



Associate Certification Preparation Test

The following test is intended to prepare you by offering additional questions associated with the DCU course material that you may be tested on in the Certification exam. This does not replicate the exam, but is meant to help you prepare.

1. For a reactively loaded circuit, the _____ rating is likely to exceed the expected Volt-Ampere load.
 - a. Ohm
 - b. Phase angle
 - c. Watt
 - d. Hertz

2. The shift between the voltage and current is called the _____.
 - a. Phase angle
 - b. Amplitude
 - c. Harmonic
 - d. Derivative

3. Suppose there is a DC circuit in which the resistance is one Ohm and the current is one Ampere, producing an actual power of one Watt. If the current in the circuit triples to three Amperes, the actual power will become:
 - a. 3 Watts
 - b. 6 Watts
 - c. 9 Watts
 - d. 0.3 Watts

4. Voltage can be compared to:
 - a. Water
 - b. Pressure
 - c. Air
 - d. Velocity

5. Three Phase power uses three wires and a neutral connection. Each phase is offset from the others by:
 - a. 90 degrees
 - b. 120 degrees
 - c. 150 degrees
 - d. 180 degrees

6. Current is a measure of:
 - a. Electron speed passing a given point
 - b. Electron weight
 - c. Electron spin



- d. Flow of electrons
7. _____ occur when there is a varying quality of connections to earth at different points in an electrical installation.
- a. Ground loops
 - b. DC offsets
 - c. Frequency shifts
 - d. Voltage fluctuations
8. _____ happen when there is a quick rise in voltage or current on a power or data line, such as when lightning strikes a telephone pole.
- a. Interruptions
 - b. Transients
 - c. Harmonics
 - d. Sags
9. _____ electricity is usually distributed to residential and small commercial customers.
- a. Three Phase
 - b. Rectified
 - c. Single Phase
 - d. Transient
10. _____ is the estimated percentage of time that electrical power will be online and functioning properly to support the critical load.
- a. Redundancy
 - b. Availability
 - c. Reliability
 - d. Vulnerability
11. The _____ UPS is the most common design used for small business, Web, and departmental servers.
- a. Line Interactive
 - b. Standby
 - c. Standby-Ferro
 - d. Double Conversion On-Line
12. The _____ UPS is the most common type of UPS above 10kVA.
- a. Standby
 - b. Standby-Ferro
 - c. Double Conversion On-Line
 - d. Delta Conversion On-Line

13. A Capacity System is also known as _____ System.
- Isolated Redundant
 - An “N”
 - Parallel Redundant
 - Distributed Redundant
14. This is the most reliable and expensive redundancy configuration in the industry.
- Isolated Redundant
 - Parallel Redundant
 - Distributed Redundant
 - System plus System Redundant
15. An N+1 System is also known as _____ System.
- Isolated Redundant
 - Parallel Redundant
 - Distributed Redundant
 - System plus System Redundant
16. A 6 disk RAID with the capacity of 4 disks is an example of what type of redundancy configuration?
- N
 - N+1
 - N+2
 - 2N
17. _____ are often used to enhance single-corded equipment availability by providing the benefits of redundant utility paths.
- Transfer switches
 - UPS
 - Generators
 - RAID Arrays
18. The _____ transformer takes in three phases and a ground and it outputs three phases and a neutral.
- Wye to Delta
 - Delta to Wye
 - Delta to Isolation
 - Wye to Wye
19. The strength of the induced current depends upon the number of times the second wire is wrapped around the _____.
- first wire
 - primary wire



- c. iron core
- d. lead core

20. _____ is the voltage that the power company guarantees.

- a. Normal voltage
- b. Single phase voltage
- c. Nominal voltage
- d. Three phase voltage

21. Although there are numerous variations of the internal combustion engine, the most commonly used for standby generator systems is the _____.

