

- a) Moment of momentum
- b) Moment of force
- c) Momentum/distance
- d) Force/distance

166. Which of the following is a dimensionless quantity, even when the measured quantity is not dimensionless?

- a) absolute error
- b) Gross error
- c) Relative error
- d) experimental error

167. The zero error belongs to the category of:

- a) Constant error
- b) Personal error
- c) Accidental error
- d) Instrumental error

168. The least count of a stop watch is 0.1s. The time of 20 oscillations of the pendulum is found to be 20s. The percentage error in the time period is

- a) 0.25%
- b) 0.75%
- c) 0.50%
- d) 1.0%

169. The value of $0.98 - 0.989$ with regard to the significant digit will be:

- a) 0.001
- b) 0.010×10^{-1}
- c) 0.01×10^{-1}
- d) None of these

170. What is the number of significant figures in $(3.20 + 4.80) \times 10^5$?

- a) 2
- b) 3
- c) 4
- d) 5

171. Which of the following numerical values has three significant figures?

- a) 5.055
- b) 0.050
- c) 50.50
- d) 0.500

172. Which of the following is not the name of a physical quantity?

- a) Kilogram
- b) Density
- c) Energy
- d) Impulse

173. A laser signal is sent towards the moon with a speed of light C and returns after a time t seconds. The distance of the moon from the observer is

- a) Ct
- b) $ct/2$
- c) ct^{-2}
- d) ct^{-1}

174. The volume of a cube in m^3 is numerically equal to its surface area in m^2 . The volume of the cube is

- a) $64m^3$
- b) $1000m^3$
- c) $216m^3$
- d) $512m^3$

175. The weight of a body is 12g. This statement is not correct because:

- a) The correct symbol for the unit of weight has not been used
- b) The correct symbol for gram is gm.
- c) The weight should be expressed in kg.
- d) None of the above

176. Give that the displacement of a particle is given by $x = A^2 \sin^2 kt$, where t denotes the time. The unit of k is

- a) Radian
- b) Metre
- c) Hertz
- d) Second

177. Which of the following is the unit of molar gas constant?

- a) $JK^{-1} \text{ mol}^{-1}$
- b) J
- c) JK^{-1}
- d) $J \text{ mol}^{-1}$

178. The dimensional formula for angular momentum is same as that for:

- a) Torque
- b) Planck's constant
- c) Gravitational constant
- d) Impulse

179. Which of the following physical quantity is dimensionless?

- a) Angle
- b) Specific gravity
- c) Strain
- d) All of these

180. Convert a pressure measurement of 20 PSIA into units of inches water column (gauge)

- a) 1321" H₂O
- b) 510.1" H₂O
- c) 701.2" H₂O
- d) 146.7" H₂O
- e) 960.5" H₂O

181. Which of the following is not a type of pressure sensing element?

- a) Bellows
- b) Bourdon tube
- c) Manometer
- d) Orifice plate
- e) Diaphragm

182. If a force of 3400 pounds is applied to a circular piston 2 inches in diameter, calculate the fluid pressure working against the piston.

- a) 344.5 PSI
- b) 270.6 PSI
- c) 850 PSI
- d) 1082.3 PSI
- e) 1700 PSI

183. Another word for "pressure" is:

- a) pH
- b) Flow
- c) Density
- d) Force
- e) Head

184. If the pressure applied to the "low" side of a ΔP transmitter increases while the pressure applied to the "high" side remains steady, the transmitter output should:

- a) Fail low
- b) Remain the same
- c) Increase
- d) Decrease
- e) Fail high

185. Identify the proper sequence of valve actions for a three-valve manifold and bleed when taking a differential pressure transmitter out of service:

- a) Open bleed, close one block valve, open equalizing valve, close other block valve
- b) Open equalizing valve, close both block valves (simultaneously), open bleed
- c) Close one block valve, open equalizing valve, close other block valve, open bleed
- d) Close one block valve, open bleed, close other block valve, open equalizing valve
- e) Open equalizing valve, open bleed, close both block valves (simultaneously)

186. Physical quantities are

- a) quantities such as degrees, radians and steradians
- b) Quantities such as length, mass, time, electric current, thermodynamic temperature, amount of substance, and luminous intensity
- c) Quantities such as pounds, dollars and rupees
- d) Quantities such as kilos, pounds and gallons

187. Which of the following pairs has the same dimensions?

- a) Specific heat and latent heat
- b) Impulse and momentum
- c) Surface tension and force
- d) Moment of Inertia and torque

188. The dimensions of kinetic energy is

- a) $[M^2 L^2 T]$
- b) $[ML^2 T]$
- c) $[ML^2 T^{-2}]$
- d) $[ML^2 T^{-1}]$

189. A force F is given by $F = at + bt^2$, where t is time. What are the dimensions of a and b ?

- a) MLT^{-1} and MLT^0
- b) MLT^{-3} and ML^2T^4
- c) MLT^{-4} and MLT^1
- d) MLT^{-3} and MLT^{-4}

190. The atmospheric pressure is 106 dyne/cm². What is its value in SI unit?

- a) 105 newton/m²
- b) 106 newton/m²
- c) 104 newton/m²
- d) 103 newton/m²

191. In a system of units if force (F), acceleration (A) and time (T) are taken as fundamentals units then the dimensional formula of energy is

- a) FA²T
- b) FAT²
- c) FA²T
- d) FAT

192. If force (F), work (W) and velocity (v) are taken as fundamental quantities. What is the dimensional formula of time (T)?

- a) [WFv]
- b) [WFv⁻¹]
- c) [W⁻¹F⁻¹v]
- d) [WF⁻¹v⁻¹]

193. The dimensions of kinetic energy is same as that of

- a) Force
- b) Pressure
- c) Work
- d) Momentum

194. Which of the following groups have different dimensions?

- a) Potential difference, EMF, voltage
- b) Pressure, stress, Young's modulus
- c) Heat, energy, work done
- d) Dipole moment, electric flux, electric field

195. ML⁻¹T⁻² is the dimensional formula of

- a) Magnetic induction
- b) Self-inductance
- c) Electric potential
- d) Electric field

196. What is the dimensional formula of magnetic field?

- a) MT⁻²A⁻¹
- b) MT⁻¹A⁻²
- c) M⁻¹L⁻²TA⁻¹
- d) M⁻¹LT⁻²A⁻²

197. Electron volt is a unit of

- a) Charge
- b) Potential difference
- c) Energy
- d) Magnetic force

198. The volume of a cube in m³ is equal to the surface area of the cube in m². The volume of the cube is

- a) 64 m³
- b) 216 m³
- c) 512 m³
- d) 196 m³

199. In SI system the fundamental units are

- a) Meter, kilogram, second, ampere, Kelvin, mole and candela
- b) Meter, kilogram, second, coulomb, Kelvin, mole and candela
- c) Meter, Newton, second, ampere, Kelvin, mole and candela
- d) Meter, kilogram, second, ampere, Kelvin, mole and lux

200. Which one of the following represents the correct dimensions of the coefficient of viscosity?

- a) $[ML^{-1}T^{-2}]$
- b) $[MLT^{-1}]$
- c) $[ML^{-1}T^{-1}]$
- d) $[ML^{-2}T^{-2}]$

201. A particle starting from the origin (0, 0) moves in a straight line in the (x, y) plane. Its coordinates at a later time are the path of the particle makes with the x-axis an angle of

- a) 300
- b) 450
- c) 600
- d) 0

202. Resolution is

- a) A measure of the bias in the instrument
- b) None of these
- c) The smallest amount of input signal change that the instrument can detect reliably
- d) A measure of the systematic errors

203. Absolute error of the measurement is

- a) The difference between the individual measurement and the true value of the quantity cubed.
- b) The difference between the individual measurement and the true value of the quantity squared.
- c) The difference between two individual measurements and their mean
- d) The difference between the individual measurement and the true value of the quantity

204. Which of the following units denotes the dimensions $[ML^2/Q^2]$, where Q represents the electric charge?

- a) Wb/m^2
- b) Henry(H)
- c) H/m^2
- d) Weber(Wb)

205. Light year is a unit of

- a) Time
- b) Distance
- c) Sunlight intensity
- d) Mass

206. Under the OSH Act, employers are responsible for providing a _____

- a) Safe workplace
- b) Land
- c) Insurance
- d) Estimation

207. OSHA was created to _____

- a) Data analysis
- b) To reduce hazards
- c) Ecological development
- d) EIA analysis

208. Which act establishes responsibilities and rights for employers and employees?

- a) SARA
- b) RCRA
- c) CERCLA
- d) OSHA

209. OSHA is part of the _____ department of labour.

- a) UK
- b) US
- c) India
- d) Australia

210. In the case of fatal accident, when should be a report filed for nearest OSHA office?

- a) Within 24 hours
- b) Within 48 hours
- c) Within 8 hours
- d) Within 4 hours

211. OSHA assignment is to set standards and conduct _____

- a) Inspections
- b) Tests
- c) Analysis
- d) Estimation

212. OSHA ensures that employees have been provided with _____

- a) Job
- b) PPE
- c) Insurance
- d) Security

213. Under OSHA, employee has the right to access medical records.

- a) True
- b) False

214. Hazard communication in OSHA conducts _____

- a) Chemical analysis
- b) Toxic exposure
- c) Strength analysis
- d) Hazard evaluations of the products

215. The OSHA Form 300 is an injury/illness log.

- a) Injury
- b) Analysis
- c) Finance
- d) Assistance

216. When should be the form 300A posted?

- a) January
- b) February
- c) March
- d) April

217. What is OSHA Form 301?

- a) Sickness log
- b) Individual incident report
- c) Chemical log
- d) Finance log

218. Employers in statistically low-hazard industries are exempt from maintaining OSHA 300 form records.

- a) True
- b) False

219. Safety and Health Achievement Recognition Program (SHARP) recognizes _____

- a) Small employers who operate safety and health management system
- b) Large employers who operate safety and health management system
- c) All employers who operate safety and health management system
- d) Workers who operate safety and health management system

220. When was OSHA enacted?

- a) 1980
- b) 1930
- c) 1945
- d) 1970

221. The purpose of a lock-out/tag-out procedure is to:

- a) Improve productivity on the job
- b) Secure harmful energy sources to prevent injury
- c) Slow down work so technicians are less stressed
- d) Save money
- e) Identify personal items to avoid theft

222. The purpose of CPR is to:

- a) Maintain oxygenated blood circulation
- b) Stabilize body temperature to avoid hypothermia
- c) Build upper body strength
- d) Dislodge blood clots within the victim's lungs
- e) Prevent infection resulting from open wounds

223. The very first thing you should do if you are the first to witness or discover an accident on the job site is to:

- a) Go find at least one co-worker to help you so you can work as a team
- b) Go to the scene and help the person(s) injured
- c) Find and fill out the necessary forms to document the incident
- d) Activate the emergency response system
- e) Contact your supervisor to report the incident

224. The purpose of a cartridge-style respirator is to:

- a) Reduce the concentration of particulates in the air you breathe
- b) Provide a pure oxygen breathing environment where there is insufficient oxygen in the air
- c) Enhance your personal appearance for maximum social appeal
- d) Convert exhaled carbon dioxide back into oxygen for re-breathing
- e) Reduce noxious odors in the air you breathe

225. Shock is defined as an abnormal condition of the body where:

- a) A broken bone has penetrated the skin
- b) The lungs are unable to process oxygen properly
- c) The muscles in the body have "frozen" and will not move
- d) The heart stops beating normally, and "quivers" instead
- e) There is insufficient blood delivered to the body's cells

226. A confined space is deemed ready for employee entry when:

- a) A company safety inspector has certified it
- b) The unit operations foreman declares it ready
- c) An engineer has completed the necessary calculations
- d) Your supervisor assigns you to the job
- e) An independent inspection agency has completed their survey

227. One of the common signs of a heart attack is:

- a) A sharp pain in the lower area of the spine
- b) Loss of bowel control
- c) A feeling of numbness in the legs
- d) Discomfort in the chest and/or upper body
- e) A general feeling of restlessness and anxiety

228. Heat stroke is often indicated by the following symptoms:

- a) A sudden affinity for country-western music
- b) Dizziness, vomiting, cold skin, profuse sweating
- c) Cold and clammy skin, thirst, vomiting, confusion
- d) Hot and dry skin, inability to drink, vomiting, confusion
- e) Blue-colored skin, extreme hunger, feelings of anxiety, thirst

229. Arc blast is caused by:

- a) Poor contact within electrical wire splices
- b) Radio frequency emissions from high-power transmitters
- c) Discharge of high electrical current through open air
- d) Failure to lock-out and tag-out electrical breakers
- e) Ionization of gases near high-voltage electrical conductors

230. Current measurements are more dangerous to make with a multimeter than voltage measurements because:

- a) You must use both hands to take the measurement
- b) Most multimeters are unfused
- c) The resulting magnetic fields may be very strong
- d) The circuit must be broken (opened)
- e) A fuse protects the voltage measurement ranges, but not current

231. In load flow studies of a power system, a voltage control bus is specified by

- a) Real power and reactive power
- b) Reactive power and voltage magnitude
- c) Voltage and voltage phase angle
- d) Real power and voltage magnitude

232. In power system, the maximum number of buses are

- a) Generator buses
- b) Load buses
- c) Slack buses
- d) P-V buses

233. In power system, if a voltage controlled bus is treated as a load bus then which one of the following limits would be violated?

