Roll No: ----------

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: M.Tech -PLE | **Semester – III**
Subject (Course): ESM & its Application in Petro Sector | **Max. Marks : 100**
Course Code : MPTI803 | **Duration : 3 Hrs**
No. of page/s:2

Section A

Answer all questions. [4x5=20]

1. What is the working principle of GPS?
2. What is Knowledge Pyramid?
3. What is the difference between Wisdom and Intelligence?
4. Explain ETL.

Section B

Answer any six questions. [6x10=60]

5. Explain the concepts of Data Warehouse.
6. Explain the different types of data in GIS.
7. Identify and implement BPR Framework in your area of work.
8. Explain the BPR Lifecycle
9. Differentiate between C2C & B2C. What is EFT?
10. Explain the different execution phases in ERP.

Section C

Answer all questions. [2X10=20]

GIS-based information management portal for an oil and gas major

The client

A global energy company wanted to digitize its oil well files and enable multidisciplinary collaboration.

Business need

Gaps in document management: Searching and retrieving documents was difficult as oil well files were stored in multiple locations and shared drives.

Collaboration not always supported by systems and processes: The absence of a common platform and processes did not allow information exchange between multidisciplinary teams.

Silos in Geospatial Information System (GIS): The lack of a unified GIS to support oil well location evaluation hindered the ability to take informed decisions and resulted in delayed decision-making.

Our solution

Infosys reviewed the business processes, identified gaps in how information was managed, and developed an information management strategy. We provided an end-to-end business solution, including a strategy, solution design, solution development, overall program management, hard copy oil well file document scanning, and migration.

Infosys developed a GIS-based information management portal to integrate production data, electronic documents, and spatial data. The portal used GIS to manage spatial information; Documentum to manage document information; and existing database management systems to manage production data. The solution enabled stakeholders to collaborate during new oil well planning and development activities.

Benefits

Infosys GIS-based Information Management portal solution delivered several benefits:

Collaboration: Multidisciplinary teams share information and take prompt and informed decisions

Efficiency: Quick document and data access through a scalable system enhanced organizational efficiency

Data and knowledge transfer: Improved the ability to capture and transfer data

Compliance: Improved the ability to meet regulatory requirements

<u>**Attempt any 2 [2x15=30]**</u>

Questions:

11. Please analyze and identify the benefits of applying GIS in the above scenario.
12. Identify the technical requirements for implementing GIS in the above system.

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Section A

Answer all questions. [4x5=20]

1. What is GIS?
2. What is the benefit of ERP?
3. What is the difference between Wisdom and knowledge?
4. Explain BPR.

Section B

Answer any six questions. [6x10=60]

5. Describe GIS and its implications in Oil & Gas Industry.
6. What is the requirement and benefit of ERP implementation in an organization?
7. How is Data Warehouse different than Database.
8. Explain the BPR Lifecycle
9. What are the benefits of E-Commerce?
10. What are the challenges of BPR implementation?

Section C

Answer all questions. [2X10=20]

How to use GIS in Road Infrastructure Management

*An **Austrian government company, which plans, finances, builds, maintains and collects tolls for highways, explains how it is using GIS at each step for optimizing work processes.***

ASFINAG — short for Autobahnen- und Schnellstraßen-Finanzierungs- Aktiengesellschaft (German for Autobahn and highway financing stock corporation) — is an Austrian publicly owned corporation that plans, finances, constructs, operates and tolls the entire Austrian motorway and express roads with a total length of 2,183 km. For about 2,800 employees GIS plays an increasing role supporting daily business. Topics vary from cadastre, drainage systems and infrastructure to noise protection, natural hazards, construction site program and long-term activities.

ASFINAG's GIS is based on Esri ArcGIS, with SynerGIS WebOffice at the front-end. The company has used GIS since 2003 and today it is one main goal is the geographical visualization of data and information by using Web technologies. To guarantee up-to-date information, interfaces to several databases as well as guidelines and processes supporting the data management are indispensable.

The GIS team and its tasks are organized within ASFINAG in the department road network planning. The GIS team collaborates with the entire ASFINAG. The main goals are suppling a modern, state-of-the-art GIS system architecture, running a geographic platform with high performance and reliable data, providing data and information in a self-explanatory and pleasant way and guaranteeing up-to-date data by establishing interfaces to several databases. The GIS team sees itself as a service provider for all employees ASFINAG and contractors.

Data management

To guarantee up-to-date data and information, tasks are established:

• Guideline for surveying data: Contractors have to deliver surveying data according to the ASFINAG guideline "PLaDOK", which describes the structure (layers) of an AutoCAD (dwg) dataset. The surveying data are stored in the GIS. The necessary activities between different ASFINAG departments and the contractors are specified within defined tasks.

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• Project-specific data: Contractors have to deliver project-specific data for instance for drainage systems, natural hazards, etc., according to a given structure by the GIS team.

• Purchasing data like cadastre or orthophotos from third parties.

• Interface between databases: GIS connects to different databases, e.g. SAP, Sharepoint and document management system.

• Generating data can be done in house by GIS experts or by non GIS experts in different departments by using a WebGIS frontend.

Facts and figures

The GIS team consists of three employees. Data management is supported by one employee from ASFINAG ASG. Now 200 unique users are using the GIS daily. There are more than 200,000 map requests per month. The GIS team offers monthly GIS trainings. Employees have the possibility to learn different GIS functions and review the different GIS contents. Therefore, GIS links information of different departments together, supports decision processes and stimulates comprehensive collaboration within ASFINAG.

<u>**Attempt any 2 [2x15=30]**</u>

Questions:

11. Please analyze and identify the benefits of applying GIS in the above scenario.
12. Identify the technical requirements for implementing GIS in the above system.

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