PGDM & PGDM (IB), 2020-22
AI in Data Analytics
DM-471 & IB-471
Trimester – IV, End-Term Examination: September 2021

Time allowed: 2 Hrs 30 Min
Max Marks: 50

Roll No: _____

Instruction: Students are required to write Roll No on every page of the Answer Sheet. All other instructions on the question paper / notifications should be followed meticulously.

Sections	No. of Questions to attempt	Marks	Total Marks
A	Minimum 3 question with internal choices and CILO (Course Intended Learning Outcome) covered Or Maximum 6 questions with internal choices and CILO covered (as an example)	3*10 Or 6*5	30
B	Compulsory Case Study with minimum of 2 questions	20	20
			50

1. With the arrival of 5G as an important technological development –
    a. Describe the technology framework of 5G. (Marks – 3.5)
    b. Describe how can eMBB, mIoT and MCS bring in the benefits to the industry (Marks – 3)
    c. What the important differentiators between eMBB, mIoT and MCS (Marks – 3.5)

Or

AI Ethics and Data Privacy –

    d. Give at least 2 real life examples of AI Ethics challenges faced by the industry. Describe them in detail. (Marks – 3)
    e. From data generation to model building and implementation define and describe the biases faced in each stage. (Marks – 3.5)
    f. Define the following in details – (Marks – 3.5)
        i. Who is classified as social media intermediatory as per India's Personal Data Protection Bill, 2019?
        ii. How is children's personal data being protected as per the provisions in India's Personal Data Protection Bill, 2019?

2) Distributed Ledger Technology
    a. What are the differences between Permissioned and Public blockchains? (Marks – 3.5)
    b. How does a block chain work? (Marks – 3.5)

c. How can distributed ledger technology provide potential to drive simplicity and efficiency through the establishment of new financial services infrastructure and processes? (Marks – 3)

Or

Designing an AI solution

d. What are the trade offs to be considered when deploying AI/ML solution? (Marks – 3.5)
e. What is the machine learning pipelines to be considered when deploying AI/ML models? (Marks – 3.5)
f. What is the ML-based Software Delivery Metrics to be considered? (Marks – 3)

3)Prioritizing Product Features

a. Who are considered as dangerous animals of product management? (Marks – 3.5)
b. Describe the Frameworks for Smaller Companies while defining Prioritizing Product Features? (Marks – 3.5)
a. How does the analytics journey change during Prioritizing Product Features? (Marks – 3)

Or

AI solution for industry –

c. Explain how can Speech be used to solve the real-world business problem? (Marks – 3.5)
d. Describe the Cognitive IoT Framework. (Marks – 3.5)
e. How can AI applications be used to solve the challenges faced by the Agriculture setor? (Marks – 3)

Case Studies

Answer any 2 out of 3

Case Study 1 – P&C Claims Processing (Total Marks 10)

Insurance is a financial risk management product in which an individual or entity receives protection against losses (e.g. property, asset, casualty and health) from the insurer. Commercial property and casualty (P&C) insurance (e.g. commercial motor, commercial property and commercial liability) protects businesses against risks that may result in loss of life or property.

Current-state process –

- Insuree reports loss and claims restitution from an insurer (and reinsurer, if applicable) via a broker (or independently)
- Broker may request additional information from insuree to support the loss claim
- Broker submits the claim to the insurer and reinsurer (in cases of syndicate insurance or reinsurance)
- After verifying the documentation received, the insurer(s) confirm receipt of the claim submission
- Loss adjusters perform claim assessments and verify the validity of the claims through client information, secondary data sources (e.g. weather statistics and authority reports) or additional inspection assessments/interviews

- If additional information is required by the insurer, a new information request is made to the broker or insuree. In some situations, the insuree must collect supporting documentation directly from secondary data sources
- After concluding claim assessments, the loss adjuster within each insurer reaches a conclusion about the claim
- If the claim is approved, payment to the insuree is initiated via an insurer's claims agent

Current-state challenges –

- Undesirable customer experience: to initiate a claim, the insuree must complete a
- complex questionnaire and maintain physical receipts of the costs incurred by the loss
- Costly intermediaries: brokers act as intermediaries during processing, adding delays and
- costs to the submission
- Fragmented data sources: insurers must establish individual relationships with third-party data providers to get manual access to supporting asset, risk and loss data that may not be updated
- Fraud prone: the loss assessment is completed on a per-insurer and per-loss basis with no information sharing between insurers, increasing the potential for fraud and manual rework
- Manual claim processing: loss adjusters are required to review claims and to:
    - Ensure their completeness
    - Request additional information or use supporting data sources
    - Validate loss coverage
    - Identify the scope of the liability
    - Calculate the loss amount

Question –

1. What is the techno functional implications for the Insurance business when Distributed Ledger Technology (DLT) is adopted? (Marks – 2)
2. What are the Critical conditions for implementation? (Marks – 2.5)
3. What are the future benefits an insurance company gain after implementing the DLT technology? (Marks – 2.5)
4. What are the challenges when providing a legal and regulatory framework for DLT technology? (Marks – 3)

Case Study 2 – AI and ML Automate Point-of-Sale Data

Point-of-sale information is key for a client, a global advertising analytics firm, to understand sales trends and customer preferences. Its brand managers use this valuable data to make decisions about promotions and new sales initiatives. However, reports on the firm's sales data were often compiled manually, which required personnel to enter information into forms and spreadsheets. This led to errors, inefficiencies and high costs—including auditing expenses. The company asked us for a better way to extract information from sales receipts using AI to automate the analysis and generate insights.

As a first step, compared the performance of different optical character recognition (OCR) tools available in the market to identify the best one for this application. Computer Vision was for ability to extract consumer purchase information and recognize familiar subjects like

brands and moderate content from sales receipts. Collaborating with client's technical team, designed and implemented a solution driven by artificial intelligence (AI) that enables this worldwide company to process sales receipts automatically and glean key information more quickly.

Question –

1. How can the OCR be customized to solve the challenges being faced by the organization? (Marks – 3.5)
2. Describe – apart from OCR technology what are the other technologies that can be applied to improve the consumer purchase information extraction while recognizing familiar subjects like brands and improving on the content from sales receipts? (Marks – 3.5)
3. How can Big Data be applied to solve the challenge of logistics management to enable the company to process sales receipts automatically? (Marks – 3)