- a. 2-Stroke Engine
- b. 4-Stroke Engine
- c. 3-Stroke Engine
- d. 5-Stroke Engine

22. The main function of the _____ is to convert mechanical energy from the prime mover into alternating current.

- a. Alternator
- b. Governor
- c. 4 Stroke Engine
- d. Starter Motor

23. The _____ designation refers to the fact that this design requires no contacts placed against any revolving parts to transfer electrical energy to or from the components.

- a. Brushless
- b. Self Excited
- c. Armature
- d. Seamless

24. The _____ maintains constant RPM of the prime mover under a variety of conditions by adjusting the fuel that feeds the prime mover.

- a. Alternator
- b. Starter Motor
- c. Armature Winding
- d. Governor

25. Shutting off all power for approximately _____ once a year is recommended to check the tightness of all medium voltage (MV) and switchgear terminations.

- a. 5 hours
- b. 40 hours
- c. 10-20 hours
- d. 24 hours



26. _____ is a worldwide organization that offer a wealth of information about emissions and other standby generator considerations. Additionally, they serve as a source of information, education, and training and develop performance standards for on-site power technology.

- a. EPA
- b. Defra
- c. MoEF
- d. EGSA

27. The majority of generator systems use a _____ starter motor similar to automotive applications.

- a. Battery-operated
- b. Fuel operated
- c. Electrically operated
- d. Solar operated

28. Data Center Precision Cooling Systems maintain temperature within _____ degree(s) of their design set point.

- a. 1° F
- b. 2° F
- c. 3° F
- d. 5° F

29. Static electric discharges in the data center can corrupt data and damage hardware. Which condition increases the potential for static discharges?

- a. Ground Loop
- b. High humidity
- c. Low humidity
- d. Carpeted floor tiles

30. The Refrigeration Cycle is a closed cycle made up of the following stages:

- a. Compression, Contraction, Precipitation and Evaporation
- b. Expansion, Contraction, Precipitation and Saturation
- c. Condensation, Evaporation, Vaporization, and Saturation
- d. Evaporation, compression, condensation and expansion

31. Whenever electrical power is being consumed in an Information Technology (IT) room or data center, _____ is being generated.

- a. Heat
- b. Static electricity
- c. Condensation

d. Humidity

32. Which device found in the Refrigeration cycle pushes the refrigerant carrying the heat energy around the refrigeration loop?

- a. Evaporator coil
- b. Condenser coil
- c. Compressor
- d. Expansion Valve

33. Which device found in the Refrigeration cycle precisely regulates the flow of high-pressure refrigerant at a rate that maintains an optimal difference in pressure to ensure efficient cooling.

- a. Evaporator coil
- b. Condenser coil
- c. Compressor
- d. Expansion Valve

34. R-22 and R-134a are examples of _____.

- a. Evaporator coils
- b. Condenser coils
- c. Expansion Valves
- d. Refrigerants

35. Which device acts similarly to the radiator in a car, in that it carries heat from the engine to the air outside the car?

- a. Evaporator coils
- b. The Condenser coil
- c. Compressors
- d. Refrigerants

36. _____ or _____ oriented cooling architecture is best suited to addressing each lifecycle cost challenge.

- a. Row, room
- b. Room, rack
- c. Row, rack
- d. rack, CRAC

37. The key drivers for deploying rack-oriented cooling are:

- a. N + 2 availability requirements and low density
- b. N +1 or 2 N availability requirements
- c. structured layout, low density, targeted deployment
- d. extreme densities, high granularity of deployment, or unstructured layout



38. The advantages of _____ and _____ oriented architectures is that they are modular, and deployable at their respective level increments, which may be targeted at specific densities.

- a. Room, Rack
- b. Row, Rack
- c. Rack, CRAC
- d. none of the above

39. _____ cooling will remain an effective approach for low density applications and applications where change is infrequent.

- a. Mixed
- b. Rack-oriented
- c. Row-oriented
- d. Room-oriented

40. _____ cooling architecture provides the flexibility, predictability, scalability, reduced electrical power consumption, reduced TCO, and optimum availability that next-generations data centers require.

