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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2018/2019**

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DURATION : 3 HOURS
INSTRUCTION : ANSWERS ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

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Section A: Choose the best answer for each of following questions.

- Q1** Which scenario best illustrates the benefits of using a hybrid cloud?
- A. An enterprise whose IT infrastructure is underutilized on average and the system load is fairly consistent.
 - B. A small startup business that is focused primarily on short term projects and the system load is highly unpredictable.
 - C. An enterprise that is not too concerned about control over their data and has a large existing infrastructure that is capable of handling future needs.
 - D. An enterprise that needs highly controlled storage and access to their data and that has a large existing infrastructure but needs additional resources for test and development of new solutions.
- Q2** A company must perform a complex analysis for a client, and their computer systems do not have the computation capacity to perform this analysis. How can this analysis be completed quickly and cost effectively?
- A. Order new hardware to boost computational power.
 - B. Consolidate the existing hardware to find required computational capacity.
 - C. Temporarily access computational power on demand from a cloud service provider.
 - D. Virtualize existing hardware to extract efficiency and utilize the extra capacity.
- Q3** A company that provides gift giving advice has leveraged collaborative services in a cloud computing environment to provide online chat between its employees and customers. As the holiday season approaches, the company is able to easily increase the resources needed in the cloud environment. When the season has ended, the company is able to reduce the resource usage. This allows the company to effectively manage the required computational resources and thereby reduce costs. What type of cloud computing billing model is this company using?
- A. utility
 - B. monthly
 - C. recurring
 - D. subscription
- Q4** What advantage is there for an enterprise to adopt a virtual private cloud model?
- A. Reduce costs by adopting a flexible pricing model for the entire operation.
 - B. Reduce infrastructure costs since all data centers will be managed in a third party cloud.
 - C. Manage sensitive data in a compliant and secure manner and benefit from flexible pricing models for selected services or infrastructure.
 - D. Obtain maximum control over aspects such as security and performance since the entire infrastructure will be managed within the IT department.

- Q5** A company is considering a cloud environment to improve the operating efficiency for their data and applications. The company is part of an industry where strict security and data privacy issues are of the highest importance. Which type of cloud would be a good choice?
- A. hybrid cloud
 - B. private cloud
 - C. public cloud
 - D. governed cloud
- Q6** A company has decided to leverage the web-based email services provided by a cloud provider and to pay for those services as they are used. The cloud provider manages the infrastructure and any application upgrades. This is an example of what type of cloud delivery model:
- A. Platform as a Service
 - B. Software as a Service
 - C. Application as a Service
 - D. Infrastructure as a Service
- Q7** A company interested in cloud computing is looking for a provider who offers a set of basic services such as virtual server provisioning and on demand storage that can be combined into a platform for deploying and running customized applications. What type of cloud computing model fits these requirements?
- A. Platform as a Service
 - B. Software as a Service
 - C. Application as a Service
 - D. Infrastructure as a Service
- Q8** A company has peak customer demand for its IT services in the month of April. It has enough IT resources to handle off peak demand but not peak load. What is the best approach to handle this situation?
- A. Utilize an external cloud service provider to handle the peak load.
 - B. Outsource all of IT services to a cloud based provider.
 - C. Virtualize its servers and implement a cloud based system.
 - D. Acquire additional IT resources and design the system to handle the peak load.

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- Q9** Which customer scenario best fits a deployment on a public cloud?
- A. A customer whose IT infrastructure is underutilized.
 - B. A customer who deals with highly sensitive user information.
 - C. A customer who does not have the IT infrastructure to handle variable system load.
 - D. A customer who is not too concerned about security control over their data, and the system load is almost a constant at all times.

- Q10** What is grid computing?
- A. It is distributed computing where autonomous computers perform independent tasks.
 - B. It is interconnected computing where a computing platform is delivered to consumers.
 - C. It is parallel and distributed computing where computer infrastructure is offered as a service.
 - D. It is parallel computing where autonomous computers act together to perform very large tasks.

(10 marks)

Section B: Subjective Questions

- Q11** (a) List out the **THREE (3)** Cloud Service Models. (3 marks)

- (b) Identify the following characteristic is belong to either Cloud Computing or Grid Computing:
- (i) Distributed architecture of where many computers are connected to resolve any given problem, for example detecting signal for extra-terrestrial objects.
 - (ii) Focuses on reducing costs and increase returns for its client.
 - (iii) Dealing with idle energy in computers.
 - (iv) Offer clients virtualized services.

(4 marks)

- Q12** (a) Consider the following case study for question **Q12(a)** to **Q12(b)**.

KLWatch is a local startup that has been asked by the city to monitor and record near misses and accidents between cars, bicyclists and pedestrians 24 hours per day, 7 days per week, 365 days per year. KLWatch is planning to deploy video cameras and dedicated computing at each busy intersection in the city. The startups plans to capture video at a sustained frame grab rate of 20 frames per second, 24 hours per day. They will provide privacy to

drivers, cyclists and pedestrians by blurring the video at the intersection, before it is stored. Since the bandwidth from the intersection to the cloud is limited, KLWatch plans to process the streams of data at the intersection to identify near misses and accidents. They will then send the data for just the significant cases to the cloud for storage and potential further analysis.

For this project, indicate whether the following cloud computing advantages is important to KLWatch and describe why.

- (i) VM Elasticity.
- (ii) No upfront cost.
- (iii) Reduced IT maintenance.