- a) Voltage
- b) Active power
- c) reactive power
- d) Phase angle

234. In a load flow analysis of a power system, the load connected at a bus is represented as

- a) Constant current drawn from the bus
- b) Constant impedance connected at the bus
- c) Voltage and frequency dependent sources at the bus
- d) Constant real and reactive power drawn from the bus

235. The voltage of a particular bus can be controlled by controlling the

- a) Active power of the bus
- b) Reactive power of the bus
- c) Phase angle
- d) All of the above

236. The over voltage surges in power systems may be caused by

- a) Lightning
- b) Resonance
- c) Switching
- d) All of the above

237. The critical clearing time of a fault in power system is related to

- a) Reactive power limit
- b) Short circuit limit
- c) Steady-state stability limit
- d) Transient stability limit

238. Our system stability is least affected by

- a) Reactance of generator
- b) Input torque
- c) Losses
- d) Reactants of transmission line

239. Which portion of the power system is least prone to faults?

- a) Alternator
- b) Transformer
- c) Overhead lines
- d) Underground cable

240. The domains of power system where directional overcurrent relay is indispensable are

- a) In case of parallel feeder protection
- b) In case of ring main feeder protection
- c) Both A and B
- d) None of the above

241. The commercial sources of energy are

- a) Solar, wind and biomass
- b) Fossil fuels, hydropower and nuclear energy
- c) Wood, animal wastes and agriculture wastes
- d) None of the above

242. Compounding of steam turbine is done for

- a) Reducing the work done
- b) Increasing the rotor speed
- c) Reducing the rotor speed
- d) Balancing the turbine

243. In India largest thermal power station is located at

- a) Kota
- b) Sarni
- c) Chandrapur
- d) Neyveli

244. The percentage O₂ by weight in atmospheric air is

- a) 18%
- b) 23%
- c) 77%
- d) 79%

245. The percentage O₂ by volume in atmosphere air is

- a) 21%
- b) 23%
- c) 77%
- d) 79%

246. The proper indication of incomplete combustion is

- a) High CO content in flue gases at exit
- b) High CO₂ content in flue gases at exit
- c) High temperature of flue gases
- d) The smoking exhaust from chimney

247. The main source of production of biogas is

- a) Human waste
- b) Wet cow dung
- c) Wet livestock waste
- d) All above

248. India's first nuclear power plant was installed at

- a) Tarapore
- b) Kota
- c) Kalpakkam
- d) None of the above

249. In fuel cell, the _____ energy is converted into electrical energy.

- a) Mechanical
- b) Chemical
- c) Heat
- d) Sound

250. Solar thermal power generation can be achieved by

- a) Using focusing collector or heliostates
- b) Using flat plate collectors
- c) Using a solar pond
- d) Any of the above system

251. The energy radiated by sun on a bright sunny day is approximately

- a) 700 W/m²
- b) 800 W/m²
- c) 1 kW/m²
- d) 2 kW/m²

252. Thorium Breeder Reactors are most suitable for India because

- a) These develop more power
- b) Its technology is simple
- c) Abundance of thorium deposits are available in India
- d) These can be easily designed

253. The overall efficiency of thermal power plant is equal to

- a) Rankine cycle efficiency
- b) Carnot cycle efficiency
- c) Regenerative cycle efficiency
- d) Boiler efficiency x turbine efficiency x generator efficiency

254. Rankine cycle efficiency of a good steam power plant may be in the range of

- a) 15 to 20 percent
- b) 35 to 45 percent
- c) 70 to 80 percent
- d) 90 to 95 percent

255. Rankine cycle operating on low pressure limit of p_1 and high pressure limit of p_2

- a) Has higher thermal efficiency than the Carnot cycle operating between same pressure limits
- b) Has lower thermal efficiency than Carnot cycle operating between same pressure limits?
- c) Has same thermal efficiency as Carnot cycle operating between same pressure limits
- d) May be more or less depending upon the magnitude of p_1 and p_2

256. Rankine efficiency of a steam power plant

- a) Improves in summer as compared to that in winter
- b) Improves in winter as compared to that in summer
- c) Is unaffected by climatic conditions
- d) None of the above

257. Carnot cycle comprises of

- a) Two isentropic processes and two constant volume processes
- b) Two isentropic processes and two constant pressure processes
- c) Two isothermal processes and two constant pressure processes
- d) None of the above

258. In Rankine cycle the work output from the turbine is given by

- a) Change of internal energy between inlet and outlet
- b) Change of enthalpy between inlet and outlet
- c) Change of entropy between inlet and outlet
- d) Change of temperature between inlet and outlet

259. Regenerative cycle thermal efficiency

- a) Is always greater than simple Rankine thermal efficiency
- b) Is greater than simple Rankine cycle thermal efficiency only when steam is bled at particular pressure
- c) Is same as simple Rankine cycle thermal efficiency
- d) Is always less than simple Rankine cycle thermal efficiency

260. In a regenerative feed heating cycle, the optimum value of the fraction of steam extracted for feed heating

- a) Decreases with increase in Rankine cycle efficiency
- b) Increases with increase in Rankine cycle efficiency
- c) Is unaffected by increase in Rankine cycle efficiency
- d) None of the above

261. Convert a pressure measurement of 20 PSIA into units of inches water column (gauge)

- a) 1321" H₂O
- b) 510.1" H₂O
- c) 701.2" H₂O
- d) 146.7" H₂O
- e) 960.5" H₂O

262. Which of the following is not a type of pressure sensing element?

- a) Bellows
- b) Bourdon tube
- c) Manometer
- d) Orifice plate
- e) Diaphragm

263. If a force of 3400 pounds is applied to a circular piston 2 inches in diameter, calculate the fluid pressure working against the piston.

- a) 344.5 PSI
- b) 270.6 PSI
- c) 850 PSI
- d) 1082.3 PSI
- e) 1700 PSI

264. Another word for "pressure" is:

- a) pH
- b) Flow
- c) Density
- d) Force
- e) Head

265. If the pressure applied to the "low" side of a ΔP transmitter increases while the pressure applied to the "high" side remains steady, the transmitter output should:

- a) Fail low
- b) Remain the same
- c) Increase
- d) Decrease
- e) Fail high

266. Identify the proper sequence of valve actions for a three-valve manifold and bleed when taking a differential pressure transmitter out of service:

- a) Open bleed, close one block valve, open equalizing valve, close other block valve
- b) Open equalizing valve, close both block valves (simultaneously), open bleed
- c) Close one block valve, open equalizing valve, close other block valve, open bleed
- d) Close one block valve, open bleed, close other block valve, open equalizing valve
- e) Open equalizing valve, open bleed, close both block valves (simultaneously)

267. Assuming the pipes and vessel are completely filled with slow-moving water, how will the two pressure gauges' indications compare?

- a) Both gauges will register exactly the same pressure
- b) Gauge A will register less pressure than gauge B
- c) Gauge B will register less pressure than gauge A
- d) Gauge A will register a more erratic pressure than gauge B
- e) Gauge B will register a more erratic pressure than gauge A

268. How much differential pressure does this manometer indicate?

- a) 8.00" W.C.
- b) 745 torr
- c) 4.00" W.C.
- d) 3.929" W.C.
- e) 0.272" W.C.

269. Suppose the following pneumatic ΔP transmitter was calibrated to a range of 0 to 250 inches water column: What would have to be done to it to re-calibrate it for a new range of 100 to 350 inches water column?

- a) Turn the screw (located near the bellows)
- b) Bend the flapper (next to the nozzle)
- c) Turn the range wheel nut (located in the middle of the range bar)
- d) Re-size the orifice (located between air supply and nozzle)
- e) Replace the diaphragm capsule with one of a different size

270. The following circuit shows three pressure switches that all measure the same process pressure, but activate different electrical loads: Determine the statuses of these loads at a pressure of 210 PSI.

- a) Lamp 1 on, Lamp 2 off, Solenoid on
- b) Lamp 1 off, Lamp 2 on, Solenoid off
- c) Lamp 1 on, Lamp 2 off, Solenoid off
- d) Lamp 1 on, Lamp 2 on, Solenoid on
- e) Lamp 1 off, Lamp 2 on, Solenoid on

271. Compression efficiency is compared against.....

- a) Ideal compression
- b) adiabatic compression
- c) both isothermal and adiabatic compression
- d) Isentropic compression

272. The volume of air delivered by the compressor is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

273. The most efficient method of compressing air is to compress it.....

- a) Isothermal
- b) Adiabatically
- c) Isentropically
- d) Isochronically

274. The value of air sucked by the compressor during its suction stroke is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) none of the above

275. Volumetric efficiency of air compressors is of the order of.....

- a) 20 to 30%
- b) 40 to 50%
- c) 60 to 70%
- d) 70 to 90%

276. Ratio of compression is the ratio of.....

- a) Gauge discharge pressure to the gauge intake pressure
- b) Absolute discharge pressure to the absolute intake pressure
- c) Stroke Volume and clearance volume
- d) None of the above

277. Cylinder clearance in a compression should be

- a) As large as possible
- b) As small as possible
- c) about 50% of swept volume
- d) About 100% of swept volume

278. Euler's equation is applicable for

- a) Centrifugal compressor
- b) Axial compressor
- c) Pumps
- d) All of the above

279. The rotary compressors are used for delivering.....

- a) Small quantities of air at high-pressure
- b) Large quantities of air at high-pressure
- c) Small quantities of air at low pressures
- d) Large quantities of air at a low pressures

280. The maximum delivery pressure in a rotary air compression is.....

- a) 10 bar
- b) 20 bar
- c) 30 bar
- d) 40 bar

281. The compressor efficiency is the

- a) Isothermal HP/indicated HP
- b) Isothermal HP/shaft HP
- c) Total output/air input
- d) Compression work/motor input

282. An air compressor may be controlled by.....

- a) Throttle control
- b) Clearance control
- c) Blow-off control
- d) Any of the above

283. Which of the following type does Screw compressor belongs to?

- a) Positive displacement compressor
- b) Dynamic compressors
- c) Both a & b
- d) None of the above

284. For every 4°C raise in air inlet temperature of an air compressor, the power consumption will increase by _____

- a) 2%
- b) 1%
- c) 3%
- d) 4%

285. The basic function of air dryer in a compressor is:

- a) prevent dust from entering compressor
- b) storage and smoothening pulsating air output
- c) reduce the temperature of the air before it enters the next state to increase efficiency
- d) to remove remaining traces of moisture after after-cooler

286. What is the % of Oxygen in Atmospheric Air?

- a) 78%
- b) 21%
- c) 3%
- d) 40%

287. A machine used to raise the pressure of air is called:

- a) Gas turbine
- b) IC Engine
- c) Compressor
- d) Air Motor

288. Maximum density in these gases :

- a) N
- b) Ar
- c) O
- d) None of these

289. An after cooler is used to?

- a) Remove impurities from air
- b) Reduce volume of air
- c) Cause moisture and oil vapour to drop out
- d) Cool the air

290. A compressor is driven by

- a) Electric motor
- b) Engine
- c) Either A or B
- d) None of these

291. Air filter used to?

- a) Cooling the air
- b) Cleaning the air
- c) Change form of the air
- d) All of these

292. Which gas is found the most in the atmosphere?

- a) N
- b) Ar
- c) C
- d) O

293. 8 Purify oxygen is used to?

- a) In Hospitals
- b) In Industry
- c) In Welding
- d) Both A and B

294. What is the full form of PSA?

- a) Pressure Same Absorption
- b) Pressure Swing Adsorption
- c) Pressure Secure Atom
- d) None of these

295. Which of the following is not a unit of the Oxygen Plant?

- a) Compressor
- b) Air Filter
- c) Oil Filter
- d) Silencer

296. What is the molecular weight of Oxygen?

- a) 30
- b) 31
- c) 32
- d) 33

297. How much percentage of oxygen is present in High purity oxygen?

- a) 90.5
- b) 93.5
- c) 95.5
- d) 99.5

298. Which oxygen is used for blast furnace operations?

- a) High purity oxygen
- b) Low purity oxygen
- c) Atmospheric oxygen
- d) Liquid oxygen

299. Which of the following is the greatest disadvantage of pressure-cycled ventilation?

- a) Increased I:E ratio
- b) Increased mechanical dead space
- c) Increased risk for barotraumas
- d) Variable respiratory rates
- e) Variable tidal volumes

300. PSA stands for?

- a) Pressure Sling Adsorption
- b) Pressure Swing Adsorption
- c) Pressure Swing Absorption
- d) Pressure Switch Adsorption

301. The purity of oxygen produced by cryogenic plants is?

- a) 90%
- b) 95%
- c) More than 99%
- d) None of the above

302. The purity of oxygen produced by PSA Oxygen plants is?

- a) 90 to 95 %
- b) 85 %
- c) More than 99%
- d) None of the above

303. VPSA stands for?

- a) Variable Pressure Switch Adsorption
- b) Vacuum Pressure Swing Adsorption
- c) Vacuum Pressure Swing Absorption
- d) Variable Pressure Switch Absorption

304. The colour code of medical oxygen bottle is?

- a) Body black shoulder white
- b) Body white shoulder black
- c) Body black shoulder black
- d) Body white shoulder white

305. The different types of zeolite are?

- a) Type A & B
- b) Type A & z
- c) Type A & X
- d) Type X & Z

306. Zeolite are based on

- a) Sodium based
- b) Calcium based
- c) Lithium based
- d) All of the above

307. The approx. percentage of oxygen in atmosphere is?

- a) 20%
- b) 21%
- c) 22%
- d) 23%

308. The adhesion of atoms, ions or molecules from a gas, liquid or dissolved solid to a surface is known as?

- a) Absorption
- b) Adsorption
- c) Cohesion
- d) Generation

309. Sodium based 13X zeolite adsorbs gases?

- a) N₂
- b) CO
- c) CO₂
- d) All of the above

310. The pore size of Lithium based zeolite is?

- a) 4 Angstrom
- b) 5 Angstrom
- c) 10 Angstrom
- d) 60 Angstrom

311. Calcium based 13X zeolite adsorbs gases?

- a) Larger hydrocarbon
- b) CO
- c) CO₂
- d) All of the above

312. The boiling point of Oxygen is?

- a) -200°C
- b) -197°C
- c) -183°C
- d) -187°C

313. Large group of minerals consisting of hydrated aluminosilicates of sodium, potassium, calcium, and barium are known as?

- a) Silica
- b) Zeolite
- c) Clay
- d) Ceramic

314. The composition mixer of gases 21% oxygen, 78% Nitrogen, 0.9% argon and 0.1% other gases is Called _____

- a) Carbon air
- b) Compressed air
- c) Atmospheric air
- d) None of the above

315. The purpose of flow meter is _____

- a) To check the voltage
- b) To check temperature
- c) To check the flow of the gases.
- d) None of the above

316. The valve used for safety to protect oxygen tanks when the pressure of gases reach more than the Capacity is _____

- a) Needle valve
- b) Relief valve
- c) Globe Valve
- d) Check valve

317. The Pressure gauge is used for _____

- a) Checking temperature of gases
- b) Checking the pressure of the gases
- c) Checking time duration of the adsorption
- d) None of the above

- 318. The valve which ensures the product gas does not flow back is _____**
- a) Gate Valve
 - b) Globe valve
 - c) Check Valve
 - d) None of the above
- 319. The purpose of air dryer is _____**
- a) To compress the atmospheric air
 - b) To generate clean dry air from compressed air
 - c) To filter oil content from air
 - d) None of the above
- 320. The type of compressor generally used in most of PSA oxygen generation plants is ____**
- a) Reciprocating
 - b) Rotary
 - c) Screw type
 - d) None of the above
- 321. The component which draws oxygen from the reservoir and compresses it to a higher pressure to store in oxygen cylinders is _____**
- a) Air Compressor
 - b) Oxygen Compressor
 - c) Air Dryer
 - d) None of the above
- 322. The component which used for drain nitrogen and other waste gases in PSA Plant is _____**
- a) Needle valve
 - b) Air filter
 - c) Muffler
 - d) None of the above
- 323. The component which used for joining the set of oxygen cylinders to fill the compressed air is _____**
- a) Hose pipe
 - b) Nozzle
 - c) Compressor
 - d) Manifold
- 324. The equipment which is used to operate the PSA oxygen plant and monitor its operation is _____**
- a) Air filter
 - b) Manifold
 - c) Pressure gauge
 - d) Control panel
- 325. What type of compressor are used in oxygen PSA Plant?**
- a) Reciprocating type
 - b) Screw Type
 - c) Rotary Type
 - d) All of the above.
- 326. What is the pressure in one bar?**
- a) 15 PSI
 - b) 20 PSI
 - c) 14.5PSI
 - d) 16 PSI

327. Generally pressure of compressed air is....

- a) 5 Bar
- b) 7 to 7.5 Bar
- c) 10 Bar
- d) Above 10 Bar

328. After the dryer the compressed air is goes to...

- a) Air receiver tank
- b) PSA Unit
- c) Buffer Tank
- d) Oxygen Analyser

329. Which material is used for adsorbent?

- a) Aluminium Oxide
- b) Zeolite
- c) Carbon
- d) Paper filter

330. The bacterial filter is used after the.....

- a) PSA Unit
- b) Buffer Tank
- c) Oxygen Analyser
- d) After Dryer

331. What is the use of oxygen booster?

- a) To clean the air
- b) To creating pressure for bottling purpose.
- c) To suck the air
- d) To check the oxygen qualities.

