

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2020

Course: Data Centre Transformation II

Program: B. Tech (CS+IFM)

Course Code: CSIB 439

Semester: VII

Time 03 hrs.

Max. Marks: 100

Instructions: Attempt all Questions

SECTION A

S. No.		Marks	CO
Q1	Process used to optimize the performance of a SAN by assigning storage in the form of server disk drive is called _____. A. Data mining B .Storage Provisioning C. Data Warehousing D. Storage assignment Ans : B	2	CO1
Q2	Digital Service Efficiency Dashboard that provides up-to-date metrics on energy performance and is integrated into important business performance metrics was launched by _____. A. Salesforce B. eBay C. HP D. None of the above Ans: C	2	CO1
Q3	Which company discloses no information about its energy footprint and therefore remains at the bottom of the industry for energy transparency? A. Twitter B. Yahoo	2	CO1

	<p>C. Verizon Terremark D. None of the above</p> <p>Ans: A</p>		
Q4	<p>What is the purpose of backup?</p> <p>A To restore a computer to an operational state following a disaster B To restore small numbers of files after they have been accidentally deleted C To restore one among many version of the same file for multiple backup environment D All of the mentioned</p> <p>Ans: D</p>	2	CO2
Q5	<p>_____ allow more processing power in less rack space, simplifying cabling and reducing power consumption.</p> <p>A. Blade server B. Rack server C. None D. Both</p> <p>Ans: A</p>	2	
Q6	<p>What is the relationship between the noise levels in data centre and operating in the ambient temperature?</p> <p>A. Noise levels increase with ambient temperature linearly B. There is a handover between noise levels and ambient temperature C. They are independent of each other D. Noise levels increase with ambient temperature exponentially</p> <p>Ans: B</p>	2	
Q7	<p>HP is planning to consolidate 85 worldwide data center facilities down to six, taking HP's data center real estate down from 500,000 square feet to 300,000. What is cited as a major, but often unsung, component to their consolidation strategy?</p>	2	

	<p>A. Application consolidation -- it's a huge cost saver in licensing, management resources and hardware support.</p> <p>B. Losing the raised floor and going with a high-density approach to computing and cooling.</p> <p>C. Decreasing the size of the staff -- this will force the IT department to prioritize projects and work smarter, not harder.</p> <p>D. Architecture diversification -- This allows IT to optimize applications and weed-out unnecessary programs.</p> <p>Ans. A</p>		
Q8	<p>Air side economizers, which bring in cooler outside air to lower that data center's temperature, have the potential to save companies a lot of money on cooling. But there is also a lot of skepticism about the viability of air side economizers. Which of these concerns have been cited?</p> <p>A. Contaminants like pollen or construction dust.</p> <p>B. Conditioning the outside air to the appropriate humidity level potentially negates the energy saved by using air side economizers.</p> <p>C. Air side economizers are only practical for specific geographies.</p> <p>D. All of the above.</p> <p>Ans: D</p>	2	
Q9	<p>Raised floor cooling has been the standard for many years. But during the late 1990s, many companies started experimenting with overhead cooling, claiming that handling IT equipment was easier if the cabling was overhead, and the influx of smaller servers made water piping unnecessary. In an IBM study, researchers compared the methods. What were the findings?</p> <p>A. Both cooling strategies provided similar amounts of cooling with irrelevant levels of variance.</p> <p>B. With chillers operating at 100% and 80% levels, overhead cooling resulted in cooler rack intake temperatures.</p> <p>C. With chillers operating at 100% and 80% levels, raised-floor cooling resulted in cooler rack intake temperatures.</p>	2	

	D. The results were largely inconclusive. Ans: C		
Q10	What is the primary requirement to be addressed before installing LCP systems? A. Compatible equipment B. Supply and return lines C. Floor space D. All of the above Ans: C	2	
Q11	True or false: Liquid is more energy efficient than air for cooling servers. A. True B. False Ans: A	2	CO2
Q12	Why is a high-availability disaster-avoidance strategy so crucial in a virtualized data center setup? E. Managing backup and recovery in a virtualized environment is challenging. F. Multiple virtual servers lead to an increase in security risks. G. A lack of physical servers results in decreased protection. H. None of these Ans: E	2	CO2
Q13	Which of these is not "free cooling?" I. Mechanical air refrigeration J. Water/glycol through tower. K. Adiabatic chamber cooling L. These are all free cooling methods Ans: I	2	CO2
Q14	What exhibits an ability to contact the electronics directly? A. Water	2	CO2

	<p>B. Refrigerants C. Dielectric fluids D. None of the above</p> <p>Ans: C</p>		
Q15	<p>When the fan speed is increased over the range of ambient temperatures what happens to the IT equipment flow rate?</p> <p>A. Increases first, then decreases abruptly B. Stays constant C. Increases with fan speed D. Decreases with fan speed</p> <p>Ans: C</p>	2	CO2
Q16	<p>Why is data center outsourcing becoming an increasingly attractive option, according to some market watchers?</p> <p>E. The pressure to cut costs. F. The age of existing data centers relative to current technologies. G. Both of the above. H. None of the above</p> <p>Ans : G</p>	2	CO2
Q17	<p>Which Management Maturity level deals with Incident Management?</p> <p>A. Level 4 B. Level 1 C. Level 3 D. Level 2</p> <p>Ans: B</p>	2	CO2
Q18	<p>A trove of information disclosing the amount of energy it uses at all of its data centres was released by which company?</p> <p>A. Amazon Web Services A. Apple</p>	2	CO2

