1. The boiling point of Nitrogen gas is

A. 77.36K

B. 87.36K

C. 97.36K

D. 100K

ANSWER: A

2. Inversion curve is used to study the process of

A. compression

B. expansion

C. heat rejection

D. heat addition

ANSWER: B

3. Maximum inversion temperature of hydrogen is

A. 213K

B. 300K

C. 200K

D. 243K

ANSWER: C

4. Maximum inversion temperature of helium is

A. 21K

B. 24K

C. 20K

D. 23K

ANSWER: B

5. The boiling point of Argon gas is

A. 100.3K

B. 90.40K

C. 87.15K

D. 78.8K

ANSWER: C

6. Specific heat is a _____ property of engineering materials.

A. Electrical

B. Mechanical

C. Magnetic

D. Thermal

ANSWER: D

7. In precooled Linde Hampson system the gas temperature after compression is lowered by means of

A. air

B. water

C. refrigerant

D. liquified nitrogen

ANSWER: C

8. Cryosurgery is the _____ application of cryogenics.

A. mechanical

B. transportation

C. medical

D. space

ANSWER: C

9. Precooled Linde Hampson system takes help of_____ for liquefaction of neon

A. liquified helium

B. liquified nitrogen

C. liquified air

D. liquified argon

ANSWER: B

10.Claude system takes help of_____ for liquefaction of hydrogen

A. liquid helium

B. liquid nitrogen

C. liquified air

D. liquified argon

ANSWER: B

11. Elastic moduli is a _____ property of engineering materials.

A. Electrical

B. Mechanical

C. Magnetic

D. Thermal

ANSSWER: B

12. Cryogenic temperature range is considered below

A. 123K

B. 100K

C. 78K

D. 98K

ANSWER: A

13. Reducing the thermal emissions of the telescope is the _____ application of cryogenics.

A. medical

B. transport

C. space

D. None of these

ANSWER: C

14. _____ is considered as the pay off function for the analysis of cryogenic system.

A. -W/m

B. $-W/m_f$

C. m_f/m

D. all of these

ANSWER: A

15. In thermodynamically ideal system the expansion is

A. Isobaric

B. Isentropic

C. Isothermal

D. None of these

ANSWER: B

16. Cascade System was first system to produce liquid air

True or False

Ans –True

15. Giauque-hampson heat exchanger areuse for

A Large liquefaction system

B Small liquefaction system

C Laboratory application

D None of above

Ans-A

16. In bundle type of heat exchanger inner and outer tubes are joined by

A Dip welding

B Dip soldering

C Dip brazing

D Metal joining techinics

Ans- C

17. Which configuration is not used in cryogenic heat exchangers

A Linde Concentric tube heat exchanger

B Linde multiple tube heat exchanger

C Wire spacer heat exchanger

D Bundle heat exchanger

Ans- C

18. Which vessel is used as storage vessel in cryogenic

A Pressure shell

B Pressure vessel

C Dewar vessel

D None of above

Ans C

19. Precooled boil off parameter (Z) is given by

A (h2-h1)/(hc-ha)+y(S1-Sf)/(hc-ha)

B (h2-h1)/(hc-ha)+y(h1-hf)/(hc-ha)

C (S2-S1)/(hc-ha)+y(h1-hf)/(hc-ha)

D (h2-h1)/(hc-ha)+(h1-hf)/(hc-ha)

Ans B

20. Which statement is correct for helium gas refrigerated hydrogen gas liquefaction from the following

A Relatively High pressure required for liquefaction
B Regenerators are used in the system
C Work producing device is Present
D None of above
Ans C

21. Isobaric source refrigerator means

A Heat is absorbed at constant volume
B Heat rejected isobarically
C Heat absorbed isobarically
D None of above
Ans C

22. Which component is absent in Philips refrigerator

A Piston
B Displacer
C Regenerator
D Compressor
Ans D

23. Which statement is correct for Vuillemierrefrigerator

A It is isobaric refrigerator
B Operating on reversed Carnot cycle
C Rejecting the heat at intermediate volume
D None of above
Ans C

24. From following list which not type of pulse tube type refrigerator

A Inline Pulse tube refrigerator
B U type pulse tube refrigerator
C Coaxial Pulse tube refrigerator
D Angular pulse tube refrigerator
Ans D

