Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Science

End Sem Examination May-2024

BC3ET08 Containerization using Dockers

Programme: B.Sc. Branch/Specialisation: Computer Science / All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Container can be listed by command- **1**

(a) Docker list (b) Docker Ps

(c) List (d) Docker container list

ii. Docker represented as- **1**

(a) A containerization platform

(b) A virtual machine platform

(c) A cloud computing platform

(d) A programming language

iii. Which is the default registry in docker? **1**

(a) Docker images (b) Docker hub

(c) Docker container (d) All of these

iv. Which command is used to build a new Docker image? **1**

(a) Docker build (b) Docker pull

(c) Docker run (d) Docker commit

v. Continuous integration is not beneficial for- **1**

(a) Faster time-to-market (b) Improved software quality

(c) Lower development costs (d) Reduced server load

vi. Which command are used to run the application in a container? **1**

(a) Docker run (b) Run

(c) Docker start (d) Start

vii. Docker network define as- **1**

(a) A virtual network that connects docker containers

(b) A physical network that connects docker nodes

(c) A way to manage docker images

(d) A way to manage docker containers

P.T.O.

viii. What is a bridge network? **1**

(a) A public network accessible from outside
(b) A private network segment created for a specific container
(c) A way to connect multiple containers to the internet
(d) A network connecting containers to each other on the same host

ix. What is docker compose? **1**

(a) A scripting language for docker
(b) A continuous integration tool for docker
(c) A tool for defining and running multi-container docker applications
(d) A docker CLI plugin

x. Docker stack is utilize for? **1**

(a) To define and manage multi-service applications in a docker swarm
(b) To define and manage single-service applications in a docker swarm
(c) To define and manage docker images in a docker registry
(d) To define and manage docker containers on a single node

Q.2	i.	What is dockers? Explain with their architecture.	**4**
	ii.	Differentiate between virtual machine and container. Explain benefit of containerization over virtual machine.	**6**
OR	iii.	Explain dockers component with diagram. Describe each dockers component in brief.	**6**
Q.3	i.	Explain docker image layer. Explain working of each layer.	**4**
	ii.	How can you build docker image using docker file? Describe steps of building docker image.	**6**
OR	iii.	What is docker registry? Describe Docker hub and their security.	**6**
Q.4	i.	What is CI/CD pipeline? Explain working with docker.	**4**
	ii.	What is container? How can we manage container without SSH? Explain in brief.	**6**
OR	iii.	How can we build web application and application server with docker? Write steps for testing.	**6**
Q.5	i.	Explain docker engine API authentication.	**2**

	ii.	Explain following: (a) None network (b) Bridge network (c) Host network (d) Overlay network	**8**
OR	iii.	What is the process for connecting two containers on same host with docker? Explain with their command and diagram.	**8**
Q.6		Attempt any two:	
	i.	Differentiate between docker and Kubernetes.	**5**
	ii.	Explain container orchestration.	**5**
	iii.	Explain orchestration alternatives and components.	**5**

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Marking Scheme

Containerization using Docker-BC3ET08(T)

Q.1 i) Container can be listed by command **1**
B.. Docker Ps

ii) Docker represented as ? **1**

A.. containerization platform

iii) Which is the default registry in docker? **1**
B.. Docker hub

iv) Which command is used to build a new Docker image? **1**

A. **docker build**

v) Continuous integration is not beneficial for **1**
D. **Reduced server load**

vi) Which command are used to run the application in a container? **1**

A. Docker run

vii) what is a bridge network? **1**

D. **A network connecting containers to each other on the same host**

viii) Docker network define as? **1**
A. **A virtual network that connects Docker containers**

ix) **1**
What is Docker Compose?
C. A tool for defining and running multi-container Docker applications

x) Docker stack is utilize for? **1**

A. **To define and manage multi-service applications in a Docker swarm**

Q.2 i. What is Dockers? Explain with their Architecture . **4**
Definition- 2 Marks
Architecture- 2 Marks

ii. Differentiate between virtual machine and Container. Also Explain Benefit of Containerization over Virtual Machine? **6**
Differentiate – 3 Marks
Benefit- 3 Marks

OR iii. Explain Dockers Component with Diagram? Also describe each Dockers Component in brief **6**
Component- 3 Marks
Diagram- 1 Marks
Describe- 2 Marks

Q.3 i. Explain Docker image layer? Explain working of each layer? **4**
Explain-
Docker Image layer- 2 Marks
Working- 2 Marks

ii. How can you build Docker Image using docker file? Describe steps of building Docker image? **6**
Method- 3 Marks
Describe- 3 Marks

OR iii. What is docker Registry ? Describe Docker hub and and their security? **6**
Docker registry- 2 Marks
Docker Hub- 2 Marks
Security- 2 Marks

Q.4 i. What is CI/CD pipeline? Explain working with docker? **4**

Definition- 2 Marks
Working- 2 Marks

ii. What is Container? How can we manage container without SSH, Explain in Brief? **6**
Definition Container- 2 Marks
Explain Manage Container- 4 Marks

OR iii. How can we build web application and application server with docker? Also write steps for testing. **6**
Explanation- 3 Marks
Steps- 3Marks

Q.5	i.	Explain Docker Engine API authentication?	**2**
		Explain- - 2 Marks	
	ii.	Explain Following?	**8**
		None Network- 2 Marks	
		Bridge Network- 2 Marks	
		Host Network- 2 Marks	
		Overlay Network- 2 Marks	
OR	iii.	What is the process for connecting two container on same host with docker? Explain with their command and diagram.	**8**
		Process- 3 Marks	
		Command- 3 Marks	
		Diagram- 2 Marks	
Q.6		Attempt any two:	
	i.	Differentiate between Docker and Kubernetes.	**5**
		Differentiate (minimum 5)- 1 Marks for each	
	ii.	Explain Container Orchestration?	**5**
		Explain- 5 Marks	
	iii.	Explain Orchestration alternatives and components?	**5**
		alternatives – 2.5 Marks	
		components- 2.5 Marks	

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