	<p>B. Google</p> <p>C. Akamai</p> <p>Ans: B</p>		
Q19	<p>What network is highly distributed, with over 127,000 servers spread across 1,100 data centres in 81 countries?</p> <p>A. Akamai</p> <p>A. AWS</p> <p>B. IBM</p> <p>C. Intel</p> <p>Ans: A</p>	2	CO2
Q20	<p>In the _____, DCIM provides operational data, including environmental data (temperature, humidity, air flow), power data (at the device, rack, zone and data centre level), and cooling data.</p> <p>I. Operations phase</p> <p>J. Monitoring phase</p> <p>K. Predictive analysis phase</p> <p>L. Design phase</p> <p>Ans: J</p>	2	CO2
Q21	<p>_____ Oregon utility (Umatilla Electric) is working to gut the state renewable energy law in order to avoid having to meet the higher renewable targets it now faces.</p> <p>A. AWS</p> <p>A. IBM</p> <p>B. Google</p> <p>C. Rackspace</p>	2	CO3

	Ans: A		
Q22	<p>Which data center systems and processes may be good candidates for outsourcing, according to one analyst?</p> <p>A. Strategic competencies and core capabilities.</p> <p>A. Neither strategic competencies nor core capabilities.</p> <p>B. Complex processes.</p> <p>C. None of the above</p> <p>Ans: A</p>	2	CO3
Q23	<p>Dirty filters on a computer room air condition (CRAC) unit can cause excessive condensate to build up in the unit and cause a “water under floor” alarm.</p> <p>A. True</p> <p>B. False</p> <p>Ans: A</p>	2	CO3
Q24	<p>Which of the following is NOT a benefit of ‘cold aisle containment’?</p> <p>A. No need for ‘tile management’</p> <p>B. Better control of peak temperature in the server racks</p> <p>C. Work environment for technicians when compared to ‘hot aisle containment’</p> <p>D. Increased efficiency of HVAC system.</p> <p>Ans: A</p>	2	CO3
Q25	<p>If no steps taken for efficiency improvement or concurrent downsizing, What will happen?</p> <p>A. Data centre’s infrastructure curve distorts completely</p>	2	CO3

	<p>B. The data centre's infrastructure curve will remain the same and PUE will move up on the efficiency curve.</p> <p>C. PUE moves down the efficiency curve.</p> <p>D. None of the above</p> <p>Ans: B</p>		
Q26	<p>In terms of a data center's HVAC system what is "heat density"?</p> <p>A. The average temperature of all sensors/racks</p> <p>B. The lowest temperature and highest temperature in the environment added then divided by two</p> <p>C. The temperature average in an area, but not the entire site.</p> <p>D. Any noticeable temperature difference when moving through a Cold aisle</p> <p>Ans: C</p>	2	CO3
Q27	<p>Name the liquid cooling technique that features full-door units which can replace a standard server rack door and contain sealed tubes filled with chilled water?</p> <p>A. Modular liquid cooling units</p> <p>B. Device-mounted liquid cooling.</p> <p>C. Integrated rack-based liquid cooling.</p> <p>D. Door units</p> <p>Ans: D</p>	2	CO3
Q28	<p>Which of these allow for cooling through a refrigeration cycle?</p>	2	CO3

	<p>A. Heat of Compression</p> <p>B. Heat Transfer dynamics</p> <p>C. Low boiling point compounds</p> <p>D. All of the above</p> <p>Ans: D</p>		
Q29	<p>Losses that arise as electrical losses proportional to the square of carries current are called</p> <p>A. Fixed losses</p> <p>B. Square losses</p> <p>C. Proportional losses</p> <p>D. Both B and D</p> <p>Ans: D</p>	2	CO3
Q30	<p>Why would some companies rather hire more IT staff before outsourcing</p> <p>A. to keep sensitive data in-house</p> <p>B. to keep internal IT jobs</p> <p>C. to keep capital expenses low</p> <p>D. None of these.</p> <p>Ans: A</p>	2	CO3
SECTION B			
Q31	Demonstrate, how IT equipment cooling is done in Data Centre? Define with the help of example.	10	CO2
Q32	Define systematic approach to transform Datacenter into an Optimized and Energy Efficient Datacenter.	10	CO3
Q33	Explain Air Containment strategies for Data Centre. List out the benefits of liquid cooling in DC	10	CO4

	OR What are the other power alternatives for Datacenter?		
Q34	Define following A Liquid cooling at Rack level B Liquid cooling at Server level style="text-align: center;"> OR Define different challenges of today's Data Centre. List out different ways to design an optimized Data Centre.	10	CO5