25. Depending upon the usages of valves following are example of Pulse tube refrigerator

A Gifford McMacmohan
B Stirling
C Stirling Pulse tube
D None of above
Ans A

26. Solvay refrigerator is used to produce the temperature in the range of

A 100-150 K

B 120- 150 K

C 10-150 K

D 50-150K

Ans C

27. In cryogenics regenerative heat exchanger are made up of materials with

A Low volumetric capacity with low thermal conductivity in flow direction

B Low volumetric capacity with High thermal conductivity in flow direction

C High volumetric capacity with low thermal conductivity in flow direction

D A High volumetric capacity with low thermal conductivity in flow direction

Ans D

28. In a heat exchanger constant_____ heat rejection is carried out.

A. temperature

B. pressure

C. temperature and pressure

D. volume

ANSWER: B

29. In precooled Linde Hampson system the gas temperature after compression is lowered by means of

A. air

B. water

C. refrigerant

D. liquified nitrogen

ANSWER: C

30. The expansion through an expansion device is irreversible process

A. True

B. false

ANSWER: A

31. Precooled Linde Hampson system takes help of_____ for liquefaction of neon

A. liquified helium

B. liquified nitrogen

C. liquified air

D. liquified argon

ANSWER: B

32.Claude system takes help of_____ for liquefaction of hydrogen

A. liquid helium

B. liquid nitrogen

C. liquified air

D. liquified argon

ANSWER: B

33. Hardness and Ductility is a _____ property of engineering materials.

A. Electrical

B. Mechanical

C. Magnetic

D. Chemical

ANSSWER: B

34. Cryogenic temperature range starts from

A. 123K

B. 100K

C. 78K

D. 98K

ANSWER: A

35. MRI is the _____ application of cryogenics.

A. medical

B. transport

C. space

D. None of these

ANSWER: A

36 FOM is defined as the ratio of theoretical and actual work requirements.

A. true

B. false

ANSWER: A

37. In thermodynamically ideal system the expansion is

A. Isobaric

B. Isentropic

C. Isothermal

D. None of these

ANSWER: B

38. Cascade system is desirable a thermodynamic point of view because it approaches to to the ideal reversible system
True or False
Ans- True

39. Which configuration is not used in cryogenic heat exchangers
A Linde Concentric tube heat exchanger
B Bundle heat exchanger
C Linde Multiple tube heat exchanger
D Claude Multiple tube heat exchanger
Ans D

40. Which vessel is used as storage vessel in cryogenic
A Crock Pot
B Pressure vessel
C Dewar vessel
D None of above
Ans – C

41. Precooled boil off parameter (Z) is given by
A (h2-h1)/(hc-ha)+y(h1-hf)/(hc-ha)

B (h1-h2)/(hc-ha)+y(h1-hf)

C (h2-h1)/(hc-ha)+y(hf-h1)

D (h2-hf)/(hc-ha)+y(h1-hf)/(hc-ha)
Ans A

42. Which statement is correct for helium gas refrigerated hydrogen gas liquefaction from the following
A Relatively High pressure required for liquefaction
B Three channel type of heat exchanger used in the system
C Work producing device is absent
D None of above
Ans B

43. For isothermal refrigerator, COP of the system is

A (Th-TC)/Th

B TC/(TH-TC)

C TH/(TH-TC)

D None of above

Ans B

44. COP of the isobaric refrigerator is

A (h2-h1)/T0(S2-S1)-(h2-h1)

B (h2-h1)/T0(S2-S1)-(h1-h2)

C (h2-h1)/(S2-S1)-(h2-h1)

D (h1-h2)/T0(S2-S1)-(h1-h2)

Ans A

45. What is ideal COP of the Philips refrigerator when source temp is 80 K and sink temp 300K

A 0.25

B 0.23

C 0.36

D 0.30

Ans C

46. Following statement is correct for Vuillemier refrigerator

A Absorbing heat lower and intermediate temperature and reject at higher temperature

B Absorbing heat lower temperature and reject at higher temperature

C Absorbing heat lower temperature and reject at intermediate temperature

D None of above

Ans D

47. High frequency Pulse tube refrigerator having operating frequency

A 40 Hz- 90 Hz

B 30 Hz- 80 Hz

C 50 Hz- 100 Hz

D above 80 Hz

Ans B

48. In pulse tube refrigerator PSM means

A Pulse shift Mechanism

B Phase Shift Mechanism

C Pulse shift Machine

D Phase shift Machine

Ans B

49. In Vuillemier refrigerator

A Diameter of hot cylinder displacer is larger than cold cylinder displacer

B Diameter of hot cylinder displacer is smaller than cold cylinder displacer

C Diameter of hot cylinder displacer and cold cylinder displacer are equal

D None of above

Ans B

50. COP of VM refrigerator is less than that for Philips refrigerator because

True or false

Ans True

51. system performance parameters are also known as payoff functions.