332. The oxygen analyser is used for.....

- a) To check the oxygen purityTo check the oxygen purity
- b) To remove the bacteria.
- c) To remove the nitrogen
- d) To check the oxygen pressure.

333. The starting time of oxygen PSA plant is.....

- a) 30min
- b) 20min
- c) 5min
- d) 40min

334. What is the life of zeolite?

- a) 1year
- b) 2year.
- c) 10-year
- d) 3 to 5year.

335. What is function of air dryer?

- a) To cool the air.
- b) To remove the particle from air.
- c) A and B both
- d) To cool the PSA unit.

336. Which kind of valve is used in PSA unit?

- a) Hand operated valve.
- b) Needle valve.
- c) Solenoid Valve
- d) None of the above

337. In PSA Unit 1st cylinder is pressurised then 2nd cylinder is

- a) Cooling down
- b) Removing nitrogen
- c) Cleaning the air
- d) Removing Oil

338. Which part of the air oxygen compressor will be affected first after the air filter fails?

- a) Screw Piston
- b) Zeolite
- c) Both A & B
- d) None

339. Electric power is given to the PSA plant

- a) With electric panel
- b) with voltage stabilizer
- c) Both A & B
- d) None

340. When should the air filter be replaced?

- a) AS per manual
- b) Weekly
- c) Monthly
- d) Yearly

341. The best way to do mechanical maintenance is.

- a) Byplant running sound
- b) By visual inspection
- c) Byhand touch
- d) All of the above

342. Pressure is measured in _____ unit?

- a) Bar
- b) liter
- c) kilometer
- d) All of the above

343. When should the air filter be replaced?

- a) Daily
- b) Weekly
- c) Monthly
- d) Before block

344. Which compressor is used in PSA compressor?

- a) Screw compressor
- b) Rotary compressor
- c) Both A & B
- d) None

345. Oil filter is fitted _____

- a) In PSA assembly
- b) In compressor assembly
- c) In Air dryer assembly
- d) None of the above

346. What are the sizes of Zeolite molecules?

- a) 3A, 4A
- b) 5A
- c) 13X
- d) All of the above

347. O.E.M. stands for

- a) Original equipment Manufacturer
- b) Old Equipment Manufacturer
- c) Old Equipment Maintenance
- d) Original Equipment Maintenance

348. Expand the "PSA"

- a) Pressure Swing Adsorption
- b) Pressure Swing Absorption
- c) Both a & b
- d) None of these

349. The percentage of Oxygen in atmospheric air is _____ %.

- a) 98
- b) 21
- c) 1
- d) 50

350. The percentage of Nitrogen in atmospheric air is _____ %.

- a) 98
- b) 21
- c) 1
- d) 50

351. Expand the "VPSA".

- a) Vacuum Pressure Swing Adsorption
- b) Vacuum Pressure Swing Absorption
- c) Both a & b
- d) None of these

352. Condensate should discharge from the outlet or tubing for approximately every three to five second for every _____ minutes when the oxygen Generator is running.

- a) 10
- b) 30
- c) 60
- d) 120

353. _____ molecular sieves are use to separate the Nitrogen from atmospheric air in PSA Plant.

- a) Hydrogen
- b) Carbon
- c) Zeolite
- d) None of these.

354. _____ molecular sieves are use to separate the Oxygen from atmospheric air in PSA Plant.

- a) Carbon
- b) Hydrogen
- c) Zeolite
- d) None of these.

355. Superheated Vapur behaves

- a) Exactly as Gas
- b) As Steam
- c) As Ordinary Vapour
- d) Approximately as gas

356. Oxygen cylinder have ____ hand thread.

- a) Left
- b) Right
- c) Both Left & Right
- d) None of the above

357. Oxygen Cylinders are painted with _____ colour.

- a) Red
- b) Maroon
- c) Blue
- d) Black

358. _____ device is used for opening and closing the cylinder.

- a) Hammer
- b) Chipping hammer
- c) Mallet
- d) Spindle key.

359. Use _____ to check the leakage of Oxygen plant. .

- a) Fresh Water
- b) Kerosin
- c) Diesel
- d) Oil

360. Oxygen Cylinders are kept in _____ Position.

- a) Horizontal
- b) Upright
- c) Inclined
- d) All of the above

361. Cylinder should ____ be used as rollers as moving others objects.

- a) Never
- b) None of the above
- c) Always

362. Most Oxygen in the blood is transported.

- a) As gas dissolved in Plasma
- b) As Oxyhemoglobin
- c) As Carboxyhemoglobin
- d) All of the above

363. State the statement is true or false: "There are five common compressors i.e. Reciprocating, Scroll, Screw, Rotary, Centrifugal used in industry".

- a) False
- b) True.

364. Generally PSA Oxygen Plant is used in _____.

- a) Industry
- b) Hospital
- c) Home
- d) None of the above

365. When Oxygen is contact with any element then element will convert into oxide is called _____.

- a) Oxidation
- b) A & B
- c) Nitridation
- d) None of the above

366. What is the formula of Oxygen?

- a) CO₂
- b) H₂O
- c) C₂H₂
- d) O₂

367. What is the role of compressor in PSA system?

- a) Cooling
- b) Distillation
- c) Filter
- d) Air Inlet

368. How much Oxygen a COVID – 19 Patient needs?

- a) Depending on the severity of their illness
- b) Depending on the PSA Plant Capacity
- c) A & B
- d) None of the above

369. What is the formula of Density _____.

- a) Density / Volume
- b) Density / Mass
- c) Mass/ Volume
- d) None of the above

370. Medical Oxygen Plant can generate Oxygen with purity up to _____ % .

- a) 100
- b) 99.5
- c) 90.5
- d) 50.5

371. Liquid Oxygen has a _____ colour?

- a) Red
- b) Pale Blue
- c) Black
- d) Green

372. Oxygen Becomes Liquefied at a temperature of Normal atmospheric Pressure is _____⁰

- C.
- a) 82.962
- b) 85. 962
- c) 83.962
- d) 81.962

373. Give the full form of PSA.

- a) Pressure sulphur atoms
- b) Pressure Swing Adsorption
- c) Pressure silicon argon
- d) Primary silica air

374. How many % of Oxygen and argon in atmosphere?

- a) 25 % and 5 %
- b) 29 % and 9 %
- c) 20.95 % and 0.93 %
- d) 15.90 % and 2.5 %

375. The ratio of mass of water vapor to the mass of dry air is called as

- a) Specific humidity
- b) Relative humidity
- c) Coefficient of performance
- d) Adiabatic Saturation

376. The ratio of work-done per cycle to the stroke volume of the compressor is known as.....

- a) Compressor capacity
- b) Compression ratio
- c) Compressor efficiency
- d) Mean effective pressure

377. The capacity of a compression is $10 \text{ m}^3/\text{minute}$. $10 \text{ m}^3/\text{minute}$ refers to.....

- a) Standard air
- b) Free air
- c) Compressed air
- d) Compressed air at delivery pressure

378. The value of air sucked by the compressor during its suction stroke is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

379. The maximum delivery pressure in a rotary air compression is.....

- a) 10 bar
- b) 20 bar
- c) 30 bar
- d) 40 bar

380. Cylinder clearance in a compression should be

- a) As large as possible
- b) As small as possible
- c) About 50% of swept volume
- d) About 100% of swept volume

381. Which is the important gas used by human beings for breathing?

- a) Nitrogen
- b) Carbon dioxide
- c) Oxygen
- d) Sodium chloride

382. Which one of the following is normally not an atmospheric pollutant?

- a) CO
- b) CO₂
- c) SO₂
- d) Hydrocarbon.

383. How is the molar volume calculated?

- a) RT/V
- b) RT/n
- c) RT/P
- d) RT/np

384. In adsorption from liquid process, choose what type of adsorbent usually use in this unit.

- a) Carbon
- b) Zeolite
- c) Silica
- d) Zinc

385. Choose importance of regeneration to adsorbent.

- a) Removal of adsorbent
- b) Removal of unknown particles
- c) Removal of adsorbates
- d) Reduce activation energy of reaction

386. Adsorption is a

- a) Bulk phenomena
- b) Surface phenomena
- c) Both
- d) None of these

387. Identify type of adsorber based on the figure above.

- a) Gas-drying equipment
- b) Vapor phase adsorption
- c) Pressure swing adsorption
- d) Fixed bed adsorber

388. What is the process called when the molecules of a substance are retained at the surface of a solid or a liquid?

- a) Absorption
- b) Adsorption
- c) Sorption
- d) Desorption

389. Which of the following is an example of sorption?

- a) Sponge in water
- b) Cotton dipped in ink
- c) Water on silica gel
- d) Oxygen on metal surface

390. Which of the following can result in a transition from physisorption to chemisorptions?

- a) Decrease in temperature
- b) Increase in temperature
- c) Decrease in pressure
- d) Increase in surface area

391. The process of adsorption is

- a) Exothermic
- b) Endothermic
- c) Sometimes exothermic or endothermic
- d) None of the above

392. Physical adsorption is a _____ process.

- a) Reversible
- b) Irreversible
- c) Exothermic
- d) None of these

393. Heat transfer coefficient for air _____

- a) 10 to 100 W/m² K
- b) 20 to 60 W/m² K
- c) 30 to 80 W/m² K
- d) None of the above

394. _____ takes a liquid stream and separates the solute or suspension as a solid and the solvent into a vapour.

- a) Spray dryer
- b) Freeze dryer
- c) Drum dryer
- d) Pulse combustion dryer.

395. Tubular adsorber follows which isotherm

- a) Langmuir
- b) Freundlich
- c) Linear adsorption
- d) None of the above

396. Rusting of iron is

- a) Oxidation
- b) Reduction
- c) Absorption
- d) Adsorption

397. Multi-molecular layers are formed in

- a) Absorption
- b) Physical adsorption
- c) Chemisorptions
- d) Reversible adsorption

398. The relationship between equilibrium pressure of gas and its amount adsorbed on the solid adsorbent at constant temperature is called

- a) Chemisorptions
- b) Adsorption isobar
- c) Adsorption isotherm
- d) None of these

399. Chemisorption

- a) Involves the weak attractive interactions between adsorbent and adsorbate
- b) Is irreversible in nature
- c) Decreases with increase of temperature
- d) Involves multilayer formation of adsorbent on adsorbate

400. Micro filtration is the separation of suspended material such as bacteria by using a membrane with pore sizes of

- a) 0.02 to 10 μ m
- b) 1-10 A°
- c) 20-30 μ m
- d) 25 m

401. A mixture of dry air and water vapour, when the air has diffused the maximum amount of water vapour into it, is called

- a) Dry air
- b) Moist air
- c) Saturated air
- d) Specific humidity

402. The difference between dry bulb temperature and wet bulb temperature, is called

- a) Dry bulb depression
- b) Wet bulb depression
- c) Dew point depression
- d) Degree of saturation

403. Which of the following refrigerants has the lowest boiling point?

- a) Ammonia
- b) Carbon dioxide
- c) Sulphur dioxide
- d) Freon-12

404. When the rate of evaporation of water is zero, the relative humidity of the air is

- a) 0%
- b) 100%
- c) 50%
- d) Unpredictable

405. The dew point temperature is less than the wet bulb temperature for

- a) Saturated air
- b) Unsaturated air
- c) Both saturated and unsaturated air
- d) None of the above

406. The moisture content lines in psychrometric chart are also called as

- a) Relative humidity lines
- b) Specific humidity lines
- c) Both a. and b.
- d) None of the above

407. Which of the following statement is true?

- a) The chart is plotted for pressure equal to 760mm Hg
- b) The constant wbt line represents adiabatic saturation process
- c) The constant wbt line coincides with constant enthalpy line
- d) All of the mentioned

408. Which of the following statement is true?

- a) Characteristic gas constant is given by dividing the universal gas constant by the molecular weight
- b) Avogadro's number (A) = 6.023×10^{26} molecules/kgmol
- c) Boltzmann constant (K) = 1.38×10^{-23} J/molecule K
- d) All of the mentioned

409. The value of universal gas constant is

- a) 8.2353
- b) 8.3143
- c) 8.5123
- d) None of the mentioned

410. Which of the following represents the energy in storage?

- a) Heat
- b) Work
- c) Internal energy
- d) None of the mentioned

411. The value of c_p and c_v depend on

- a) Temperature of the gas
- b) γ and R
- c) Pressure of the gas
- d) All of the mentioned

412. If the gas is cooled during compression, work required will be _____ the adiabatic compression work.

- a) More than
- b) Less than
- c) Equal to
- d) None of the mentioned

413. One kg of diatomic Oxygen is present in a 500 L tank. Find the specific volume on both mass and mole basis.

- a) $0.6 \text{ m}^3/\text{kg}$, $0.260 \text{ m}^3/\text{mole}$
- b) $0.5 \text{ m}^3/\text{kg}$, $0.0160 \text{ m}^3/\text{mole}$
- c) $0.56 \text{ m}^3/\text{kg}$, $0.0215 \text{ m}^3/\text{mole}$
- d) $0.7 \text{ m}^3/\text{kg}$, $0.0325 \text{ m}^3/\text{mole}$

- 414. The correct identities of the four control valve types shown below are (in order from left to right):**
- a) Plug, Slide, Rotary, Ball
 - b) Globe, Butterfly, Disc, Ball
 - c) Ball, Gate, Butterfly, Plug
 - d) Diaphragm, Gate, Disc, Globe
- 415. The main purpose of a control valve positioner is to:**
- a) Alter the fail-safe status of the valve
 - b) Improve the precision of the valve
 - c) Alter the characterization of the valve
 - d) Increase transmitter accuracy
- 416. The purpose of valve packing is to:**
- a) Help reduce cavitation in the valve trim
 - b) Increase stiction
 - c) Cushion the valve against harm during shipment
 - d) Seal process fluid from escaping past the stem
- 417. An air-to-open valve assembly may be formed with which of these actuator/valve body combinations?**
- a) Reverse-acting actuator, direct-acting valve body
 - b) Direct-acting actuator, direct-acting valve body
 - c) Direct-acting actuator, reverse-acting valve body
 - d) A or C
- 418. The fire triangle does not include**
- a) Oxygen
 - b) Fuel
 - c) Temperature
 - d) Heat
- 419. Who may be responsible for accident?**
- a) Worker
 - b) working conditions
 - c) Management
 - d) All of the above
- 420. Most of the industrial accidents are**
- a) unavoidable
 - b) not preventable
 - c) Preventable
 - d) None of the above
- 421. The temperature and pressure conditions at free air delivery are**
- a) 27 degree Celsius, 100 bar
 - b) 15 degree Celsius, 101.325 bar
 - c) 27 degree Celsius, 101.325 bar
 - d) 15 degree Celsius, 100 bar
- 422. In a mixture of dry air and water vapour,**
- a) Mole fraction of dry air = p_a/p
 - b) Mole fraction of water vapour = p_w/p
 - c) Both of the mentioned
 - d) None of the mentioned

