Cloud Computing

Assignment-Week 5

TYPE OF QUESTION: MCQ/MSQ

Number of questions: **10** **Total mark: 10 X 1 = 10**

QUESTION 1:

____ is a formal contract between a Service Provider (SP) and a Service Consumer (SC).

A. SLA
B. KPI
C. SLO
D. Utility Premium

Correct Option: A

Detailed Answer: SLA (Service Level Agreement) is a formal contract between a Service Provider (SP) and a Service Consumer (SC) in slide 2 of SLA. So the correct option is A.

QUESTION 2:

If demand is exponential ($D(t)=e^t$), any fixed provisioning interval (*tp*) according to the current demands will fall linearly behind.

A. TRUE
B. FALSE

Correct Option: B

Detailed Answer: If demand is exponential ($D(t)=e^t$), any fixed provisioning interval (*tp*) according to the current demands will fall exponentially behind.

QUESTION 3:

A third party application runs in the cloud for 18 hours/day. At the end of one month (30 days), it was found that the cloud suffered outages totalling 5 hours and T hours, on different days over the service period. The cloud guarantees service availability for 98% of the time. What are the value(s) of T among the given options such that the SLA negotiation does not get honored in terms of service availability?

A. 4 hours
B. 5 hours
C. 6 hours
D. 8 hours

Correct Option: C, D

Detailed Answer: Total Outage: (5+T) hours, application runs for 540 hours in a month. Availability = 1 - (downtime/uptime). For availability: [1- {(5+T)/(535-T)}] >= 0.98, T<=5.59 hours. Options C and D are correct as the SLA negotiation **does not** get honored.

QUESTION 4:

What is/are the correct statement(s) regarding VM load management?

A. When load increases, new VMs should be scheduled to new nodes.
B. When load decreases, use WOL to start up waiting nodes.
C. When load increases, use WOL to start up waiting nodes.
D. When load decreases, live migrate VMs to more utilized nodes.

Correct Option: A, C, D

Detailed Answer: When load decreases, VMs should be live migrated to more utilized nodes. When load increases, WOL should be used to start up waiting nodes and new VMs should be scheduled to new nodes.

QUESTION 5:

Statement I: In resource management, resource allocation is the allocation of a service provider's resources to a customer.

Statement II: Resource mapping is correspondence between resources required by the users and resources available with the provider.

Which of the options is correct?

A. Statement I is TRUE and Statement II is FALSE
B. Statement II is TRUE and Statement I is FALSE
C. Both statements are TRUE

D. Both statements are FALSE

Correct Answer: B

Detailed Solution: Refer slide 10 in Resource Management - II. In resource management, resource allocation is the distribution of resources economically among competing groups of people or programs. Statement II is true. Hence, option B is correct.

QUESTION 6:

Which of the following is/are resource allocation approaches in resource management?

A. Intelligent multi-agent model
B. Network queueing model
C. Energy-aware resource allocation
D. Reinforcement learning guided control policy

Correct Answer: A, C

Detailed Solution: Intelligent multi-agent model and energy-aware resource allocation are resource allocation approaches. Network queueing model is a resource provisioning approach and reinforcement learning guided control policy is a resource adaptation approach..

QUESTION 7:

Consider that the peak computing demand for an organization is 250 units. The demand as a function of time can be expressed as D(t) = 5t. Baseline (owned) unit cost is 120 and cloud unit cost is 150. The cloud is owned for a period of T time units. Select the values of T for which cloud is cheaper than owning.

A. 50
B. 100
C. 150
D. 200

Correct Option: A

Detailed Answer: Total baseline cost $B_T = P \times B \times T = 250*120*T = 30,000*T$ units.

Total cloud cost $C_T = \int_0^T C * D(t)dt = \int_0^T 150 * 5t\, dt = 750 * [\frac{t^2}{2}]_0^T = 375*(T^2)$ units

Utility function $U_T = (C_T/B_T) = 375*T^2/30{,}000*T = T/80$.

For T = 50 units, cloud is cheaper than owning. For all the other cases, cloud is costlier than owning.

QUESTION 8:

Which of the following is/are objective(s) of Resource Management?

A. Increased latency
B. Scalability
C. Improved throughput
D. Improved security

Correct Option: B, C

Detailed Answer: From the objectives outlined in slide 9 of Resource Management - II.

QUESTION 9:

In computing, there is a nonlinear relationship between the number of processing cores used and power consumption

A. TRUE
B. FALSE

Correct Option: A

Detailed Answer: Refer to slide 10 of resource management-I.

QUESTION 10:

If demand is flat, the penalty will be linear.

A. TRUE
B. FALSE

Correct Answer: B

Detailed Solution: If demand is flat, the penalty will be zero.