- a. Rack and room-oriented
- b. Row and rack-oriented
- c. Room and row-oriented
- d. Hybrid

41. Traditional perimeter cooling”architectures require a _____ for each unique room layout.

- a. complex Computational Fluid Dynamics (CFD) analysis
- b. complex HVAC analysis
- c. dedicated generator
- d. chilled water system

42. _____ is inflexible, time consuming to implement, and performs poorly at higher density but has cost and simplicity advantages at lower density.

- a. Room-oriented architecture
- b. Row-oriented architecture
- c. Rack-oriented architecture
- d. Hybrid architecture

43. Whether or not the system has the capability to provide predictive failure analysis is an example of a _____.

- a. life cycle cost challenge
- b. agility challenge
- c. serviceability challenge
- d. manageability challenge

44. A distribution system where the equipment supply air is provided via ducts which have vents located near the loads, and the return air is directly ducted out of the loads is an example of a _____ configuration.
- Flooded
 - Locally Ducted supply, Fully Ducted return
 - Fully Ducted supply, Locally Ducted return
 - Flooded supply, Fully Ducted return
45. This type of heat removal approach involves the use of air cooled computer room air conditioners, which are widely used in IT environments of all sizes and are considered the “staple” for small and medium rooms.
- Air Cooled DX systems
 - Air Cooled self contained systems
 - Glycol Cooled systems
 - Water Cooled systems
46. The highest capacity cooling devices found in the IT environment are _____.
- ceiling mounted.
 - wall-mounted
 - mini-split systems
 - floor-mounted
47. In a hot aisle / cold aisle configuration, racks should be arranged in the following manner:
- Every row of racks facing the same way
 - Alternating racks facing the same way within a row
 - Every other row of racks should be forward facing
 - All racks given a 4 foot clearance in the front and back
48. The cooling system that has the components of the refrigeration cycle relocated from the computer room air conditioning systems to a device called a water chiller is called a _____.
- Air Cooled self contained systems
 - Glycol Cooled systems
 - Water Cooled systems
 - Chilled Water systems
49. These two types of cooling systems contain all refrigeration cycle components in one enclosure.
- Air Cooled DX systems and Glycol Cooled systems
 - Air Cooled self contained systems and Glycol Cooled systems
 - Water Cooled systems and Air Cooled self contained systems
 - Chilled Water systems and Air Cooled self contained systems
50. This type of system is also known as a split system



- a. Air Cooled DX systems
- b. Air Cooled self contained systems
- c. Glycol Cooled systems
- d. Water Cooled systems

51. Relative humidity represents the actual amount of water vapor in the air relative to the maximum amount of water vapor the air can hold at a given _____.

- a. Pressure
- b. Temperature
- c. Volume
- d. Dew Point

52. If Computer Room Air Conditioning (CRAC) units in a data center do not work together in a coordinated fashion, they are likely to fall short of their cooling capacity and incur a higher operating cost. This condition is known as:

- a. Short Cycling
- b. Thermal Fighting
- c. Thermal Fluctuation
- d. Demand Fighting

53. As air temperature decreases, its ability to hold water _____.

- a. Increases
- b. Decreases
- c. Stays the same
- d. Ceases

54. As temperature decreases, relative humidity _____.

- a. Increases
- b. Decreases
- c. Stays the same
- d. Ceases

55. When air reaches 100% relative humidity the air's dew point is always equal to its _____ and the air is considered saturated.

