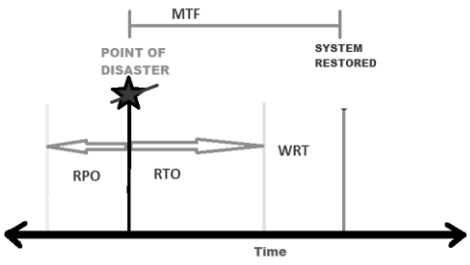
	UNIVERSITY OF PETROLEUM AND ENERGY STUDIES **End Semester Examination, May 2020** **Course: Back Up and DR** **Semester: 8th** **Program: B. Tech CSE ALL IBM** **Time 03 hrs.** **Course Code: CSIB 493** **Max. Marks: 100** **Instructions:** The paper contains 2 sections where section 1 contains 30 questions of 2 marks each, section 2 contains 4 question of 10 Marks each.	
S. No.	Section 1 There are 30 MCQ questions with 2 marks each. The MCQ are single correct only.	**Marks**
Q 1	When back up and DR will be considered as a data protection strategy a). RPO and RTO is more than 24 hrs. b). RPO and RTO is less than 24 hrs. c). RPO less than 24 hrs. and RTO greater than 24 hrs. d). None	**2**
Q 2	Pick the wrong statement a). Back UP is last line of defense b). Using back up is always recommended c). Back UP can't be stored on tape drive. d). None	**2**
Q 3	Pick the correct one a). RPO signifies the amount of data that is recoverable during disaster. b). RTO signifies the time in the system is fully restored. c). For a good data protection solution, the higher value of RTO and RPO is recommended. d). None	**2**
Q 4	Pick the correct storage hierarchy in terms of increasing access time a). cache> ram> magnetic disk > tape drive b). registers< l1 cache<l2 cache <l3 cache < dynamic memory c). both d). none	**2**
Q 5	In disk array which of the following feature is absent a). Data de duplication b). Snapshot copy c). Compression d). Encryption	**2**

Q 6	Which of the following are the feature of LTO (Linear tape open)? a). WORM b). AES-256 encryption c). Robotic control d). All	**2**
Q 7	Difference between incremental and differential backup a). Only file which has changed from the earlier backup will be copied b). The changes are taken from last full back up in case of incremental c). The changes are taken from last differential back up in case of differential d). None	**2**
Q 8	Disk to Disk to Tape backup architecture uses _____ as staging of data to avoid the _____ and _____ time of the _____. a). Tape, start, stop, drive b). Drive, rotation, translation, tape c). Drive, start, stop, tape d). Tape, rotation, translation, Disk	**2**
Q 9	Which of the following technique reduces the load on the data center? a). Compression b). De duplication c). Both a and b d). None	**2**
Q 10	Which of the following is correctly matched with is full form? Abbr. 1.WORM a. Recovery time objective 2. Microsoft VSS b. Recovery point objective 3. RPO c. Write only read once 4. RTO d. Volume Shadow service a).1-a 2-b 3-c 4-d b).1-d 2-b 3-c 4-a c).1-c 2-d 3-b 4-a d).1-c 2-d 3-a 4-b	**2**
Q 11	Which of the following is not a key requirement for high availability cluster? a). Availability with zero downtime b). Redundancy c). Encryption d). Fault tolerance	**2**
Q 12	Calculate the MTBF and MTTR (in hours) of the system with 120 days of uptime on the machine and 96 hrs. total hours of downtime on the machine and total number of breakdown is 16.	**2**

	a). 180 and 20 b). 18 and 2 c). 180 and 2 d). 18 and 20	
Q 13	Which of the following is correct about RAID - 6 a). Min no of disks 4 b). Storage efficiency = (n-1) *100/n c). both a and b d). None	**2**
Q 14	For AES which combination of block size and key size is correct. a). block size =128 key size = 512 b). block size = 256 key size = 256 c). block size = 128 key size = 64 d). block size = 128 key size = 192	**2**
Q 15	For AES-256 pick the correct a). block size =128 key size = 256 rounds = 14 b). block size =256 key size = 128 rounds = 16 c). block size =256 key size = 256 rounds = 14 d). block size =256 key size = 256 rounds = 16	**2**
Q 16	A network administration wants his network backbone with 3 routers to be 3 fault tolerant. How many router (working + standby) will be required by the network administrator. a). 3 b). 6 c). 9 d). 12	**2**
Q 17	Match the following (All Right column may or may not match) 1. Proactive Strategy i). Disaster Recovery 2. Reactive Strategy ii). Business Impact Analysis 3. Business focus iii). Business Continuity planning 4. Technology focus a). 1-i 2-iii 3-iii 4-ii b). 1- iii 2- i 3-iii 4- iii c). 1- iii 2- i 3-iii 4- i d). 1- iii 2- ii 3-iii 4- i	**2**
Q 18	The RAS stands for a). R-replication A-asynchronous S- synchronous b). R-remote A-access S-system c). R-response A-action S-system d). R-reliability A-availability S- serviceability	**2**

