

## ASSESSMENT TEST 2

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**INSTRUCTIONS: Answer all Questions**

**(30 marks)**

1. Differentiate between the second and the third condition for deadlock **(3 marks)**

**One and a half mark for each differentiation**

**Hold and Wait**

**This happens when a process holds allocated resources as it waits for other resources. Good example is tickets for a particular concert are on sale. The last two remaining tickets are taken by one person as they wait for the money. The other person has the money but cannot access the tickets. This is the second condition for deadlock [1].**

**No pre-emption**

**This is a situation where a resource can only be released voluntarily by the process holding it. A resource cannot be forcibly taken away from a process. This is the third condition for deadlock [1].**

2. Differentiate using their drawbacks the difference between contiguous and non-contiguous storage **(4 marks)**

**2 marks for each drawback**

**Contiguous Storage**

**Contiguous means one after the other. In this regard, contiguous storage refers to records being stored one after the other [1]. This is like a sequence which is very easy to implement.**

**Non-Contiguous Storage**

**This is like random file storage. Files are stored within any available space within the disk. Any additional sections to a file are stored within other free sections of the hard disk.**

3. Discuss two strategies of the four properties of system survivability **(4 marks)**

**One mark for each strategy. One mark for each property**

- 1. Resistance to attacks**
- 2. Recognition, when attacked including damage, inflicted**
- 3. Recovery of essential services after an attach**
- 4. Adaptation and evolution of system defence to stop future attacks**

4. Given the following jobs, use the SRT algorithm to show the timeline **(6 marks)**

**Job**

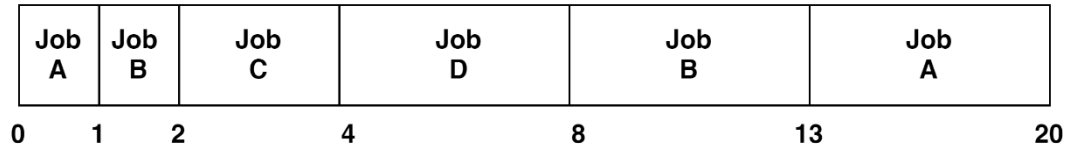
**CPU Cycle**

**Arrival Time**

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A	8	0
B	6	1
C	2	2
D	4	3

One mark for each part of the timeline (6 parts in total)



5. Discuss three advantages that the Symmetric Configuration has over the loosely coupled configuration (6 marks)

**2 marks for each advantage. An advantage looks at the drawback of the loosely Loosely Coupled Configuration**

**The loosely coupled configuration has a complete system where each processor has access to its memory and input/output devices. Each processor can communicate with the other processor. Each job is allocated to a specific processor that takes care of its processing till completion.**

**Symmetric Configuration**

**This system features a decentralized processor scheduling [1]. Based on this system, a single copy of the O/S and a global listing of each job and its status are stored within memory. This is shared and accessed by all the processors.**

6. Using examples of devices, differentiate between the dedicated, shared and virtual devices (6 marks)

One mark to define the category and one mark for the device

**Dedicated: These are devices that are assigned only one job at a time [1]. They can only work on one job until they complete the job or release it. A printer is a good example of such a device. The printer will only print one job at a time and another job cannot be started until the previous job is completed.**

**Shared: These devices can be allocated several jobs at the same time. A hard disk is a good example of a shared device as it can work with several processes.**

**Virtual: These devices are a combination of dedicated and shared devices. They are dedicated devices that have been transformed into sharing devices [1]. Printers for instance can be shared using spooling or using servers that can hold several jobs.**