- a. Temperature
- b. Humidity
- c. Density
- d. Weight

56. To measure the humidity levels in the data center, the single most important place to measure is _____.

- a. In the top one-third of the rack
- b. At the return air inlet of the CRAC
- c. At the supply air duct of the CRAC

- d. At the air intake on IT equipment
57. The exhaust air exiting a server has _____.
- a higher temperature and lower relative humidity (compared to the inlet of the server) but the dew point is unchanged
 - a higher temperature and higher relative humidity (compared to the inlet of the server) but the dew point is lower
 - a lower temperature and lower relative humidity (compared to the inlet of the server) but the dew point is higher
 - a higher temperature and lower relative humidity (compared to the inlet of the server) but the dew point is higher
58. _____ is one way to determine if short cycling is occurring.
- Humidity measurement
 - Temperature measurement
 - Dew point measurement
 - Relative humidity measurement
59. Blanking Panels are:
- Covers that are placed over empty rack spaces
 - Air Distribution Units
 - Devices that cool air entering a rack
 - Cable management devices
60. Seismic, wall mount and networking are all types of:
- Disasters
 - Enclosures
 - Servers
 - Frames
61. An air distribution unit (ADU) mounts at the bottom _____ of any EIA-310 19 inch rack that has an open base.
- 4U
 - 2U
 - 5U
 - 8U
62. The _____ defines important dimensions for racks, enclosures and rack mounted equipment.
- ASHRAE TC9.9
 - EIA-310
 - Four Post Frame
 - Cooling



63. Copper cables come in _____ configurations.
- 1
 - 2
 - 3
 - 4
64. The _____ is the standard data cable connector of choice.
- RB22
 - RJ40
 - RJ45
 - RZ55
65. _____ is a commonly used variety of fiber cable which provides connectivity over moderate distances, such as those in most data center environments, or among rooms within a single building.
- Multimode
 - Single mode fiber
 - Copper
 - Connective
66. In the realm of data cabling, the introduction of the _____ brought an end to the 'run a new cable' philosophy and introduced modularity to network cabling.
- Single mode fiber
 - Patch panel
 - Copper cable
 - Multimode fiber
67. The insulated copper end of a whip feeds a breaker in the main _____.
- PDU
 - UPS
 - Server
 - Rack
68. For data cabling, in IEEE 802.3, UTP/STP Ethernet scenarios, a _____ network topology is used
- Star
 - Bus
 - Tree
 - Ring
69. What water sprinkler system configuration is recommended for data centers?
- Wet-pipe
 - Dry-pipe



- c. Pre-action
- d. FE-36

70. What is the first system objective of a fire protection system?

- a. Detect
- b. Limit damage
- c. Communicate
- d. Suppress

71. Which gaseous agent is recommended for use in fire extinguishers in a data center?

- a. FM-200
- b. Inergen
- c. FE-13
- d. HFC-236fa

72. NFPA is the acronym for which organization?

- a. National Flood Protection Agency
- b. Northern Fire Prevention Agency
- c. National Fire Protection Association
- d. National Flood Prevention Association

73. Which group represents the correct order of the stages of combustion?

- a. Incipient stage, visible smoke stage, flaming fire stage, intense heat stage
- b. Incipient stage, flaming fire stage, visible smoke stage, intense heat stage
- c. Incipient stage, heat, fire, smoke stage
- d. Visible smoke stage, intense heat stage, flaming fire stage, incipient stage

74. Which of the following choices is considered the least effective form of fire detection in a data center?

- a. Smoke detector
- b. Heat detector
- c. Flame detector
- d. VESD

75. Today, some of the most commonly used gaseous agents in data centers are _____ and _____.

- a. Co2 and Halon
- b. Inergen and FE-16
- c. Inert gases and Fluorine Based Compounds
- d. FM-200 and FA-1013

76. "Because a _____ is used, less water is needed, therefore the _____ system needs minimal storage space."

- a. steady stream, dry-Pipe



- b. fine mist, water mist
 - c. gaseous agent, VESD
 - d. fire suppression agent, control
77. Which of the following fire suppression systems utilize laser beams to detect smoke?
- a. Linear thermal detection systems
 - b. Air sampling smoke detection systems
 - c. Signaling device systems
 - d. Intelligent fire extinguishers
78. Which access control method is the least secure?
- a. What you know
 - b. Who you are and what you have
 - c. What you have
 - d. Who you are
79. Which access control method is the most secure?
- a. What you know
 - b. Who you are and what you have
 - c. What you have
 - d. Who you are
80. Which of the following typically has the greatest depth of security?
- a. Building perimeter
 - b. Computer racks
 - c. Visitor area
 - d. Computer rooms
81. According to studies by The Uptime Institute and 7x24 Exchange, what physical security threat causes the most downtime in a data center?
- a. Theft
 - b. Human error
 - c. Sabotage
 - d. Espionage
82. Biometrics verifies:
- a. What you know
 - b. What you have
 - c. What you know and what you have
 - d. Who you are



83. Potential loss needs to be weighed against the known costs of security, when designing and implementing a physical security strategy. Which of the following is NOT a cost of security?