(6 marks)

- (b) After one year of operation, KLWatch has grown and gone international, soon to cover 75% of the world's big cities. Should they build their own private cloud? Explain your answer.

(4 marks)

- (c) The web guest.com provides access for its client to its data through REST API. Write REST script based on the following requirement:

- (i) Update customer details with id 001 including name Ali bin Abu and email ali@gmail.com.

(5 marks)

- (ii) Delete customer with id 002.

(2 marks)

- (iii) Retrieve data from customer id 005.

(2 marks)

- (d) List **FOUR (4)** main parts that is written in SOAP message.

(4 marks)

- Q13** (a) Choose the best payment method (monthly subscription, pay per click or profit sharing) for the client if they want to use Software as a Service (SaaS) for each of the following scenario:

- (i) If the transaction is heavy.
- (ii) In case client don't have enough capital to pay the usage.

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(iii) If the transaction is very light.

(3 marks)

(b) Consider the information given below:

The TripleServ charge user a \$0.25 per hour for their services with the condition user needs to pay a non-refundable booking fee \$900.00 for entire server for one year. For an alternative, a local provider ExpertCloud offers the same service with slightly higher price of \$0.35 per hour but clients are not required to pay for the server booking fee. Your organization asks you to choose either to use services from TripleServ or Expert Cloud.

If the length of the project is two years, decide which service provider will be your choice. Support your answer by showing the calculation.

(5 marks)

(c) Based on the following requirements, select the most appropriate and accurate cloud type for each of the following company.

(i) ABC Enterprise does not want to have controls over the cloud facilities and also can share the facilities with other companies.

(ii) XYZ Sdn Bhd willing to spend more money on their cloud infrastructures so that they can control the hardware because they want to ensure the security and control level are at the highest.

(2 marks)

Q14 (a) Explain in which situation that hybrid migration strategy is preferred over forklift migration strategy?

(2 marks)

(b) The following list illustrate what is happening during Venture.com cloud migration to the Amazon Web Services. Identify which cloud migration phase that represents the following scenario:

(i) The team decided to move all of the application's static files (Images, JS, CSS, video, audio, and static HTML content) into an Amazon S3 bucket, created a CloudFront distribution of that Amazon S3 bucket, and modified the references in web pages so that end-users get the content directly from Amazon S3 and Amazon CloudFront.

(ii) The company is testing the cloud function by using real data. The relational database files including transaction logs were moved to Amazon RDS instances using the standard `mysqlimport` utility.

- (iii) Technical, financial and security team study the feasibility of the cloud for their current system. The technical team discovered that the web app can be configured to run at peak capacity (7 Servers) during promotional campaigns and medium capacity (4 Servers) on weekdays and weekends.
- (iv) The development team analyzed their utilization patterns and realized that they could save 30% if they switched to Reserved Instances.
- (v) This is the phase where the forklift or hybrid migration happens.

(10 marks)

- (c) Differentiate between clouds intranet and on premise intranet.

(4 marks)

- (d) Explain **TWO (2)** disadvantages of cloud based intranet compared to traditional intranet.

(4 marks)

- Q15** (a) At 1.00 pm BorneoCloud has experience power outage in their server center. Explain what will happen to the Disaster Recovery (DR) process at BorneoCloud based on the following SLA documentation:

- (i) Recovery Time Objective (RTO) is 1 hour.

- (ii) Recovery Point Objective (RPO) is 1 hour.

(4 marks)

- (b) In the event of failure, the Recovery Time Objective (RTO) must be less than 3 hours, and the Recovery Point Objective (RPO) must be 15 minutes. The customer realizes that data corruption occurred roughly 1.5 hours ago. Identify DR strategy could be used to achieve

- (i) RTO.

- (ii) RPO.

(4 marks)

- (c) Identify which disaster recovery solution needs to be used if the current DR solution is Warm Standby and the company wants to achieve the following objective:

- (i) Reduce recovery time.

- (ii) Reduce cost of DR solution.

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(2 marks)

Q16 Consider the following case study for question **Q16(a)** to **Q16(d)**.

You are working as IT personnel at XY.com. You are suggesting the migration of the company servers that manage the international sales website to the cloud. This is due to the reason of the peak sales demands during weekends that cannot be handle by the local resources. Furthermore it is too costly for the XY.com to purchase new infrastructure to meet with the business demand. The board of director raise many questions about the move to the cloud. You are being requested to address the questions as listed below.

(a) One of director expressed concern about the business data and related application services, as the cloud service provider's infrastructure and applications are not covered by the organization's own contingency plan. Provide **TWO (2)** measures that can be taken to address the concerns by the director on:

(i) Data Availability

(ii) Data Auditability

(4 marks)

(b) When moving to cloud, the company client data will be stored at the cloud provider site. The infrastructure is also will be provide by cloud provider. The board of director asked you to list **FOUR (4)** security risks ought to be considered by XY.com due to the migration.

(4 marks)

(c) Explain **TWO (2)** reasons why is the location of the data center of the cloud provider important to be known by XY.com?

(4 marks)

(d) Most of the cloud provider did not reveal where their data center is. Explain the reason.

(2 marks)

(e) Cloud computing business that offer SaaS can centralize their resources and provide the services to their client. This model provides at least three major benefits to the businesses. Explain what these **THREE (3)** benefits are and give a brief explanation for each one.

(6 marks)

- END OF QUESTION -

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