Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
First Semester 2022-2023
Comprehensive Examination
(EC-3 Regular)

Course No.   : CSI ZG514
Course Title   : Introduction to DevOps
Nature of Exam   : Open Book
Weightage   : 40%
Duration   : 2 ½ Hours
Date of Exam   : 27/11/2022 (Evening)

No. of Pages = 2
No. of Questions = 4

Note to Students:
1.   Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2.   All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3.   Assumptions made if any, should be stated clearly at the beginning of your answer.

Q.1   Jason works in a firm with a small workforce, and he must do a variety of tasks, including coding, building, testing, and deployment. As a result, he is overworked, which is affecting his mental health. Due to personal constraints, he is unable to leave his organization. What kind of automation strategy will he use to solve the aforementioned scenario? Mention the necessary tools and respective file names.

[10 Marks]

Ans:

Ci/cd, Automation testing

Tools:
Jenkins, Teamcity, Azure Devops, Github Action

Filename: ??

Q.2   Melabo Hitech is one of the pioneer organizations in Product Development since 1987 in North America, they were one of the first to bring the Agile Methodology development among all their competitors in the market, however since the last three years, all their new products releases are struggling even though they have a dedicated team to Develop, Test and Deploy to Production.

To overcome this challenge Melabo Hitech would like to adopt the new technology & tools available in the market and revisit their process improvement, your organization has been hired to help Melabo Hitech to complete its digital transformation and improve its delivery of Products and Features.

Jot down all the challenges you observe here and provide your suggestion and justification to achieve the goal of Melabo Hitech?   [10 Marks]

Observation:

- Manual process in testing and deployment
- Using legacy application

Suggestion:

- Implement CI/CD
- Move to cloud-based architecture
- Implement Unit test, Integration test, Automation testing
- TDD for Agile process
- Best practice for devops like Sonar qube (to check code coverage, code smell and quality analysis)

Justification:

Q.3　Tiger Team has certain concepts that they wish to convert the idea into a working software application.

(a)　Now, as a manager, I'm unsure if I should adopt the Agile or DevOps work cultures. Can you tell me why DevOps is better than Agile? Or vice versa?

[3 Marks]

(b)　I am not sure whether Continuous Testing and Automation Testing are the same. Can you explain whether both are the same or not? Justify your answer. [3 Marks]

(c)　The team wanted to keep the Trunk/Mainline (master branch) updated by using forward and reverse update processes. There are two teams developing new features using separate branches. Describe the process the team is using for keeping the Trunk/Mainline updated. [4 Marks]

Ans:

Q.4　ProcMain Pharmaceutical has recently procured 198 Units of Processors, 1 TB of Memory and 500 TB of Storage, to build their new Data Center. With this capacity, they are expecting to run 1000 Applications which includes Development, QA and Production. What all solutions can help ProcMain to achieve and optimize their

utilization of capacity procured? Justify the best solution you think of and how it will work.   [7 + 3 Marks]

Ans:

Virutal machine:
Docker, Container, Kubernate (or openshift),
Virtualisation
Staging – Dev/UAT/Performance/Prod

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