- a. Productivity loss during downtime
- b. Maintenance of security equipment
- c. Cost of security personnel
- d. Initial cost of security equipment.

84. When a password is written down on a piece of paper, its security matches the level of a:

- a. Voice signature
- b. Fingerprint
- c. Metal key
- d. Photo ID with fingerprints

85. A stranger who uses “ordinary guile and deceit [friendly talking and lying] to gain access” to a facility is using:

- a. Surveillance
- b. Social Engineering
- c. Tailgating
- d. A mantrap

86. Physical security asks two main questions: 1. “Who are you?” and 2. “Why are you here?” These two questions establish:

- a. Social Engineering and Reason to Be There
- b. Reason to Be There and Personal Identity
- c. What you have and Why you have It
- d. Personal identity and Personal Property

87. _____ is the ability of a system or component to perform its required functions under stated conditions for a specified period of time.

- a. Availability
- b. Reliability
- c. Mean Time to Recover (MTTR)
- d. 99.999%

88. According to The Gartner Group, the largest single cause of downtime in the data center is_____.

- a. Insufficient UPS runtime
- b. Human error
- c. Lightning Strikes
- d. Network Viruses

89. Which of the following is an example of a business, that when the systems are down, there is a relatively constant rate of loss?



- a. Semiconductor fabrication plant
- b. Retail store
- c. Car dealership
- d. eCommerce

90. If cooling is not distributed properly in a data center, _____ can occur, which significantly threatens availability

- a. Transients
- b. Undervoltages/Sags
- c. Overvoltages/Swells
- d. Hot spots

91. The expected time to recover a system from a failure is known as the

- a. Start-up delay
- b. MTTR Mean Time to Recover (or Repair)
- c. MTBF (Mean Time Between Failure)
- d. Transfer time

92. The likelihood that a system or component is in a state to perform its required function under given conditions at a given instant in time is known as its _____.

- a. Reliability
- b. Availability
- c. Predictability
- d. Failure rate

Answer Key:

- | | | |
|-------|-------|-------|
| 1. c | 17. a | 34. d |
| 2. a | 18. b | 35. b |
| 3. c | 19. c | 36. c |
| 4. b | 20. c | 37. d |
| 5. b | 21. b | 38. b |
| 6. d | 22. a | 39. d |
| 7. a | 23. a | 40. b |
| 8. b. | 24. d | 41. a |
| 9. c | 25. c | 42. a |
| 10. b | 26. d | 43. d |
| 11. a | 27. a | 44. b |
| 12. c | 28. a | 45. a |
| 13. b | 29. c | 46. d |
| 14. d | 30. d | 47. c |
| 15. b | 31. a | 48. d |
| 16. c | 32. c | 49. b |
| | 33. d | 50. a |



- 51. b
- 52. d
- 53. b
- 54. a
- 55. a
- 56. d
- 57. a
- 58. b
- 59. a
- 60. b
- 61. b
- 62. b
- 63. b
- 64. c
- 65. a

- 66. b
- 67. a
- 68. a
- 69. c
- 70. a
- 71. d

- 72. c
- 73. a
- 74. c
- 75. c
- 76. b
- 77. b
- 78. c

- 79. b
- 80. b
- 81. b
- 82. d
- 83. a
- 84. c
- 85. b

- 86. b
- 87. b
- 88. b
- 89. b
- 90. d
- 91. b
- 92. b