(3 hours) [80 marks]

NOTE: Question No 1 is compulsory. Attempt any three questions from remaining.
Assume suitable data if necessary.
Draw neat labelled diagrams wherever needed.

Q1.

a. Design and implement ILM for Storage Management system. **10 Marks**

b. Consider a disk I/O System in which I/O request arrives at the rate of 80 IOPS. The Disk Service Time is 6 ms.
Compute the following
1. Utilization of IO controller
2. Total Response Time
3. Average Queue Size
4. Total time spent by a request in a queue **10 Marks**

Q2 a. An application has 1,000 heavy users at a peak of 2 IOPS each and 2,000 typical users at a peak of 1 IOPS each, with a read/write ratio of 2: 1 . It is estimated that the application also experiences an overhead of 20 percent for other workloads. Calculate the IOPS requirement for RAID 1, RAID 3, RAID 5, and RAID 6.. **10 Marks**

b. Explain FC Protocol Stack and FC SAN topologies. **10 Marks**

Q3 a. Explain in detail the different components required to design Intelligent Storage System. **10 Marks**

b. Explain BC planning lifecycle with an example. **10 Marks**

Q4 a. Explain IP Storage standards. **10 Marks**

b. Explain Multilingual retrieval systems. **10 Marks**

Q5 a. Explain different components of information system and its types. **10 Marks**

b. Explain Network Data Management Protocol (NDMP) **10 Marks**

Q6 Write a short note on **20 Marks**

a) IP Storage
b) NAS
c) Stemming
d) Symmetric and Asymmetric virtualization

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