UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Data Centre Transformation II   Semester: VIII
Program: B. Tech (CSE+IFM)   Time 03 hrs.
Course Code: CSIB439   Max. Marks: 100

Instructions: Attempt all Questions

SECTION A			
S. No.		Marks	CO
Q 1	List out the benefits of liquid cooling in DC.	4	CO1
Q 2	What do you understand by Datacenter Infrastructure Management?	4	CO2
Q 3	What are the other power alternatives for Datacenter?	4	CO2
Q 4	List out the key elements required for Data Centre.	4	CO1
Q 5	Explain Air Containment strategies for Data Centre. List out the benefits of liquid cooling in DC.	4	CO3
SECTION B			
Q 6	How IT equipment cooling is done in Data Centre? Define with the help of example.	10	CO4
Q 7	Define systematic approach to transform Datacenter into an Optimized and Energy Efficient Datacenter?	10	CO3
Q 8	Explain the impact of virtualizing Data Centre on power utilization in detail. **OR** How IT equipment cooling is done in Data Centre? Define with the help of example	10	CO3
Q 9	Draw the diagram and explain the process of A Liquid cooling at Rack level B Liquid cooling at Server level.	10	CO4
SECTION-C			
	CASE STUDY: IT departments are under more pressure than ever to deliver increasing value back to the business. In addition to responding to day-to-day operational challenges, IT is being asked to define an efficient path to new deployment paradigms, including server virtualization, cloud computing, and ultimately, a software-defined infrastructure. For IT decision-makers, the question becomes: How do you help lead your business forward? While there is no silver bullet for all the challenges IT faces today, spearheading IT modernization initiatives and replacing outdated data center technologies with the latest, cost-effective innovations, IT decision-makers can better		

	meet business needs for greater performance, security, networking, storage, and software efficiency advantages—all while lowering operating expenses. Optimizing the data center can also help IT be viewed as an enabling internal partner, moving the enterprise toward a highly efficient, software-defined infrastructure that enables the business to better use the latest technologies to take advantage of future opportunities. Many organizations consider the benefits of IT modernization through the lens of infrastructure modernization technology benefits, including better performance, efficiency, and security. This is a common and valid way to think about modernization. However, another way to look at modernization is to examine the financial aspects of a modernization effort and to seek answers to key questions:		
Q 10	Does it cost more to get these new capabilities? Can the business afford the incremental cost in a tight budgetary environment? OR What is the short term / long term financial impact and ROI related to these efforts?	**20**	**CO5**
Q 11	Define Consolidation and Virtualization of Data Centre. Also explain the process of Virtualization and Optimization of the Storage	**20**	**CO4**

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Data Centre Transformation II   **Semester: VIII**
Program: B. Tech (CSE+IFM)   **Time 03 hrs.**
Course Code: CSIB439   **Max. Marks: 100**

Instructions: Attempt all Questions

	SECTION A		
S. No.		Marks	CO
Q 1	Discuss and explain the Site infrastructure tier standards (topology) for DC.	4	CO1
Q 2	Review the detailed description of electrical infrastructure of DC with the help of diagram	4	CO1
Q 3	What do you understand by Datacenter Infrastructure Management?	4	CO2
Q 4	What are the other power alternatives for Datacenter?	4	CO2
Q 5	Justify the need of maintaining temperature and humidity in Data Centre.	4	CO3
	SECTION B		
Q 6	In context of Data Centre, explain the different type of transformation trends.	10	CO3

Q 7	Explain the following in context of cooling infrastructure:
	      a. Basic of cooling infrastructure
	      b. Integrated server and storage virtualization
	 OR
	 Define systematic approach to transform Datacenter into an Optimized and Energy Efficient Datacenter?
		10	CO3

Q 8	How IT equipment cooling is done in Data Centre? Define with the help of example.	10	CO4

Q 9	Explain how IT utility requires the understanding of following:
	      a) New business model for IT compiler
	      b) Green Data Center
	      c) IT equipment in Data Centre
		10	CO4

	SECTION-C		
	CASE Study: Hurricane Sandy left roughly 90 percent of Long Island Power Authority's (LIPA's)		

	1.1 million customers without power. The recovery has been the slowest on Long Island. Many customers were without electricity for weeks after power was restored to most of New York City and other parts of the metropolitan area. As a result, customers, municipalities, and the business stakeholders demanded faster, more responsive engagement with accurate information. To better serve its customers, LIPA needed to develop a plan for a new storm process with a supporting power outage management system. At the heart of this effort was the transformation of the IT infrastructure. To implement the new process, the project team needed to upgrade dozens of interfaces from multiple generations of technology. Mainframe applications were over 20 years old. Countless copies of data left users wondering what information was accurate. Hurricane Sandy revealed the weakness in this complexity. When the power went out, LIPA experienced significant issues delivering outage information due to middleware and interface performance and reliability during the stresses of the storm. Connecting hundreds of mismatched components and data models, not to mention licensing costs and unsupported software, was complicating architectures and support plans in the new data centers. LIPA needed to modernize its IT infrastructure and deliver a transformational storm process.		
Q 10	How the modernizing and restructuring the infrastructure with an enterprise approach can meet the business requirements? OR How the Data Virtualization greatly reduced system complexity and improved performance and reliability?	**20**	**CO5**
Q 11	How the Power Management is done at Hardware side. Also explain the Management Function of IBM Devices in Data Centre	**20**	**CO4**