423. What is the function of compressor in a PSA oxygen plant?

- a) Air filtering
- b) Air compressing
- c) Oil filtering
- d) Oxygen separation

424. How much pressure is sucked by a compressor in a PSA oxygen plant?

- a) 1 Bar
- b) 3 Bar
- c) 5 Bar
- d) 8 Bar

425. What is the function of Air Dryer in a PSA Plant?

- a) Air filtering
- b) Air dehumidification
- c) Air humidification
- d) Oil filetering

426. How much oxygen is present in the atmospheric air?

- a) 21%
- b) 31%
- c) 10%
- d) 0.80%

427. How much nitrogen is present in the atmospheric air?

- a) 21%
- b) 0.80%
- c) 78%
- d) 100%

428. What is the unit of pressure?

- a) Bar
- b) MM
- c) Kg
- d) Litre

429. Which type of compressor is used in PSA oxygen plant?

- a) Reciprocating
- b) Rotary
- c) Centrifugal
- d) Screw

430. Which adsorbent material is used for separate nitrogen?

- a) Carbon
- b) Zeolite
- c) Hydrogen
- d) Silicagel

431. What is the function of air receiver tank of PSA plant?

- a) Collecting oil
- b) Collecting O₂
- c) Collecting N₂
- d) Collecting Air

432. What is the function of Adsorbent tower of a PSA plant?

- a) Separating oil
- b) Separating Nitrogen
- c) Separating carbon
- d) Separating hydrogen

433. What is the purity of oxygen for medical purpose

- a) 65%
- b) 75%
- c) 85%
- d) 95%

434. How air flow rate is expressed?

- a) CFM
- b) PSI
- c) KG
- d) MM

435. What is the function of carbon filter in PSA plant?

- a) Removing air
- b) Removing oil
- c) Removing oxygen
- d) Removing nitrogen

436. What is the out let pressure of compressor?

- a) 5 bar
- b) 15 bar
- c) 25 bar
- d) 50 bar

437. What is function of pressure gauge in the flow circuit?

- a) Measure temperature
- b) Measure pressure
- c) Measure flow
- d) Measure quantity

438. How solenoid valve is operated?

- a) Electrically
- b) Manually
- c) Electronically
- d) Hydraulically

439. What is the function of drain out in dehumidifier?

- a) Drain oil
- b) Drain water
- c) Drain nitrogen
- d) Oxygen Knob

440. What is the main function of zeolite filter through which air passes?

- a) To remove nitrogen
- b) To remove carbon dioxide
- c) To remove sulphur dioxide
- d) To remove extra water content of the atmospheric air

441. What is done in pressure swing distillation?

- a) Two columns in series at same pressure
- b) Two columns in parallel at same pressure
- c) Two columns in series at different pressures
- d) Two columns in parallel at different pressures

442. Which Adsorption system has lower power consumption?

- a) TPSA
- b) VPSA
- c) PSA
- d) B&C

443. What is the chemical formula of zeolite?

- a) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
- b) $\text{Al}_2(\text{SO}_4)_3 \cdot 18 \text{H}_2\text{O}$
- c) $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot x\text{SiO}_2 \cdot y\text{H}_2\text{O}$
- d) $\text{Na}_2\text{Al}_2\text{O}$

444. What is called the attachment of particles to a solid surface?

- a) Absorption
- b) Adsorption
- c) Desorption
- d) Adoption

445. What happens to the Adsorption if the pressure is increased in the PSA bed?

- a) It has no effect
- b) It stops
- c) It decreases
- d) It increases

446. What is the property of Lithium based Zeolite?

- a) It has low temperature range
- b) It has high adsorption even at low pressure
- c) It can not adsorb at low pressure
- d) It has small pore size

447. Which type of system has highest degree of Oxygen purity?

- a) Cryogenic
- b) Adsorption
- c) Air separation
- d) Membrane

448. What reduces the nitrogen holding capacity of the adsorber?

- a) Low pressure
- b) High temperature
- c) A & B
- d) Neither A nor B

449. What is the property of Molecule sieves materials?

- a) Smooth surface
- b) Hard surface
- c) Porous
- d) Non-porous

- 450. What is the pressure at which Vacuum Swing Adsorption takes place?**
- a) Negative pressure
 - b) Ambient pressure
 - c) High pressure
 - d) Medium temperature
- 451. What is the effect of Temperature swing adsorption?**
- a) Regenerates at high temperature
 - b) Regenerates at low temperature
 - c) Adsorbs at high temperature
 - d) It has no effect of temperature
- 452. What is being adsorbed by the molecular sieve in PSA?**
- a) Oxygen
 - b) Nitrogen and Argon
 - c) Oxygen and Argon
 - d) Nitrogen
- 453. What component is controlling the outlet of the oxygen concentrator system by monitoring the oxygen concentration?**
- a) Automatic change over valve
 - b) Shut off valve
 - c) Solenoid valve
 - d) Oxygen Knob
- 454. What does the Adsorption means?**
- a) Adhesion to the surface
 - b) Penetration through surface
 - c) Passing over the surface
 - d) Straining through the surface
- 455. What is called the process of active evacuation of Nitrogen during Oxygen generation?**
- a) Adsorption
 - b) Releasing
 - c) Purging
 - d) Ventilation
- 456. What is the occasion of Calibration of Oxygen analyser?**
- a) During Daily maintenance
 - b) During Monthly maintenance
 - c) During 6 monthly maintenance
 - d) During Annual maintenance
- 457. Which type of valves are used for pressure maintaining in vessels?**
- a) Needle valves
 - b) Relief Valves
 - c) Gate valves
 - d) Globe valves
- 458. Which filter is changed annually in normal conditions?**
- a) Coalescing filter
 - b) Particulate filter
 - c) Bacterial filter
 - d) Filter before compressor

459. What type of valves are used before oxygen analyzers in the plant?

- a) Relief Valves
- b) Globe valves
- c) Gate valves
- d) Needle valves

460. Leak checks are usually done with?

- a) Oil spray
- b) Water spray
- c) Compressed air
- d) Soapy water

461. Normal Oxygen Cylinder capacity in Medical use is?

- a) 5000 ltrs
- b) 7000 ltrs
- c) 8000 ltrs
- d) 10000 ltrs

462. For fine controlling which valve is used?

- a) Gate valve
- b) Safety valve
- c) Relief valve
- d) Needle valve

463. What is the frequency of Filter replacement in normal conditions?

- a) 1 month
- b) 3 months
- c) 6 months
- d) 12 months

464. Oxygen in oxygen cylinders is in which form?

- a) Liquid
- b) Gaseous
- c) Solidified
- d) A & B

465. Oxygen Analyzer Comes under which maintenance check

- a) Quarterly
- b) Monthly
- c) Weekly
- d) Daily

466. Piping material used to connect Oxygen cylinders to main duct?

- a) Aluminium
- b) Stainless steel
- c) Copper
- d) Nickel

467. Which indicates the condition of the filter?

- a) Flow meter
- b) Differential pressure gauge
- c) Temperature sensor
- d) Oxygen analyzer

468. Mufflers are used for?

- a) Filtering
- b) Noise reduction
- c) Remove Water
- d) Remove dust

469. Drain valves are operated on a _____ basis

- a) Quarterly
- b) Monthly
- c) Weekly
- d) Daily

470. Oxygen booster compressor must be?

- a) Friction less
- b) Lubricated
- c) Oil free
- d) Low capacity

471. Pressure switches are fitted for the safety of?

- a) Compressors
- b) Tubings
- c) Filters
- d) Storage vessels

472. Oxygen cylinder pressure will be at?

- a) 100 bar
- b) 120 bar
- c) 130 bar
- d) 140 bar

473. Which is the important part of pressure transducer?

- a) Pressure Gauge
- b) Needle Valve
- c) Screw Gauge
- d) Strain Gauge

474. What is the purity of Oxygen output in Liquid Cryogenic system

- a) 99%
- b) 89%
- c) 94%

475. Oxygen Purity is measured in which units

- a) Degree Celsius
- b) KG/Cm²
- c) Percentage of Saturation (%)

476. Full form of PSA

- a) Pressure Swing adapter
- b) Proportionate sale adsorption
- c) Pressure Swing Adsorption

477. Purity of Oxygen output is adapting PSA technique

- a) 93-94%
- b) 100%
- c) Only 60 %

478. Zeolite is adsorbent material

- a) True
- b) False

479. Pressure gauges are fitted on Oxygen towers to indicate

- a) Blood Pressure
- b) Oxygen Tower Pressure
- c) Atmospheric Pressure

480. Mufflers are used for reducing the amount of -----emitted by the exhaust of the waste

- a) Pressure
- b) Temperature
- c) Noise

481. Air receiver is connected in between the Air dryer and Adsorbent towers.

- a) True
- b) False

482. Oxygen sensor is used to indicate the product----- from the oxygen generator.

- a) Analyse the Purity of Oxygen
- b) Temperature
- c) RPM
- d) None of these

483. PLC is

- a) Programmable logic cam
- b) Programmable Logic controller
- c) Programmable Law controller

484. Bacterial filters provide effective protection against various types of particles

- a) Bacteria, viruses, and moisture droplets
- b) Sand
- c) Dust stones

485. Regeneration Cycle is

- a) Small portion of oxygen from the drying tower passes over the sieves through the regeneration orifice.
- b) Process of removal of bacteria
- c) Process of lubrication cycle in plant.

486. Electrical Connections to oxygen Plant

- a) AC single phase 230 volts and Three Phase 400 volts
- b) Only DC Single Phase supply voltage of 230 Volts
- c) 3 Phase AC 400 volts.

487. Type of Compressor used in PSA oxygen Plant

- a) Screw Type
- b) Reciprocating Type
- c) Centrifugal Type

488. Application Of PSA oxygen Plant

- a) Medical, Steel Industries
- b) Quality Management
- c) Automobile Industries

489. The adsorbent Material used in PSA plant is

- a) Ceramic
- b) Steel
- c) Zeolite

490. Pressure gauges and Pressure Transmitters are used to Measure

- a) Tower Pressure in Oxygen Plant.
- b) Light Intensity
- c) Weight of Oxygen

491. Filters in Oxygen Plant are used to

- a) Removal of Dust Particles and Bacteria
- b) Removal of sand

492. Filters used in PSA oxygen Plant should be cleaned once in

- a) Every week
- b) Every six months

493. ----- types of Filters are installed in PSA Oxygen Plant

- a) 5
- b) 10
- c) 01

494. Sensor used to detect the oxygen purity is

- a) Oxygen Analyser
- b) Pressure Transmitter
- c) Pressure Gauge

495. Rotors present in Screw Compressor

- a) Two rotors
- b) One
- c) Five

496. Air Dryer in Oxygen Plant is used to

- a) Remove the moisture content in the compressed Air
- b) To cool the air

497. PLC is used in Oxygen Plant to

- a) To Measure the oxygen
- b) To Control the Sequential operation

498. Automatic feed Valve is used to

- a) Feed the air to Oxygen Generation
- b) To filter the Dust particles

499. Solenoid Valve used operates

- a) Mechanical
- b) Mechanical and electrically
- c) Electrical

500. In the touch screen display the alarms indicates

- a) If the purity of the oxygen drops under the rated purity level.
- b) If the pressure of the oxygen outlet drops under the rated pressure.
- c) Both the Above conditions.

501. Emergency Switch to be pressed

- a) When Oxygen purity is less than the specified
- b) When Cycle Generation to be Stopped.
- c) If Oxygen Pressure is low
- d) ALL the Above condition.

502. All the Drain Valves to be checked

- a) Daily Checks
- b) Annually
- c) Not required to check.

503. Oxygen Generation in PSA Technique use

- a) Primary and Secondary tank
- b) One tank

504. Zeolite adsorbs nitrogen, allowing oxygen to pass through at the desired purity level.

- a) True
- b) False

505. Unit of Pressure

- a) Percentage
- b) Degree Celsius
- c) PSI

506. What are the sensors used in PSA oxygen Plant

- a) Light sensor
- b) Temperature sensor
- c) Pressure, Temperature and Oxygen.

507. If Regeneration does not take cycling, Muffler would be clogged.

- a) True
- b) False

508. Status of Filter performance condition is checked

- a) By Clean Stage Indication
- b) Alarm sound

509. Compressor Oil level checking to be done

- a) Once in while
- b) Daily
- c) No monitoring

510. How many filters are used in PSA Oxygen Plant

- a) 2
- b) 5

511. HMI panel is

- a) Human Machine Interface
- b) Programmable human machine Indication.

512. What is instrument used to indicate the temperature

- a) Thermostat
- b) Pressure gauge
- c) Digital transmitter

513. Log Maintenance records the Value of

- a) Temperature
- b) Pressure
- c) Oxygen flow/Purity
- d) All the above.

514. Which of the following type does Screw compressor belongs to?

- a) Positive displacement compressor
- b) Dynamic compressors
- c) Both a & b
- d) None of the above

515. The compressor capacity of a reciprocating compressor is directly proportional to _

- a) Speed
- b) Pressure
- c) Volume
- d) All

516. The basic function of air dryer in a compressor is:

- a) Prevent dust from entering compressor
- b) Storage and smoothening pulsating air output
- c) Reduce the temperature of the air before it enters the next state to increase efficiency
- d) To remove remaining traces of moisture after after-cooler

517. Compressor is used to ___ the pressure of a fluid.

- a) Increase
- b) Decrease
- c) Can't say
- d) None of the above

518. Pressure of which of the following substances can you increase by Compressor?

- a) Liquid
- b) Gas
- c) Both
- d) None of these

519. How will you measure the compressor capacity?

- a) By volume of air sucked by the compressor
- b) By clearance volume
- c) By volume of air delivered by the compressor
- d) None of these

520. The Power Source in Pneumatic system is -----

- a) Air Receiver
- b) Compressor
- c) Valve
- d) Muffler

521. The internal elements of a valve are collectively referred to as a valve's .

- a) Guts
- b) Trim
- c) Works
- d) Packings

522. Relief and safety valves prevent equipment damage by relieving accidental over-pressurization of fluid systems.

- a) True
- b) False

523. Gate Valves are not recommended for applications which:

- a) Require regulation and throttling of flow
- b) Require good sealing with little or no leakage
- c) Can have no resistance to flow when the valve is open
- d) Require the use of flanged connections

524. Which of the following is a disadvantage of ball valves?

- a) They are large and heavy.
- b) They have high maintenance costs.
- c) They have relatively poor throttling characteristics
- d) They are among the most expensive of the valve types.

525. 99.5% purity oxygen is used in

- a) Cutting and welding by oxy-acetylene flame.
- b) Hospitals for medicinal purposes.
- c) Gas masks and artificial breathing apparatus.
- d) All (a), (b), and (c).

