**Birla Institute of Technology & Science, Pilani**

**Work Integrated Learning Programmes Division**

**Second Semester 2021-2022**

**Comprehensive Examination**

**(EC-3 Regular)**

Course No. :  CSI ZG514

Course Title :  Introduction to DevOps

Nature of Exam : Open  Book

No. of Pages = 3

No. of Questions = 5

Weightage : 40%

Duration : 2 Hours

Date of Exam : 20/05/2022 (AN)

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. (Set A) What is the significance of DevOps? How may DevOps help teams with software delivery? Mention the fundamental DevOps functions. [5 Marks]

Q.1. (Set B) What is the relationship between DevOps and the Agile Process? Is it Important to have Automated Testing in CI/CD? If, yes justify. If, no justify. [5 Marks]

Q.2. (Set A) Identify the Agile development practice which concentrates over:

1. Communication
2. Visibility
3. End User Satisfaction

and enlighten when it should be considered? [5 Marks]

Q.2. (Set B) While doing value stream mapping exercise, Elina and her team have identified that their change process, using multiple change advisory board, is slowing down their workflow. Currently team is using traditional SDLC methodology for development and do not have any standard practice for Operation methodology. They have read the latest state of DevOps Report and noted that lengthy change processes are negatively correlated with organizational performance. What could they practice in order to make their change process lighter weight? [5 Marks]

Q.3. (Set A) As DevOps becomes mainstream, many teams are asking themselves, “Where do I start with my DevOps adoption?” “What challenges am I likely to face along the way?” and, “How do I resolve those challenges?”

Below are the main concerns from many teams:

1. Inconsistent environments
2. Manual testing
3. Collaboration between development and operations
4. Manual deployments
5. No integrated tools architecture
6. No DevOps metrics
7. Limited transparency
8. Waste in existing processes
9. No standard SCM repository
10. Agile confined to developers

As a DevOps consultant, what are the DevOps practices that you may suggest to the team for resolving these challenges? Suggest appropriate DevOps tools to be used for implementing those practices? [10 Marks]

Q.3. (Set B) Ohio corporation is planning to revamp the infrastructure and host their application on upcoming cloud platforms.

Ohio IT infrastructure:

2000 Production Virtual Machines

1000 Physical Servers hosting SAP and CRM applications

5000 R&D Lab Virtual Machines

However, the revamping has a challenge respectively.

1. Production VM: has limitation of availability impact, so need roll back if something is wrong
2. Physical Server - This BU has no constraint on Budget for Transition
3. R&D Lab Virtual: strict budget constraint

Suggest the deployment strategy they need to opt for, explain the suggested deployment strategy and justify. [10 Marks]

Q.4. (Set A) Read below listed three scenarios carefully and answer following questions.

1. “Cret Solutions” is expanding their growth in India after Covid 19 where they are primarily targeting R&D solution for NextGen technology.
2. YenCash Japanese financial organization is targeting to setup operational and support organization in India. The major concern for the organization is to adhere compliances and increase security in their environment.
3. DainikMart is an incubation organization started by local merchant to serve customer base within 200 KMs. The expectation is to acquire the market share of ecommerce’s daily need services by using their developed software web & mobile application.
4. Identify the nature of business and suitability of cloud offering services for above mentioned organizations. [3 Marks]
5. Justify your suggestion & list benefits of suggested services [6 Marks]
6. Comment Private cloud Vs Public cloud [1 Marks]

Q.4. (Set B) The lack of identifying the opportunity to grow in the retail market, and the emerging new era for e-commerce in retail market created difficult situation to incorporate demand & supply response.

The Retail Market has been thoroughly disrupted by technology, and it became very critical for Ohio Ltd. application development team to efficiently develop, test and release updates to payments software using their traditional development approach. And rapidly respond to merchants’ needs which depends on technologies consumers are using.

The challenge for Ohio Ltd. is to work on the ability to accept a specific payment type, which can make the difference between a sale and a lost customer. In a recent study, 42 percent of online shoppers said that the types of payment options offered significantly influences consumer shopping.

Ohio Ltd. is willing to address the number of available payment methods, so that retailers have an opportunity to provide a more convenient customer experience – and gain a significant advantage over their competitors. Which will address the need for millions of customers by enabling them to offer seamless payment experiences in person, online, via mobile devices and through convenient cashless transactions called unattended payments – and to analyze transaction data over time.

To achieve the Ohio Ltd. organization’s goal, suggest the best transformation solution which will help them to deliver the software into the hands of its customers faster.

[10 Marks]

Q.5. (Set A) Answer the following questions: [10 Marks]

(Each question carries 2 Marks)

1. Elaborate any two scenarios where IaC would help to reduce OPEX.
2. Enlighten Feature teams over Component teams.
3. With reference to Failure detection monitoring goal, what will be the source of data? Justify your answer.
4. Define combability consideration for application deployment, explain with scenario.
5. Justify with a scenario Top down over Bottom-up monitoring approach.

Q.5. (Set B) Answer the following questions: [10 Marks]

(Each question carries 2 Marks)

1. Elaborate any two scenarios where CaC would help to reduce OPEX.
2. Enlighten Flow based over Non-Flow based Agile methodology.
3. With reference to User reaction to business offerings monitoring goal, what will be the source of data? Justify your answer.
4. Describe the consideration of rollback in application deployment, explain with scenario.
5. List the benefits of containerization over virtualization.

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