

16/1/2019

09.30 - 11.30am

Basement 3, Kevin Street



DUBLIN INSTITUTE OF TECHNOLOGY

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**DT228 BSc. (Honours) Degree in Computer Science**

**Year 3**

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**WINTER EXAMINATIONS 2018/2019**

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**CLOUD COMPUTING [CMPU3007]**

DR. BASEL MAGABLEH  
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WEDNESDAY 16<sup>TH</sup> JANUARY

9.30 A.M. – 11.30 A.M.

TWO HOURS

ANSWER QUESTION *ONE* AND *TWO* OF THE OTHER THREE  
QUESTIONS.

QUESTION ONE IS COMPULSORY AND CARRIES 50 MARKS.  
ALL OTHER QUESTIONS CARRY 25 MARKS.

1. (a) Identify and discuss *six* advantages of cloud computing.  
(12 marks)
- (b) Identify and discuss *five* challenges of storing data in cloud computing infrastructure.  
(10 marks)
- (c) Identify *five* key points about *AWS shared responsibility model*.  
(10 marks)
- (d) In the context of Virtual Private Cloud (VPC), Define the following Terms:  
(i) Security groups,  
(ii) Access lists,  
(iii) Internet Gateway (IGW).  
(6 marks)
- (e) Describe the function of the following Docker commands and briefly explain the purpose of each of the parameters.  
(i) `docker service create --replicas 2 -p 80:5000 --name web alpine:3.4`  
(ii) `docker run -d -p 8080:5000 lab6`  
(iii) `docker create -v /data --name photos web /bin/true`  
(iv) `docker swarm init advertise-addr 192.168.99.100`  
(12 marks)
2. (a) Define the following *terms*:  
(i) Docker Swarm  
(ii) AWS Lambda  
(iii) Elastic Block Storage  
(iv) EBS Snapshots  
(8 marks)
- (b) Identify the differences between AWS Regions, Data Center, Availability Zones, and Edge locations?  
(8 marks)
- (c) Give a definition of Scalability, describe *three* key benefits of Autoscaling in AWS cloud.  
(9 marks)

3. (a) Describe *four* key features of Docker Swarm. Give an example of how Docker Swarm can be used to solve the problem of service discovery.  
(8 marks)
- (b) Discuss what is meant by the term *Multitenancy* and explain *three* advantages of having *Multitenancy* in cloud-based storage.  
(8 marks)
- (c) Discuss the use of the PAXOS Algorithm.  
(9 marks)
4. (a) Identify and describe *three* examples of cloud computing infrastructures.  
(9 marks)
- (b) Identify and define *four* different storage classes of AWS S3.  
(8 marks)
- (c) Describe *four* benefits from employing AWS Simple Queue Service (SQS) in a software solution.  
(8 marks)