526. The unit of pressure in the SI system is-

- a) N
- b) N-m
- c) N-m²
- d) N/m²

527. m³ = _____ cm³

- a) 100
- b) 10³
- c) 0⁵
- d) 10⁶

528. The Freezing point of water in absolute scale is-

- a) 0 K
- b) 273 K
- c) 212 K
- d) None of the above;

529. Which is the Ideal Gas Equation from the following?

- a) $PV = mc^2$;
- b) $PV = mgh$;
- c) $PV = nRT$;
- d) $PV = mSt$;

530. Which of the following term does not involve in ideal gas law?

- a) Pressure
- b) Volume
- c) Temperature
- d) Time

531. Maintenance consist of the following action(s)

- a) Replace of component
- b) Repair of component
- c) Service of component
- d) All of the above

532. Total productive maintenance aims at

- a) Less idle time
- b) Increase in productivity
- c) Zero down time
- d) None of the above

533. Equipment history cards are meant to record

- a) The way equipment behaves
- b) Total down time of the equipment
- c) The rate at which different components wear off
- d) All of the above

534. A systematic approach for maintenance is

- a) Problem – Cause – Diagnosis – Rectification
- b) Problem– Diagnosis – Cause – Rectification
- c) Problem – Measure – Diagnosis – Rectification
- d) Problem– Diagnosis – Measure – Rectification

535. The following is not a classification of maintenance

- a) Corrective maintenance
- b) Timely maintenance
- c) Scheduled maintenance
- d) Preventive maintenance

536. What is the commercial use of zeolite molecular sieves?

- a) Removal of organic pollutants from aqueous effluents
- b) Production of N₂ from air
- c) Drying of air and other gases
- d) Separation of molecules based on size and shape

537. The chemical formula of zeolite is _____

- a) FeSO₄·7H₂O
- b) Al₂(SO₄)₃·18 H₂O
- c) Na₂O·Al₂O₃·xSiO₂·yH₂O
- d) Na₂Al₂O

538. Natural zeolites are _____

- a) Porous
- b) Amorphous
- c) Non-durable
- d) Possess gel structure

539. In zeolite process, the exchange of _____ takes place.

- a) Anions
- b) Cations
- c) Both cations and anions
- d) No ions exchange

540. Which of the following is a disadvantages of the Zeolite Process.

- a) No sludge is found
- b) The process is almost automatic
- c) Suspended impurities get deposited around the zeolite particles.
- d) Zero hardness can be occurred.

541. Give the ratio in which hydrogen and oxygen are present in water by volume.

- a) 1:2
- b) 1:1
- c) 2:1
- d) 1:8

542. The atomic number of an element 'X' is 2. Which inert gas is X?

- a) He
- b) Ar
- c) Ne
- d) Kr

543. Which of the following cannot be considered a form of matter?

- a) Atom
- b) Water
- c) Humidity
- d) Electron

544. Unit of Pressure

- a) Kg/cm²
- b) Lumen
- c) Cubic Cm
- d) Kg

545. Product Output of PSA Plant is -----

- a) Oxygen
- b) Nitrogen
- c) Argon
- d) CO₂

546. Filter is used to -----

- a) Remove dust particles and Bacteria in Compressed Air
- b) Remove pressure

547. PLC is

- a) Programmable Logic Controller
- b) Programmable logic concentrator

548. Pressure on Oxygen Tank is measured by

- a) Anemometer
- b) Pressure gauge
- c) Humidity meter

549. PSI is

- a) Pounds per square Inch
- b) Parts per Square

550. From below options, which one can be consider as good conductor of the electricity?

- a) Paper
- b) Copper
- c) Wood
- d) Rubber

551. From below options which one is used for running a bike?

- a) Nitric Acid
- b) Petrol
- c) Kerosene
- d) Lubricant oil

552. Why the rain drops fall downward on the Earth?

- a) Water is Soft
- b) Gravity of earth
- c) Water made of fluids
- d) Water can exits in atmosphere

553. Electricity produced from the Coal is called what?

- a) Hydroelectric Power
- b) Tidal Power
- c) Tidal Power
- d) Thermal Power

554. Pressure exerted by air on the Earth is called what?

- a) Atmospheric pressure
- b) Absolute pressure
- c) Differential pressure
- d) Over-pressure

555. Computer is connected to Internet by which device?

- a) Modem
- b) Mouse
- c) CPU
- d) RAM

556. What is the percentage of 5:10?

- a) 50%
- b) 60%
- c) 75%
- d) 100%

557. How many MBs are there in 1 GB?

- a) 1024 MBs
- b) 1000
- c) 1100
- d) 900

558. Defence Research and Development Organization (DRDO) belongs to which country in Asia?

- a) India.
- b) China
- c) America
- d) Apan

559. Force acting on per unit area is called

- a) Non-contact forces
- b) Contact forces
- c) Force
- d) Pressure

560. The pressure which is exerted by air around us is known as

- a) Force
- b) Atmospheric pressure
- c) Muscular force
- d) Friction

561. 1 kilogram weight is equal to

- a) 98 N
- b) 9.8 N
- c) 0.98 N
- d) 0.098 N

562. Pressure =

- a) Area / force on which it acts
- b) Force / area on which it acts
- c) Volume / force on which it acts
- d) Force / volume on which it acts

563. Name the device which is used to measure the hotness or coldness of an object.

- a) Picometer
- b) Barometer
- c) Manometer
- d) Thermometer

564. What is the normal temperature of a healthy person?

- a) 37°C
- b) 37°F
- c) 37 K
- d) None of these

565. Breathing rate in human beings in normal condition is

- a) 12-15 times in a minute
- b) 15-18 times in a minute
- c) 18-22 times in a minute
- d) 22-25 times in a minute

566. Oxygen Plant What is the full form of PSA?

- a) Pressure Same Absorption
- b) Pressure Swing Adsorption
- c) Pressure Secure Atom
- d) None of these

567. What is the % of Oxygen in Atmospheric Air?

- a) 78%
- b) 21%
- c) 3%
- d) 40%

568. Which of the following is not a unit of the Oxygen Plant?

- a) Compressor
- b) Air Filter
- c) Oil Filter
- d) Silencer

569. The main function of zeolite filter through which air passes is

- a) To remove nitrogen
- b) To remove extra water content of the atmospheric air
- c) To remove carbondioxide
- d) To remove sulphurdioxide

570. Adsorption is the process which is use for

- a) Separation
- b) Air
- c) Nitrogen
- d) Oxygen

571. What is the low frequency note of an exhaust gas

- a) 50 to 500 hz
- b) 5 to 10 hz
- c) 3000 to 10000 hz
- d) 30000 to 200000 hz

572. With multiple staging a centrifugal compressor can achieve higher output pressure greater than.

- a) 1.5 Mpa
- b) 3.0 Mpa
- c) 5.1 Mpa
- d) 6.9 Mpa

573. During a refrigeration cycle, heat is rejected by the refrigerant in a----

- a) Condenser
- b) Compressor
- c) Evaporator
- d) Expansion valve

574. What is the effect of humid air on the delivered oxygen concentrations in oxygen concentrator?

- a) The concentration of oxygen may be reduced to 70%.
- b) The concentration of oxygen may be reduced to 21%
- c) The concentration of oxygen may be increased to 100%
- d) No oxygen delivery may occur.

575. What is the effect of low voltage on oxygen concentrator?

- a) Overheating the machine due to inefficient running of the motor.
- b) Clogging of the inlet filter due to accumulation of dust particles.
- c) Blockage of the bacterial filter due to accumulation of dust particles.
- d) No effect of low voltage on the functioning.

576. What is function of air dryer?

- a) To cool the air
- b) To remove the particle from air.
- c) A and B both
- d) To cool the PSA unit.

577. Which kind of valve in PSA unit?

- a) Hand operated valve
- b) Needle valve.
- c) Solenoid Valve
- d) None of above.

578. Breathing rate in human beings in normal condition is

- a) 12-15 times in a minute
- b) 15-18 times in a minute
- c) 18-22 times in a minute
- d) 22-25 times in a minute

579. Nowadays dc motor is widely used in.....

- a) Pumping sets
- b) Machine shops
- c) Electric traction
- d) Air compressors

580. Heating and humidification's done in

- a) Winter air conditioning
- b) Summer air conditioning
- c) Both of the mentioned
- d) None of the mentioned

581. Physical adsorptionwith increase in temperature

- a) Increase
- b) Decrease
- c) Fluctuates
- d) Remain same

582. Ambient air contain Amount of water vapour

- a) Small
- b) More
- c) High
- d) None of these

583. The volume of air delivered by the compressor is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

584. Volumetric efficiency of air compressors is of the order of.....

- a) 20 to 30%
- b) 40 to 50%
- c) 60 to 70%
- d) 70 to 90%

585. Ratio of compression is the ratio of.....

- a) Gauge discharge pressure to the gauge intake pressure
- b) Absolute discharge pressure to the absolute intake pressure
- c) Stroke Volume and clearance volume
- d) None of the above

586. The degree of reaction is usually kept _____ for all types of axial flow compressors.

- a) 0.2
- b) 0.3
- c) 0.4
- d) 0.5

587. The maximum delivery pressure in a rotary air compression is.....

- a) 10 bar
- b) 20 bar
- c) 30 bar
- d) 40 bar

588. Unit of Pressure

- a) Kg/cm²
- b) Lumen
- c) Cubic Cm
- d) Kg

589. From below options, which one can be consider as good conductor of the electricity?

- a) Paper
- b) Copper
- c) Wood
- d) Rubber

590. In which process of water softening, ion exchange phenomenon takes place?

- a) Lime soda process
- b) Zeolite process
- c) Boiling
- d) Demineralization process

591. Which of the following is a disadvantage of the zeolite process?

- a) No sludge is formed
- b) The process is almost automatic
- c) Suspended impurities get deposited around the zeolite particles
- d) Zero hardness can be occurred.

592. Atmospheric pressure is measured by an instrument called _____

- a) Anemometer
- b) Wind vane
- c) Barometer
- d) Thermometer

593. In weather maps, pressure distribution is shown by _____

- a) Isohyets
- b) Isohalines
- c) Isotherm
- d) Isobars

594. The average weight of the atmospheric air is ____ per sq.cm.at the mean sea level.

- a) 1
- b) 2
- c) 3
- d) 4

595. When the pressure gradient is steep, the velocity of the wind is ____

- a) Very low
- b) Low
- c) High
- d) Medium

596. Which of the mentioned processes use High purity oxygen?

- a) Welding and cutting of metals
- b) Open hearth steel purification
- c) Medicinal purposes
- d) All the mentioned

597. Different methods used to produce oxygen onsite are

- a) PSA
- b) VPSA
- c) Cryogenic Distillation
- d) All the above

598. Which of the following type does Screw compressor belongs to?

- a) Positive displacement compressor
- b) Dynamic compressors
- c) Both a & b
- d) None of the above

599. A Rotary Compressor is driven by an

- a) Electric Motor
- b) Engine
- c) Either Electric Motor or Engine
- d) None of these

600. The compressor performance at higher altitude compared to sea level will be

- a) Dependent on other factors
- b) Same
- c) Higher
- d) Lower

601. The basic function of air dryer in a compressor is:

- a) prevent dust from entering compressor
- b) storage and smoothening pulsating air output
- c) reduce the temperature of the air before it enters the next state to increase efficiency
- d) to remove remaining traces of moisture after after-cooler

602. Rotary Compressors are used for delivering

- a) Small quantity of air at high pressure
- b) Large quantity of air at high pressure
- c) Small quantity of air at low pressure
- d) Large quantity of air at low pressure

603. In PSA Tower Pressure equalization is done to

- a) Depressurize the tower
- b) Repressurize the tower
- c) Both depressurize and repressurize
- d) None of the above

604. Which Technology is more economical and requires less energy for adsorption and desorption process?

- a) PSA
- b) VPSA
- c) TSA
- d) None of the above

605. For every 4°C raise in air inlet temperature of an air compressor, the power consumption will increase by _____

- a) 2%
- b) 1%
- c) 3%
- d) 4%

606. PSA Generator is

- a) Manual
- b) Fully Automatic
- c) Semi-Automatic
- d) None of the above

607. If air dryer fails

- a) Pressure of tower increases
- b) Molecular Sieve gets contaminated
- c) Temperature increases
- d) None of the above

608. Rotameter works on the principle of variable

- a) Pressure
- b) Length
- c) Area
- d) Resistance

609. Thermodynamic efficiency of rotary compressor is based on

- a) Isothermal compression
- b) Adiabatic compression
- c) Polytropic compression
- d) Isentropic compression

610. Maximum delivery pressure in a Rotary air compressor is of the order of

- a) 6 Kg/cm²
- b) 10 Kg/cm²
- c) 25 Kg/cm²
- d) 40 Kg/cm²

611. Which of the following is not a type of pressure sensing element?

- a) Bellows
- b) Bourdontube
- c) Orificeplate
- d) Diaphragm

612. If a force of 3400 pounds is applied to a circular piston 2 inches in diameter, calculate the fluid pressure working against the piston.

- a) A.344.5PSI
- b) 270.6PSI
- c) 850PSI
- d) 1082.3PSI

613. Which of the following conversion take place in bourdon tubes?

- a) Pressure to displacement
- b) Pressure to voltage
- c) Pressure to strain
- d) Pressure to force

614. Bourdon Pressure gauge indicates a pressure of 3 bar, absolute pressure of the system is

- a) 2 Bar
- b) 3 Bar
- c) 4 Bar
- d) None of the above

615. Filters are used

- a) Pre PSA Oxygen generation
- b) Post PSA Oxygen Generation
- c) Both
- d) None of the above

616. Coalescing and dust filter particulate grades is between

- a) 1-10 micron
- b) 2-5 micron
- c) 0.01-25 micron
- d) 5-10 micron

617. Which valve works on electricity and not on pressure difference

- a) Rubber Valve
- b) Check Valve
- c) Pitot valve
- d) Solenoid Valve

618. In conventional valves which component is used to move the spool

- a) Torque motor
- b) Mechanical servo valve
- c) Solenoid
- d) All of the above

619. The time elapsed from the point the machine fails to perform its function to the point it is repaired and brought into operating condition is known as

- a) Down time
- b) Break Down time
- c) Both (A) and (B)
- d) Idle time

620. Which statement describes a characteristic feature of routine preventive maintenance?

- a) Maintenance schedule needs to be decided, based on maintenance requirements entered in the manual
- b) Maintenance could be done either during the working of the machine or shut interval down period
- c) Maintenance done at irregular frequencies
- d) Maintenance performed only if the the machine has fault or defect

621. In a PSA oxygen plant two stage filter consists of ____.

- a) Pre-filter
- b) Coalescing filter
- c) Pre-filter and Coalescing filter
- d) Bacterial filter

- 622. As you increase in altitude, the number of air molecules will _____.**
- a) Decrease
 - b) Increase
 - c) Remain the same
 - d) None of the above
- 623. As elevation increases, air pressure will _____.**
- a) Increases
 - b) Decreases
 - c) Remains same
 - d) NOTA (None of the above)
- 624. The condensation point of Oxygen gas is _____.**
- a) -113°C
 - b) -133°C
 - c) -183°C
 - d) -143°C
- 625. How does the liquid gets separated in freeze dryer?**
- a) Boiling
 - b) Distillation
 - c) Freezing and crystallization
 - d) Evaporation
- 626. What is the function of the air dryer?**
- a) Removes dirt
 - b) Removes moisture
 - c) Controls the rate of flow
- 627. The compressed air flows to the actuator through.**
- a) Pipes and valves
 - b) Shafts
 - c) Motors
 - d) Flow control valve
- 628. The temperature of air recorded by a thermometer, when it is not affected by the moisture present in the air, is called**
- a) Wet bulb temperature
 - b) Dry bulb temperature
 - c) Dew point temperature
 - d) None of these
- 629. Where does the lowest temperature occur in a vapour compression cycle?**
- a) Condenser
 - b) Evaporator
 - c) Compressor
 - d) Expansion valve
- 630. Zeolites are complex compound of _____.**
- a) Aluminium and lime
 - b) Silica and soda
 - c) Aluminium, silica and soda
 - d) Lime and soda
- 631. Which of the following is a disadvantage of the zeolite process?**
- a) No sludge is formed
 - b) The process is almost automatic
 - c) Suspended impurities get deposited around the zeolite particles
 - d) Zero hardness can be occurred.