A. True

B. False

ANSWER: A

52 Joule Thomson expansion is a

A. Isenthalpic expansion

B. Isentropic expansion

C. Isobaric expansion

D. All of these

ANSWER: A

53. Adiabatic expansion is a

A. Isenthalpic expansion

B. Isentropic expansion

C. Isobaric expansion

D. All of these

ANSWER: B

54. Inversion curve is a term related to

A. Compression

B. Expansion

C. Heat rejection.

D. Heat addition

ANSWER: B

55. Yield strength is a _____ property of engineering materials.

A. Electrical

B. Mechanical

C. Magnetic

D. Chemical

ANSWER: B

56. Cryogenic temperature range starts from

A. 123K

B. 100K

C. 85K

D. 94K

ANSWER: A

57. Claude system takes help of_____ for liquefaction of hydrogen

A. liquified helium

B. liquified nitrogen

C. liquified air

D. liquified argon

ANSWER: B

58. The performance of cryogenic system can be judged by

A. efficiency

B. FOM

C. COP

D. All of these

ANSWER: B

59.In thermodynamically ideal system the compression is

A. Isobaric

B. Isentropic

C. Isothermal

D. Isochoric

ANSWER: C

60. The normal boiling point of air is

A. 90K

B. 78.8K

C. 100K

D. 98K

ANSWER: B

61. Inversion curve can be obtained by plotting

A. Temperature pressure plot

B. Temperature volume plot

C. pressure enthalpy plot

D. pressure volume plot

ANSWER: A

62. Cascade System is extension of precooled system
True or false
Ans – True

63. The classical heat exchanger used for large scale liquefaction system is
A Linde-hampson Heat exchanger
B Giauque-hampson heat exchanger
C Claude – hampson heat exchanger
D None of above
Ans B

64. In bundle type of heat exchanger configuration
A High pressure stream passing through the centre tube and low pressure stream through outer tubes
B Low pressure stream passing through the centre tube and high pressure stream through outer tubes
C High pressure stream passing through centre tube as well as outer tubes
D Low pressure stream passing through centre tube as well as outer tubes
Ans- A

65. Which configuration is not used in cryogenic heat exchangers
A Linde Concentric tube heat exchanger
B Bundle heat exchanger
C Linde concentric heat exchanger with wire spacer
D Shell and tube heat exchanger
Ans-D

66. Performance of liquefaction system depends upon effectiveness of heat exchangers used
True or false
Ans-True

67. Which vessel is used as storage vessel in cryogenic
A Pressure shell
B Pressure vessel
C Dewar vessel
D None of above
Ans C

68. Precooled boil off parameter (Z) is given by
A (h2-h1)/(hc-ha)+y(h1-hf)/(hc-ha)

B (h1-h2)/(hc-ha)+y(h1-hf)/(hc-ha)

C (h2-h1)/(hc-ha)+y(hf-h1)/(hc-ha)

D (h2-hf)/(hc-ha)+y(h1-hf)/(hc-ha)
Ans A

69. Which statement is correct for helium gas refrigerated hydrogen gas liquefaction from the following
A Relatively low pressure can be used for liquefaction
B Regenerators are used in the system
C Work producing device is absent
D None of above
Ans A

70. Helium refrigerated hydrogen liquefaction system liquid helium used for refrigeration
True or False
Ans False

71. Isothermal source refrigerator means
A Heat is rejected isothermally
B Heat is absorbed isothermally
C Heat is absorbed at constant pressure
D None of above
Ans B

72. Philips refrigerator operating on which cycle
A Reversed brayton cycle
B VCR cycle

C Reversedcarnot cycle
D Stirling cycle
Ans D

73. Which statement is incorrect for Vuillemierrefrigerator
A Operates on stirling cycle
B Two regenerators are used
C Working on thermal energy
D Working on Mechanical energy
Ans D

74. COP of the Vuillemier refrigerator is
A Tc (Th-Ta)/Th (Ta-TC)
B (Th-Ta)/Th (Ta-TC)
C (Th-Ta)/Th (Ta-TC)
D Tc (Th-Ta)/Th (TC-Ta)
Ans A

75. Pulse tube refrigerator cooling effect is produced by
A Lattent heat
B Total heat
C Sensible heat
D None of above
Ans C