Q 19	Arrange the following is decreasing order of RPO and RTO Warm site, Hot site, cold site a). Warm>Hot>Cold b). Hot>Warm>cold c). Cold>Warm>Hot d). Cold>Hot>Warm	**2**
Q 20	Match the following (All Right column may or may not match) 1.SDN j. Network virtualization 2. Hypervisor k. Network programmability 3. NFV l. Storage virtualization 4. SDS m. Cloud computing 5. Docker n. OS level virtualization o. H/w virtualization Provide the correct match string for 12345(in order) a). klmno b). kojln c). jmjln d). joklo	**2**
Q 21	In the cascaded-3 site topology (Correct link match between two sites) a). Primary site to near DR site – Asynchronous near DR site to DR site – Synchronous b). Primary site to DR site – Synchronous near DR site to DR site – Asynchronous c). Primary site to near DR site – Synchronous near DR site to DR site – Asynchronous d). Primary site to near DR site – Synchronous near DR site to DR site – Synchronous	**2**
Q 22	Which of the following are the **NOT** correct differentiation between clone copies or snapshots? a). Clone copy requires 100% capacity for target whereas Snapshot doesn't b). Clones are independent whereas snapshots are not c). Clone copy is faster than snapshot. d). ALL are correct	**2**
Q 23	Which formula is correct for calculation for availability a). availability = **MTTR / (MTBF + MTTR)** b). availability = Up time / (Up time + Down time) c). both a and b d). None	**2**
Q 24	Pick the wrong statement related to virtualization a). enable consolidation of multiple applications onto one or more physical server. b). way creating an abstract layer that can simulate the functionality of a hardware resource c). both d). none	**2**
Q 25	Pick the correct statement a). Raid – 3 uses block stripping b). Raid – 4 uses byte stripping c). Raid – 2 uses bit level stripping	**2**

	d). All	
Q 26	NDMP backup uses a). SAN b). NAS c). DAS d). All	**2**
Q 27	BIA is a). Analysis of how the non-availability of information systems will impact business in terms of tangible loss and intangible losses b). Is a part of Business continuity planning? c). both d). None	**2**
Q 28	Where an organization makes full back up on Sunday, differential backup on Wednesday and increment back on the remaining days at 6PM. How the recovery will be done? i. When a disaster occurs on Thursday at 2:00 PM ii). When a disaster will occur on Friday at 9:00 PM a). i- Sunday (Full)+ Wednesday (diff) b). ii. Wednesday(diff)+ Thursday(incr) c). Both are correct strategy d). None is correct	**2**
Q 29	Covid-19 is a disaster. To maintain BCP which of the following is least crucial components are a). Healthcare sector b). ICT c). Space programs d). Disaster response team	**2**
Q 30	Which is incorrect about RAID level 4? a). This uses block level striping. b). Uses single data disks, and a dedicated disk to store parity. c). Minimum of 3 disks (2 disks for data and 1 for parity) d) Good random reads, as the data blocks are striped.	**2**
	Section 2 There are 4 Short answer type questions with 10 marks each.	
Q 31	What is Business impact analysis? Use the following diagram to describe RPO, RTO, WRT, MTD.  Calculate MTF and RTO if the system starts on 1.1.20 and the disaster occurs on 26.1.20. The recoverable backup available is for 24.1.20. The Work around time is 1 days. The system is restored on 30.1.20.	**10[3+4 +3]**
Q 32	Follow the case study of 9/11 attack. And answer the following.	**10 [2*5]**

	"The 11 September terrorist attacks, six years ago today, brought the realities of IT disaster recovery sharply into focus. More than half of all small to medium-sized enterprises affected by 9/11 did not trade again." *One of the lessons of 9/11 is the need for companies to have a back-up datacenter located away from their primary datacenter.* *Merrill Lynch is one company that decentralized its core IT systems after the attacks. The financial services firm lost two datacenters on 11 September. It has now moved its primary datacenter to Staten Island, where it runs on a separate electrical grid to mitigate against the loss of power in one area. The New York site functions as a back-up.* *Morgan Stanley is another financial firm that has separated its trading and back-up facilities, which were within close proximity and dependent on the same transport and power infrastructure prior to 9/11."* --source Techtarget.com 1. Discuss in brief the role of DR plan to maintain the BCP. 2. What should be location of the backup site for an organization. 3. What is hot site and cold site. In the given scenario identify if any. 4. What is primary site and near primary site. In the given scenario identify if any. 5. As being an IT engineer suggest a proper DR plan in any such attack occurs to the infrastructure of your organization.	
33	For any organization maintaining the continuity of its business, reputation and growth requires good amount of planning. There are some set of predefined strategies for the same is known as business continuity planning i.e. BCP. a). Provide the requirements with justification for a software firm which is also a cloud and web service provider with proper justification? b). The BCP depends on CIA. Discuss CIA with the requirement for BCP team.	**10** **[5+5]**
34	Write down the short notes on the following a). Automated Tape Library b). Continuous Availability c). Data deduplication d). LAN Free Back UP	**10** **[2.5*4]**