632. Natural zeolite is mainly processed from _____

- a) White sand
- b) Green sand
- c) Grey sand
- d) Red sand

633. Molecular sieves are porous _____

- a) Alumina
- b) Silica
- c) Synthetic zeolites crystals/metal alumina-silicates
- d) None of these

634. What is PSA _____

- a) Pressure Swing Adsorption
- b) Pressure Swing Absorption
- c) Positive Swing Adsorption
- d) Positive Swing Absorption

635. Which of the following is not naturally occurring Zeolite?

- a) Na^+
- b) Al^{+3}
- c) Si^{+4}
- d) Ca^{+2}

636. In Zeolite process, the exchange of _____ takes place.

- a) Anions
- b) Cations
- c) Both Cations and Anions
- d) No ions exchange

637. Natrolite is an example of _____.

- a) Synthetic Zeolite
- b) Natural Zeolite
- c) Colgon
- d) Colloid

638. The color of the natural Zeolite is _____.

- a) Green
- b) Grey
- c) Black
- d) Blue

639. The multi stage compression as compared to single stage compression _____.

- a) Improves volumetric efficiency for the given pressure ratio
- b) Reduces work done per kg of air
- c) Reduces cost of compressor
- d) Gives more uniform torque
- e) All of the above

640. The volume of air delivered by the compressor is called ____.

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

641. Ratio of IHP and BHP is known as _____.

- a) Mechanical efficiency
- b) Volumetric efficiency
- c) Isothermal efficiency
- d) Adiabatic efficiency

- 642. The value of air sucked by the compressor during its suction stroke is called.**
- a) Free air delivery
 - b) Compressor capacity
 - c) Swept volume
 - d) NOTA (None of the above)
- 643. The pressure of air at the beginning of the compression stroke is _____ atmospheric pressure.**
- a) Equal to
 - b) Less than
 - c) More than
 - d) None of the above
- 644. Cylinder clearance in a compression should be _____.**
- a) As large as possible
 - b) As small as possible
 - c) About 50% of swept volume
 - d) About 100% of swept volume
- 645. Separators are generally installed in compressors _____.**
- a) After the intercooler
 - b) Before the intercooler
 - c) Before the receiver
 - d) After the receiver
- 646. The rotary compressors are used for delivering _____.**
- a) Small quantities of air at high-pressure
 - b) Large quantities of air at high-pressure
 - c) Small quantities of air at low pressures
 - d) Large quantities of air at a low pressure
- 647. The speed of the rotary compressor is _____ as compared to reciprocating air compressor _____.**
- a) High
 - b) Low
 - c) Equal
 - d) None of the above
- 648. Intercooling in compressors _____.**
- a) Cool the delivered air
 - b) Results in saving of power in compressing a given volume to given pressure
 - c) Is the standard practice for big compressors
 - d) Enable compression in two stages
- 649. A compressor at high altitude will draw _____.**
- a) More power
 - b) Less power
 - c) Same power
 - d) None of the above
- 650. The compressor performance at higher altitude compare to sea level will be _____.**
- a) Same
 - b) Higher
 - c) Lower
 - d) None of the above
- 651. An air receiver is to be placed outside should it to be placed in _____.**
- a) Sun
 - b) Shade
 - c) Rain
 - d) Anywhere

652. Types of compressor used in PSA Oxygen plant?

- a) Centrifugal type
- b) Reciprocating type
- c) Radial flow type
- d) Screw type

653. The capacity of compression will be highest when it's intake temperature is_____.

- a) Lowest
- b) Highest
- c) Anything atmospheric
- d) None of the above

654. Pressure is defined as the physical _____ exerted on an object.

- a) Speed
- b) Density
- c) Force
- d) Mass

655. Full form of MPV _____.

- a) Min. Pressure Valve
- b) Max. Pressure Valve
- c) Metal Pressure Valve
- d) NOTA (None of the above)

656. When the compressor is turned on, the motor is started in star mode and it takes to delta mode, how many seconds to change over to delta mode.

- a) 6-9 sec
- b) 3-6 sec
- c) 6-10 sec
- d) 4-10 sec

657. 1 bar is = _____ PSI.

- a) 14.50
- b) 12.50
- c) 15.50
- d) 11.50

658. What does PSI stand for in pressure?

- a) Gram per square inch
- b) Ton per square inch
- c) Kg per square inch
- d) Pounds per square inch

659. Which device is used to measure the liquid and gas pressures and act as Transducer _____.

- a) Pressure gauge
- b) Pressure sensors
- c) Control panel
- d) NOTA (None of the above)

660. Name the gas which is found in abundance in earth in both combine and free state with other elements?

- a) Oxygen
- b) Nitrogen
- c) Hydrogen
- d) Sulphur

661. Highest percentage of air consists of _____.

- a) Oxygen
- b) Carbon dioxide
- c) Nitrogen
- d) Argon

662. The percentage of nitrogen is _____.

- a) 21%
- b) 78%
- c) 12%
- d) 87%

663. Air pollution causes _____.

- a) Global warming
- b) Respiratory problems
- c) Soil erosion
- d) NOTA (None of the above)

664. CNG is a _____.

- a) Polluted fuel
- b) Clean fuel
- c) Harmful fuel
- d) NOTA (None of the above)

665. What is the percentage of oxygen in the air?

- a) 20%
- b) 19%
- c) 21%
- d) 18%

666. _____ is non-invasive method allowing the monitoring of the saturation of a patient's hemoglobin.

- a) Ear Oximetry
- b) Pulse Oximetry
- c) Skin-Reflectance Oximetry
- d) Intravascular Oximetry

667. The oxygen cylinder is usually painted with _____.

- a) Black colour
- b) White colour
- c) Maroon colour
- d) Yellow colour

668. For combustion _____ is necessary.

- a) Air
- b) Water
- c) Paper
- d) Fuel

669. Around how much of the human body is composed of oxygen?

- a) 10 %
- b) 20 %
- c) 40 %
- d) 65 %

670. What is PSA _____

- a) Pressure Swing Adsorption
- b) Pressure Swing Absorption
- c) Positive Swing Adsorption
- d) Positive Swing Absorption

671. What is the standard atmospheric pressure in air?

- a) 1.01325bar
- b) 1.2658 bar
- c) 1.0003 bar
- d) 0.93285 bar

672. If high pressure of air is dropping continuously, what will be the cause of the defect?

- a) Drain blocked
- b) Power supply is Low
- c) Purge rate is too high
- d) Desiccant dusting

673. Which device is used to control the whole PSA plant?

- a) Control Circuit
- b) Valves
- c) Compressor
- d) Power circuit

674. The unit of pressure in the system international (SI) is -----

- a) Force
- b) Pascal
- c) Newton
- d) Kelvin

675. If Inlet air pressure is low, what will be the cause of the defect?

- a) Insufficient air flow
- b) Drain blocked
- c) Power supply is Low
- d) Purge rate is too high

676. What is function of air dryer in PSA Plant?

- a) Removal of water vapour and cool the air
- b) To control the air flow
- c) To control the air pressure
- d) To increase the temperature of air

677. A coalescing filter is a device used to separate vapors, liquids or oil upto-----microns

- a) 0.001 micron
- b) 500 microns
- c) 1000microns
- d) 0.1 microns

678. Oxygen cylinders must be stored away from highly flammable materials by-----

- a) 20 feet
- b) 80 feet
- c) 100 feet
- d) A steel wall

679. What is the equipment is used to protect the body while handling of gas cylinders?

- a) Leather apron
- b) Leather shoes
- c) Leather gloves
- d) Goggles

680. The mass of water vapor present in a unit mass of dry air, It is also called as

- a) Temperature
- b) Humidity
- c) Dew point
- d) Dryers

- 681. What will be the cause of the defect? If oxygen purity level is low**
- Oxygen generator not cycling properly.
 - Dryer Fault.
 - Valves not functioning properly
 - Low inlet pressure
- 682. Which kind of valves are used in PSA oxygen plant?**
- Hand operated valves
 - Solenoid valves
 - Needle valves
 - Plunger valves
- 683. The device used to control the flow of waste gas is -----**
- Air filter valve
 - Filter drain valve
 - Automatic waste valve
 - Automatic Feed Air Valves
- 684. Which device is used in PSA oxygen plant to check the purity of oxygen?**
- Valves
 - Filters
 - Control circuit
 - Oxygen analyser
- 685. During an adiabatic expansion the increase in volume is associated with-----**
- Decrease in pressure and decrease in temperature
 - Decrease in pressure and increase in temperature
 - Increase in pressure and decrease in temperature
 - Increase in pressure and increase in temperature
- 686. The main function of zeolite in PSA oxygen plant is -----**
- To remove nitrogen
 - To remove extra water content of the atmospheric air
 - To remove carbondioxide
 - To remove sulphurdioxide
- 687. Which type of compressor mostly used in PSA oxgen generation plant?**
- Reciprocating Compressor
 - Rotary Compressors
 - Screw compressors
 - Scroll type Compressors
- 688. If oxygen concentration below specified concentration (50 to 70 %), What will be the probable cause of the defect?**
- Defective PLC
 - Low voltage
 - High pressure
 - Air dryer not functioning properly
- 689. The temperature at which the air becomes saturated with water when it is cooled at constant pressure is called-----**
- Dew point
 - Temparature
 - Saturation
 - DBT
- 690. Zeolites are complex compound of _____**
- Aluminium and lime
 - Silica and soda
 - Aluminium and silicate
 - Aluminium and soda

691. 1 Ångström is equal to----- nanometer

- a) 0.1 nanometers
- b) 0.01 nanometers
- c) 1 nanometers
- d) 10 nanometers

692. Cryogenics deal with temperatures around-----

- a) Minus 50 degree Celsius
- b) Minus 80 degree Celsius
- c) Minus 100 degree Celsius
- d) Minus 180 degree Celsius

693. Liquid oxygen is produced by----- method.

- a) Batch distillation
- b) Steam distillation
- c) Extractive distillation
- d) Fractional distillation

694. While operating the PSA plant, Check differential pressure Gauges on all filters by-----

- a) Monthly
- b) Daily
- c) Half yearly
- d) Weekly

695. While operating oxygen PSA Plant check the purity of oxygen by-----

- a) Daily
- b) Weekly
- c) Monthly
- d) Half yearly

696. Compression efficiency is compared against.....

- a) Ideal compression
- b) Adiabatic compression
- c) Both isothermal and adiabatic compression
- d) Isentropic compression

697. The volume of air delivered by the compressor is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

698. The most efficient method of compressing air is to compress it.....

- a) Isothermal
- b) Adiabatically
- c) Isentropically
- d) Isochronically

699. The value of air sucked by the compressor during its suction stroke is called.....

- a) Free air delivery
- b) Compressor capacity
- c) Swept volume
- d) None of the above

700. Volumetric efficiency of air compressors is of the order of.....

- a) 20 to 30%
- b) 40 to 50%
- c) 60 to 70%
- d) 70 to 90%

701. Ratio of compression is the ratio of.....

- a) Gauge discharge pressure to the gauge intake pressure
- b) Absolute discharge pressure to the absolute intake pressure
- c) Stroke Volume and clearance volume
- d) None of the above

702. Cylinder clearance in a compression should be.....

- a) As large as possible
- b) As small as possible
- c) About 50% of swept volume
- d) About 100% of swept volume

703. Euler's equation is applicable for.....

- a) Centrifugal compressor
- b) Axial compressor
- c) Pumps
- d) All of the above

704. The rotary compressors are used for delivering.....

- a) Small quantities of air at high-pressure
- b) Large quantities of air at high-pressure
- c) Small quantities of air at low pressures
- d) Large quantities of air at a low pressures

705. The maximum delivery pressure in a rotary air compression is.....

- a) 10 bar
- b) 20 bar
- c) 30 bar
- d) 40 bar

706. The compressor efficiency is the.....

- a) Isothermal HP/indicated HP
- b) Isothermal HP/shaft HP
- c) Total output/air input
- d) Compression work/motor input

707. An air compressor may be controlled by.....

- a) Throttle control
- b) Clearance control
- c) Blow-off control
- d) Any of the above

708. Which of the following type does Screw compressor belongs to?

- a) Positive displacement compressor
- b) Dynamic compressors
- c) Both a & b
- d) None of the above

709. For every 4°C raise in air inlet temperature of an air compressor, the power consumption will increase by__

- a) 2%
- b) 1%
- c) 3%
- d) 4%

710. The basic function of air dryer in a compressor is:

- a) Prevent dust from entering compressor
- b) Storage and smoothening pulsating air output
- c) Reduce the temperature of the air before it enters the next state to increase efficiency
- d) To remove remaining traces of moisture after-cooler

711. What is the % of Oxygen in Atmospheric Air?

- a) 78%
- b) 21%
- c) 3%
- d) 40%

712. A machine used to raise the pressure of air is called :

- a) Gasturbine
- b) ICEngine
- c) Compressor
- d) Air Motor

713. Maximum density in these gases :

- a) N
- b) Ar
- c) C. O
- d) D. None of these

714. An after cooler is used to?

- a) Remove impurities from air
- b) Reduce volume of air
- c) Cause moisture and oil vapour to dropout
- d) Cool the air

715. A compressor is driven by

- a) Electricmotor
- b) Engine
- c) C. Either A orB
- d) D. None of these

716. Air filter used to?

- a) Cooling the air
- b) Cleaning the air
- c) Change form of the air
- d) All of these

717. Which gas is found the most in the atmosphere?

- a) N
- b) Ar
- c) C. C
- d) D. O

718.8 Purify oxygen is used to?

- a) In Hospitals
- b) In Industry
- c) In Welding
- d) Both A and B

719. What is the full form of PSA?

- a) Pressure Same Absorption
- b) Pressure Swing Adsorption
- c) Pressure Secure Atom
- d) None of these

720. Which of the following is not a unit of the Oxygen Plant?

- a) Compressor
- b) Air Filter
- c) Oil Filter
- d) Silencer

721. Rotary screw compressor use---helical screws to force the gas into smaller space.

- a) One
- b) Two
- c) Three
- d) Four

722. Screw compressors.

- a) Have less moving component.
- b) Less vibration and surging.
- c) Can operate at variable speeds.
- d) All of the above.

