**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**
**End Semester Examination, May 2022**

Course: Application Containerization                    Semester:  VI
Program: B.Tech. CS + DevOps                          Time     : 03 hrs.
Course Code: CSDV3005                                  Max. Marks: 100

Instructions:

## SECTION A
### (5Qx4M=20Marks)

| S. No. | | Marks | CO |
|--------|------|-------|-----|
| Q1. | Define Docker Engine. Enlist the features are provided by Docker Enterprise Edition instead of Docker Community Edition? | 4 | CO1 |
| Q2. | Explain Container. Write any five major differences between Container and Virtual Machine. | 4 | CO1 |
| Q3. | Explain Kubelet, Kubectl and kube-scheduler in brief. | 4 | CO2 |
| Q4. | Enlist the different ways for building a Docker image. Write complete Docker Commands for multiple options used for building an image. | 4 | CO3 |
| Q5. | Differentiate between RUN, UP and START under docker-compose. | 4 | CO4 |

## SECTION B
### (4Qx10M= 40 Marks)

| Q6. | Write the significance of following files in Docker.<br>a) Dockerfile<br>b) Docker-compose file<br>c) .dockerignore file | 10 | CO1 |
|--------|------|-------|-----|
| Q7. | Explain Docker Image and Docker Image Registry. Explain various Docker command relate to images. | 10 | CO3 |
| Q8. | Enlist different network drivers used in Docker. Define the default Docker network driver, and how can you change it when running a Docker image? | 10 | CO3 |
| Q9. | Define orchestration. How does Docker support orchestration? Explain various concepts used in Docker Swarm with some proper Docker commands. | 10 | CO1 |

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| | <div align="center">OR</div><br>Write a short note on following<br>    a)  Hypervisor<br>    b)  Docker Volume | | |
| **SECTION-C**<br>**(2Qx20M=40 Marks)** | | |
| Q10. | Explain<br>    a)  FreeBSD<br>    b)  LXC<br>    c)  Chroot System Calls<br>    d)  Cgroup | **20** | **CO2** |
| Q11. | Differentiate between Docker Swarm and Kubernetes. Explain the following terms related to Docker Swarm and Kubernetes.<br>    a)  Docker Container<br>    b)  Kubernetes Pods<br>    c)  Minikube<br><br><div align="center">OR</div><br>Explain the significance of Micro-Services based architecture over Monolithic Architecture for an Application. How is Docker supporting Micro- Services based architecture? Explain the similarity of Docker Containers in IT Industry with Shipping Containers in Shipping Industry. | **20** | **CO4** |