723. Rotary van compressor can have mechanical efficiency of about.

- a) 70%
- b) 80%
- c) 90%
- d) 100%

724. With multiple staging a centrifugal compressor can achieve higher output pressure greater than.

- a) 1.5 Mpa
- b) 3.0 Mpa
- c) 5.1 Mpa
- d) 6.9 Mpa

725. Axial compressor use ---to progressively compress a fluid.

- a) Pistons
- b) Air foils
- c) Lobes
- d) None of above

726. A diffuser section in centrifugal convert velocity energy to

- a) Mechanical energy
- b) Heat energy
- c) Presser energy
- d) Potential energy

727. Following type is a positive displacement compressor

- a) Screw
- b) Diaphran
- c) Centrifugal
- d) All of the above

728. Compressor are similar to

- a) Gears
- b) Flywheel
- c) Pumps
- d) Turbine

729. A compressor increes the ---of a gas by---its---

- a) Pressure, reducing, volume
- b) Pressure, increasing, volume
- c) Pressure, reducing, Temperature
- d) Pressure, increasing, Temperature

730. Rotary compressor is best suited for

- a) Large quantity of air at high pressure.
- b) Small quantity of air at high pressure.
- c) Small quantity of air at low pressure.
- d) Large quantity of air at low pressure.

731. Reciprocating air compressor is best suited for

- a) Large quantity of air at high pressure.
- b) Small quantity of air at high pressure.
- c) Small quantity of air at low pressure.
- d) Large quantity of air at low pressure.

732. General gas equation is----

- a) $PV=nRT$
- b) $PV=mRT$
- c) $PVn =C$
- d) $C_p-C_v=R/J$

733. During a refrigeration cycle, heat is rejected by the refrigerant in a----

- a) Condenser
- b) Compressor
- c) Evaporator
- d) Expansion valve

734. The percentage O₂ by weight in atmospheric air is

- a) 18%
- b) 23%
- c) 77%
- d) 79%

735. The percentage O₂ by volume on atmospheric air is

- a) 21%
- b) 23%
- c) 77%
- d) 79%

736. What pressure does an exhaust gases have

- a) Medium level pressure
- b) Low pressure
- c) No pressure
- d) High Pressure

737. What is the low frequency note of an exhaust gas

- a) 50 to 500 hz
- b) 5 to 10 hz
- c) 3000 to 10000 hz
- d) 30000 to 200000 hz

738. Solenoid valves are used in

- a) Small size system where on and off operation is required
 - b) Full gas system as the latching valve
 - c) Cooling water system
 - d) For continuous flow
- a) 1,2
 - b) 1,3
 - c) 1,4
 - d) 2,3

739. Give the ratio in which hydrogen and oxygen are present in water by volume.

- a) 1:2
- b) 1:1
- c) 2:1
- d) 1:8

740. The atomic number of an element 'X' is 2. Which inert gas is X?

- a) He
- b) Ar
- c) Ne
- d) Kr

741. Which of the following cannot be considered a form of matter?

- a) Atom
- b) Water
- c) Humidity
- d) Electron

742. Unit of Pressure

- a) Kg/cm²
- b) Lumen
- c) Cubic Cm
- d) Kg

743. Product Output of PSA Plant is -----

- a) Oxygen
- b) Nitrogen
- c) Argon
- d) CO₂

744. Filter is used to -----

- a) Remove dust particles and Bacteria in Compressed Air
- b) Remove pressure

745. PLC is

- a) Programmable Logic Controller
- b) Programmable logic concentrator

746. Pressure on Oxygen Tank is measured by

- a) Anemometer
- b) Pressure gauge
- c) Humidity meter

747. PSI is

- a) Pounds per square Inch
- b) Parts per Square Inch

748. From below options, which one can be consider as good conductor of the electricity?

- a) Paper
- b) Copper
- c) Wood
- d) Rubber

749. From below options which one is used for running a bike?

- a) Nitric Acid
- b) Petrol
- c) Kerosene
- d) Lubricant oil

750. Why the rain drops fall downward on the Earth?

- a) Water is Soft
- b) Gravity of earth
- c) Water made pf fluids
- d) Water can exits in atmosphere

751. Electricity produced from the Coal is called what?

- a) Hydroelectric Power
- b) Tidal Power
- c) Tidal Power
- d) Thermal Power

752. Pressure exerted by air on the Earth is called what?

- a) Atmospheric pressure
- b) Absolute pressure
- c) Differential pressure
- d) Over-pressure

753. Computer is connected to Internet by which device?

- a) Modem
- b) Mouse
- c) CPU
- d) RAM

754. What is the percentage of 5:10?

- a) 50%
- b) 60%
- c) 75%
- d) 100%

755. How many MBs are there in 1 GB?

- a) 1024 MBs
- b) 1000
- c) 1100
- d) 900

756. Defence Research and Development Organization (DRDO) belongs to which country in Asia?

- a) India.
- b) China
- c) America
- d) Apan

757. Force acting on per unit area is called

- a) non-contact forces
- b) contact forces
- c) force
- d) pressure

758. The pressure which is exerted by air around us is known as

- a) Force
- b) atmospheric pressure
- c) muscular force
- d) friction

759. 1 kilogram weight is equal to

- a) 98 N
- b) 9.8 N
- c) 0.98 N
- d) 0.098 N

760. Pressure =

- a) Area / force on which it acts
- b) force / area on which it acts
- c) Volume / force on which it acts
- d) Force / volume on which it acts

761. Name the device which is used to measure the hotness or coldness of an object.

- a) Picometer
- b) Barometer
- c) Manometer
- d) Thermometer

762. What is the normal temperature of a healthy person?

- a) 37°C
- b) 37°F
- c) 37 K
- d) None of these

763. Breathing rate in human beings in normal condition is

- a) 12-15 times in a minute
- b) 15-18 times in a minute
- c) 18-22 times in a minute
- d) 22-25 times in a minute

764. Which of the following is NOT a clinical use of oxygen concentrator?

- a) Pneumonia management in a peripheral health setup.
- b) Sick newborn with a systemic illness
- c) Utility in ventilation of preterm infants
- d) Home oxygen therapy in preterm infants with bronchopulmonary dysplasia.

765. The main function of external coarse filter through which atmospheric air passes is

- a) To remove dust particles
- b) To concentrate room air
- c) To remove bacteria in the room air
- d) To remove viruses in the room air

766. The main function of zeolite filter through which air passes is

- a) To remove nitrogen
- b) To remove carbon dioxide
- c) To remove sulphur dioxide
- d) To remove extra water content of the atmospheric air

767. The BEST STATEMENT to justify the need of two zeolite cylinders is

- a) The period of oxygen outflow from one, coincides with the discharge of nitrogen from the other, so that, a continuous supply of oxygen-enriched gas is delivered to the patient.
- b) Aluminum tri silicate removes nitrogen very efficiently
- c) The presence of lithium in two cylinders helps in the delivery of oxygen enriched air.
- d) Removal of nitrogen increases the oxygen concentration by 50% only if one cylinder is present.

768. Which of the following statements is NOT TRUE about flow splitter?

- a) A "flow-splitter" is a device which aggregates the flow of oxygen to different babies.
- b) Oxygen to five different patients can be given at the same time.
- c) Each baby can receive different flow rates.
- d) The oxygen is delivered through plastic tubing connecting the outlet nozzle and the nasal prongs fixed to the patient.

769. Which of the statements regarding the maintenance of oxygen concentrator is TRUE?

- a) The external coarse filter has to be washed every day.
- b) The inlet filter has to be replaced after 1 week.
- c) The inlet filter should be washed.
- d) The life of the zeolite crystals is expected to be nearly 365 days.
- e) Bacterial filter must be changed once in a 10 years.

770. What is the effect of humid air on the delivered oxygen concentrations in oxygen concentrator?

- a) The concentration of oxygen may be reduced to 70%.
- b) The concentration of oxygen may be reduced to 21%
- c) The concentration of oxygen may be increased to 100%
- d) No oxygen delivery may occur.

771. What is the effect of low voltage on oxygen concentrator?

- a) Overheating the machine due to inefficient running of the motor.
- b) Clogging of the inlet filter due to accumulation of dust particles.
- c) Blockage of the bacterial filter due to accumulation of dust particles.
- d) No effect of low voltage on the functioning.

772. Which statement is false about oxygen concentrator?

- a) Oxygen concentration goes down as the flow keeps on increasing.
- b) If the flow is at 1 L/min the oxygen concentration is nearly 96 %.
- c) At nearly 2L/min the concentration goes down to 95%.
- d) At flows of 5l/minute the concentration is nearly 100%.

773. A D.C. welding generator has _____.

- a) Wave moving
- b) Lap winding
- c) Duplex winding
- d) All of the above

774. In a D.C. generator the magnetic neutral axis coincides with the geometrical neutral axis, when.

- a) The generator runs on full load
- b) There is no load on the generator
- c) The generator runs on overload
- d) The generator runs on designed speed

775. When two D.C. generators are running in parallel an equalizer bar is used so that the two identical machines will pass approximately equal currents to the load.

- a) True
- b) False

776. The armature of DC generator is laminated to .

- a) Reduce Hysteresis loss
- b) Insulate the Core
- c) Reduce eddy current loss
- d) Provide air cooling passage

777. In D.C. generators, lap winding is used for _____.

- a) High voltage, high current
- b) High voltage, low current
- c) Low voltage, high current
- d) Low voltage, low current

778. Which of the following regulation is preferred with a D.C. generator?

- a) 100% regulation
- b) 1% regulation
- c) 50% regulation
- d) Infinite regulation

779. What is full load terminal voltage in a level compounded D.C. generator?

- a) Equal to no-load terminal voltage
- b) Negligibly low
- c) More than no-load terminal voltage
- d) Less than no-load terminal voltage

780. The resistance of armature winding depends on which of the following?

- a) Cross-sectional area of the conductor
- b) Length of conductor
- c) Number of conductors
- d) All of the above

781. In a four-pole D.C. machine Alternate poles are north and south.

- a) true
- b) false

782. Inacommutator__.

- a) mica and copper are equally hard
- b) Copper is harder than mica
- c) mica is harder than copper
- d) none of the above

783. We connect two generators in parallel For large DC load.

- a) true
- b) false

784. Thy yoke of a dc generator is made of cast iron because_____.

- a) It is cheaper
- b) It gives mechanical protection to the machine
- c) It completes the magnetic path
- d) All of these

785. The bearings used to support the rotor shofts are generally _____.

- a) bush bearings
- b) magnetic bearings
- c) needle bearings
- d) ball bearings

786. In case of D.C. machines, mechanical lossess are primary function of -

- a) Current
- b) Voltage
- c) Speed
- d) none

787. Brushes of D.C. Machines are made of which of the followings?

- a) Carbon
- b) Soft Copper
- c) hard copper
- d) all of the above

788. The Material of Commutator brushes is generally made of_____.

- a) Mica
- b) Copper
- c) Cast Iron
- d) Carbon

789. A D.C. generator without commutator is a AC generator.

- a) true
- b) false

790. Equalizer rings are used in wave winding.

- a) true
- b) false

- 791. Fleming's right hand rule is applicable to _____.**
- a) D.C. Motor
 - b) Transformer
 - c) D.C. Generator
 - d) Alternator
- 792. A Triplex wave winding will have _____ Parallel Paths.**
- a) 2
 - b) 4
 - c) 6
 - d) 8
- 793. When two dc series motors are connected in parallel the resultant speed is _____.**
- a) Zero
 - b) Normal speed
 - c) Less than the normal speed
 - d) More than the normal speed
- 794. Nowadays dc motor is widely used in _____**
- a) Pumping sets
 - b) Machine shops
 - c) Electric traction
 - d) Air compressors
- 795. The field coils of D.C. generator are usually made of _____.**
- a) Mica
 - b) Carbon
 - c) Copper
 - d) Cast iron
- 796. In a D.C. generator the critical resistance can be increased by _____.**
- a) Decreasing its speed
 - b) Increasing its speed
 - c) Decreasing its field resistance
 - d) None of above
- 797. Welding generator will have _____.**
- a) Lap winding
 - b) Delta winding
 - c) Wave winding
 - d) None of above
- 798. The ratio of work-done per cycle to the stroke volume of the compressor is known as _____.**
- a) Compressor capacity
 - b) Compression ratio
 - c) Compressor efficiency
 - d) Mean effective pressure
- 799. The capacity of a compression is 10 m³/minute. 10 m³/minute refers to _____.**
- a) Standard air
 - b) Free air
 - c) Compressed air
 - d) Compressed air at delivery pressure

800. Aero planes employ following type of compressor _____.

- a) Radial flow
- b) Axial flow
- c) Centrifugal
- d) Combination of above

801. The multi stage compression as compared to single stage compression _____.

- a) Improves volumetric efficiency for the given pressure ratio
- b) Reduces work done per kg of air
- c) Reduces cost of compressor
- d) Gives more uniform torque
- e) All of the above

802. Compression efficiency is compared against _____.

- a) Ideal compression
- b) adiabatic compression
- c) both isothermal and adiabatic compression
- d) Isentropic compression
- e) Isothermal compression

803. The capacity of a compressor is 10 m³/minute. 10 m³/minute refers to _____.

- a) Standard air
- b) Free air
- c) Compressed air
- d) Compressed air at delivery pressure

804. What type of compressor are used in oxygen PSA Plant?

- a) Reciprocating type
- b) B. Screw Type
- c) Rotary Type
- d) All of the above.

805. What is the pressure in one bar?

- a) 15psi
- b) 20psi
- c) 14.5psi
- d) 16psi

806. Qualities of oxygen grade is produced by PSA plant _____.

- a) 90 to 96
- b) 86 to 90
- c) 93 to 96
- d) 87 to 93

807. Generally pressure of compressed air is....

- a) 5 Bar
- b) 7 to 7.5 Bar
- c) 10 Bar
- d) Above 10 Bar

808. After the dryer the compressed air is goes to...

- a) Air receiver tank
- b) PSA Unit
- c) Buffer Tank
- d) Oxygen Analyser

809. Which material is used for adsorbent.

- a) Aluminium Oxide
- b) Zeolite

- c) Carbon
- d) Paper filter

810. The bacterial filter is used after the.....

- a) PSA Unit
- b) Buffer Tank
- c) Oxygen Analyser
- d) After Dryer

811. What is the use of oxygen booster.

- a) To clean the air
- b) To creating pressure for bottling purpose.
- c) To suck the air
- d) To Check the oxygen qualities.

812. The oxygen analyser is used for.....

- a) To Check the oxygen qualities.
- b) To remove the bacteria.
- c) To remove the nitrogen
- d) Making high pressure.

813. The starting time of oxygen PSA plant is_____.

- a) 30min
- b) 20min
- c) 5min
- d) 40min

814. What is the life of zeolite?

- a) 1year
- b) 2year.
- c) 10-year
- d) 3 to 5year.

815. What is function of air dryer?

- a) To cool the air.
- b) To remove the particle from air.
- c) A and B both
- d) To cool the PSA unit.

816. Which kind of valve in PSA unit?

- a) Hand operated valve.
- b) Niddle valve.
- c) Solenoid Valve
- d) None of above.

817. In PSA Unit 1st cylinder is pressurised then 2nd cylinder is

- a) Cooling down.
- b) Removing nitrogen
- c) Cleaning the air
- d) Removing Oils.

818. Compression efficiency is compared against_____.

- a) Ideal compression
- b) Adiabatic compression
- c) both isothermal and adiabatic compression
- d) Isentropic compression

- 819. The volume of air delivered by the compressor is called_____.**
- a) Free air delivery
 - b) Compressor capacity
 - c) Swept volume
 - d) None of the above
- 820. The most efficient method of compressing air is to compress it_____.**
- a) Isothermal
 - b) Adiabatically
 - c) Isentropically
 - d) Ischronically
- 821. The value of air sucked by the compressor during its suction stroke is called_____.**
- a) Free air delivery
 - b) Compressor capacity
 - c) Swept volume
 - d) none of the above
- 822. Volumetric efficiency of air compressors is of the order of_____.**
- a) 20 to30%
 - b) 40 to50%
 - c) 60 to70%
 - d) 70 to90%
- 823. Ratio of compression is the ratio of_____.**
- a) Gauge discharge pressure to the gauge intake pressure
 - b) Absolute discharge pressure to the absolute intake pressure
 - c) Stroke Volume and clearance volume
 - d) None of the above
- 824. Cylinder clearance in a compression should be_____.**
- a) As large as possible
 - b) As small as possible
 - c) about 50% of swept volume
 - d) About 100% of swept volum
- 825. Euler's equation is applicable for_____.**
- a) Centrifugal compressor
 - b) Axial compressor
 - c) Pumps
 - d) All of the above
- 826. The rotary compressors are used for delivering_____.**
- a) Small quantities of air at high-pressure
 - b) Large quantities of air at high-pressure
 - c) Small quantities of air at low pressures
 - d) Large quantities of air at a low pressures
- 827. The maximum delivery pressure in a rotary air compression is.....**
- a) 10 bar
 - b) 20 bar
 - c) 30 bar
 - d) 40 bar

828. The compressor efficiency is the _____.

- a) Isothermal HP/indicated HP
- b) Isothermal HP/shaft HP
- c) Total output/airinput
- d) Compression work/motor input

829. An air compressor may be controlled by _____.

- a) Throttle control
- b) Clearance control
- c) Blow-off control
- d) Any of the above

830. Which of the following type does Screw compressor belongs to?

- a) Positive displacement compressor
- b) Dynamic compressors
- c) Both a & b
- d) None of the above

831. For every 4°C raise in air inlet temperature of an air compressor, the power consumption will increases by ___

- a) 2%
- b) 1%
- c) 3%
- d) 4%

832. The basic function of air dryer in a compressor is:

- a) prevent dust from entering compressor
- b) storage and smoothening pulsating air output
- c) reduce the temperature of the air before it enters the next state to increase efficiency
- d) to remove remaining traces of moisture after after-cooler

833. What is the % of Oxygen in Atmospheric Air?

- a) 78%
- b) 21%
- c) 3%
- d) 40%

834. A machine used to raise the pressure of air is called :

- a) Gas turbine
- b) IC Engine
- c) Compressor
- d) Air Motor

835. Maximum density in these gases :

- a) N
- b) Ar
- c) O
- d) None of these

836. An after cooler is used to?

- a) Remove impurities from air
- b) Reduce volume of air
- c) Cause moisture and oil vapour to dropout
- d) Cool the air

837. A compressor is driven by

- a) Electric motor
- b) Engine
- c) Either A or B
- d) None of these

838. Air filter used to?

- a) Cooling the air
- b) Cleaning the air
- c) Change form of the air
- d) All of these

839. Which gas is found the most in the atmosphere?

- a) N
- b) Ar
- c) C
- d) O

840. Purify oxygen is used to?

- a) In Hospitals
- b) In Industry
- c) In Welding
- d) Both A and B

841. What is the full form of PSA?

- a) Pressure Same Absorption
- b) Pressure Swing Adsorption
- c) Pressure Secure Atom
- d) None of these

842. Which of the following is not a unit of the Oxygen Plant?

- a) Compressor
- b) Air Filter
- c) Oil Filter
- d) Silencer

843. Rotary screw compressor use _____ helical screws to force the gas into smaller space.

- a) One
- b) Two
- c) Three
- d) Four

844. Screw compressors.

- a) Have less moving component.
- b) Less vibration and surging.
- c) Can operate at variable speeds.
- d) All of the above.

845. Rotary van compressor can have mechanical efficiency of about.

- a) 70%
- b) 80%
- c) 90%
- d) 100%

846. With multiple staging a centrifugal compressor can achieve higher output pressure greater than.

- a) 1.5 Mpa
- b) 3.0 Mpa
- c) 5.1 Mpa
- d) 6.9 Mpa

847. Axial compressor use _____ to progressively compress a fluid.

- a) Pistons
- b) Air foils
- c) Lobes
- d) None of above

848. A diffuser section in centrifugal convert velocity energy to

- a) Mechanical energy
- b) Heat energy
- c) Presser energy
- d) Potential energy

849. Following type is a positive displacement compressor

- a) Screw
- b) Diaphran
- c) Centrifugal
- d) All of the above

850. Compressor are similar to

- a) Gears
- b) Flywheel
- c) Pumps
- d) Turbine

851. A compressor increase the _____ of a gas by _____ its _____.

- a) Pressure, reducing, volume
- b) Pressure, increasing, volume
- c) Pressure, reducing, Temperature
- d) Pressure, increasing, Temperature

852. Rotary compressor is best suited for

- a) Large quantity of air at high pressure.
- b) Small quantity of air at high pressure.
- c) Small quantity of air at low pressure.
- d) Large quantity of air at low pressure.

853. Reciprocating air compressor is best suited for

- a) Large quantity of air at high pressure.
- b) Small quantity of air at high pressure.
- c) Small quantity of air at low pressure.
- d) Large quantity of air at low pressure.

854. General gas equation is _____.

- a) $PV=nRT$
- b) $PV=mRT$
- c) $PVn =C$
- d) $C_p-C_v=R/J$

855. During a refrigeration cycle, heat is rejected by the refrigerant in a----

- a) Condenser
- b) Compressor
- c) Evaporator
- d) Expansion valve

856. Moisture in a refrigerant system is removed by

- a) Drier
- b) Fitter-driers
- c) Discards
- d) All of the above

857. The percentage O₂ by weight in atmospheric air is

- a) 18%
- b) 23%
- c) 77%
- d) 79%

858. The percentage O₂ by volume on atmospheric air is

- a) 21%
- b) 23%
- c) 77%
- d) 79%

859. What pressure does an exhaust gases have

- a) Medium level pressure
- b) Low pressure
- c) No pressure
- d) High Pressure

860. What is the low frequency note of an exhaust gas

- a) 50 to 500 hz
- b) 5 to 10 hz
- c) 3000 to 10000 hz
- d) 30000 to 200000 hz

861. Solenoid valves are used in

- a) Small size system where on are oft operation is required
- b) Full gas system as the latching value
- c) Cooling water system
- d) For continuous flow

- a) 1,2
- b) 1,3
- c) 1,4
- d) 2,3

Answer Key

1	c	34	a	67	b	100	d	133	a	166	c
2	a	35	a	68	a	101	a	134	b	167	d
3	b	36	c	69	c	102	a	135	d	168	c
4	a	37	b	70	a	103	a	136	b	169	c
5	c	38	b	71	d	104	c	137	a	170	b
6	b	39	c	72	c	105	d	138	d	171	d
7	c	40	c	73	a	106	d	139	c	172	a
8	b	41	d	74	a	107	c	140	b	173	b
9	a	42	b	75	a	108	d	141	a	174	c
10	b	43	c	76	a	109	a	142	c	175	a
11	c	44	b	77	a	110	c	143	a	176	c
12	a	45	c	78	c	111	d	144	c	177	a
13	d	46	a	79	a	112	d	145	b	178	b
14	c	47	b	80	a	113	d	146	b	179	d
15	c	48	a	81	c	114	d	147	b	180	d
16	d	49	d	82	b	115	d	148	c	181	d
17	b	50	a	83	d	116	c	149	c	182	d
18	b	51	d	84	a	117	b	150	a	183	e
19	a	52	a	85	b	118	a	151	d	184	d
20	a	53	b	86	a	119	b	152	b	185	c
21	c	54	b	87	a	120	b	153	b	186	b
22	c	55	a	88	a	121	d	154	a	187	b
23	c	56	a	89	a	122	a	155	a	188	c
24	c	57	b	90	c	123	b	156	b	189	d
25	a	58	c	91	a	124	c	157	b	190	a
26	b	59	a	92	a	125	b	158	a	191	b
27	a	60	c	93	b	126	c	159	b	192	d
28	c	61	b	94	a	127	c	160	a	193	c
29	d	62	c	95	c	128	b	161	a	194	d
30	b	63	c	96	c	129	d	162	a	195	a
31	a	64	c	97	a	130	a	163	c	196	a
32	c	65	d	98	a	131	a	164	c	197	c
33	b	66	d	99	a	132	b	165	a	198	b

199	b	232	b	265	d	298	e	331	b	364	b
200	c	233	a	266	c	299	e	332	a	365	a
201	c	234	d	267	b	300	b	333	c	366	d
202	d	235	b	268	a	301	c	334	d	367	d
203	a	236	d	269	a	302	a	335	c	368	a
204	b	237	d	270	e	303	b	336	c	369	c
205	b	238	c	271	d	304	a	337	b	370	b
206	a	239	a	272	b	305	c	338	a	371	b
207	b	240	c	273	a	306	d	339	c	372	a
208	d	241	b	274	c	307	b	340	a	373	b
209	b	242	c	275	d	308	b	341	d	374	c
210	c	243	c	276	b	309	d	342	a	375	a
211	a	244	b	277	b	310	d	343	d	376	d
212	b	245	a	278	d	311	d	344	a	377	b
213	a	246	a	279	d	312	c	345	b	378	c
214	d	247	d	280	a	313	b	346	d	379	a
215	a	248	a	281	d	314	c	347	a	380	b
216	b	249	b	282	a	315	c	348	a	381	c
217	b	250	d	283	a	316	b	349	b	382	b
218	b	251	c	284	b	317	b	350	a	383	c
219	a	252	c	285	d	318	c	351	a	384	a
220	d	253	c	286	b	319	b	352	a	385	c
221	b	254	b	287	c	320	c	353	b	386	b
222	a	255	a	288	c	321	b	354	c	387	c
223	d	256	b	289	c	322	c	355	d	388	b
224	a	257	b	290	c	323	a	356	b	389	b
225	e	258	b	291	b	324	d	357	d	390	b
226	a	259	a	292	a	325	b	358	d	391	a
227	d	260	b	293	d	326	c	359	a	392	a
228	d	261	d	294	b	327	b	360	b	393	a
229	c	262	d	295	c	328	a	361	a	394	a
230	d	263	d	296	c	329	b	362	b	395	c
231	a	264	e	297	d	330	b	363	b	396	a

397	c	430	b	463	c	496	a	529	c	562	b
398	c	431	d	464	b	497	b	530	d	563	d
399	b	432	b	465	b	498	a	531	d	564	a
400	a	433	d	466	c	499	b	532	c	565	b
401	c	434	a	467	b	500	c	533	d	566	b
402	b	435	b	468	b	501	d	534	b	567	b
403	b	436	a	469	d	502	a	535	b	568	c
404	b	437	b	470	c	503	a	536	d	569	a
405	b	438	a	471	d	504	a	537	c	570	a
406	b	439	b	472	c	505	c	538	b	571	a
407	d	440	a	473	d	506	c	539	b	572	d
408	d	441	c	474	a	507	a	540	c	573	a
409	b	442	b	475	c	508	a	541	c	574	a
410	c	443	c	476	c	509	b	542	a	575	a
411	b	444	b	477	a	510	b	543	c	576	c
412	b	445	d	478	a	511	a	544	a	577	c
413	b	446	b	479	b	512	a	545	a	578	b
414	c	447	a	480	c	513	d	546	a	579	c
415	b	448	c	481	a	514	a	547	a	580	a
416	d	449	c	482	a	515	a	548	b	581	a
417	c	450	b	483	b	516	d	549	a	582	a
418	c	451	b	484	a	517	a	550	b	583	b
419	d	452	d	485	a	518	b	551	b	584	d
420	c	453	a	486	a	519	c	552	b	585	b
421	b	454	a	487	a	520	b	553	d	586	d
422	c	455	c	488	a	521	b	554	a	587	a
423	b	456	b	489	c	522	a	555	a	588	a
424	a	457	b	490	a	523	c	556	a	589	b
425	b	458	a	491	a	524	c	557	a	590	b
426	a	459	d	492	b	525	d	558	a	591	c
427	c	460	d	493	a	526	d	559	d	592	c
428	a	461	b	494	a	527	d	560	b	593	d
429	d	462	d	495	a	528	b	561	b	594	a

595	c	628	b	661	c	694	b	727	c	760	b
596	d	629	b	662	b	695	b	728	c	761	d
597	d	630	c	663	b	696	d	729	a	762	a
598	a	631	c	664	b	697	b	730	d	763	b
599	c	632	b	665	c	698	a	731	b	764	a
600	d	633	c	666	b	699	c	732	b	765	a
601	d	634	a	667	a	700	d	733	a	766	a
602	d	635	d	668	a	701	b	734	b	767	d
603	c	636	d	669	d	702	b	735	a	768	c
604	a	637	b	670	a	703	d	736	d	769	d
605	b	638	a	671	a	704	d	737	a	770	c
606	b	639	d	672	d	705	a	738	a	771	a
607	b	640	b	673	a	706	a	739	c	772	a
608	c	641	a	674	b	707	d	740	a	773	b
609	b	642	c	675	a	708	a	741	c	774	b
610	b	643	b	676	a	709	b	742	a	775	a
611	c	644	b	677	a	710	d	743	a	776	c
612	d	645	a	678	a	711	b	744	a	777	c
613	a	646	d	679	a	712	c	745	a	778	b
614	c	647	a	680	b	713	c	746	b	779	a
615	c	648	b	681	a	714	c	747	a	780	d
616	c	649	b	682	b	715	c	748	b	781	a
617	d	650	c	683	c	716	b	749	b	782	c
618	c	651	b	684	b	717	a	750	b	783	a
619	c	652	d	685	a	718	d	751	d	784	d
620	a	653	a	686	a	719	b	752	a	785	d
621	c	654	c	687	c	720	c	753	a	786	c
622	a	655	a	688	a	721	b	754	a	787	a
623	b	656	a	689	a	722	d	755	a	788	d
624	c	657	a	690	c	723	d	756	a	789	a
625	c	658	d	691	a	724	d	757	d	790	b
626	b	659	b	692	d	725	b	758	b	791	d
627	a	660	a	693	d	726	c	759	b	792	c

793	d	826	d	859	d						
794	c	827	a	860	a						
795	c	828	a	861	a						
796	b	829	d								
797	a	830	a								
798	d	831	b								
799	b	832	d								
800	b	833	b								
801	e	834	c								
802	e	835	c								
803	b	836	c								
804	b	837	c								
805	c	838	b								
806	a	839	a								
807	b	840	d								
808	a	841	b								
809	b	842	c								
810	b	843	b								
811	b	844	d								
812	a	845	d								
813	c	846	d								
814	d	847	b								
815	c	848	c								
816	c	849	c								
817	b	850	c								
818	d	851	a								
819	b	852	d								
820	a	853	b								
821	c	854	b								
822	d	855	a								
823	b	856	a								
824	b	857	b								
825	d	858	a								