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Department of Artificial Intelligence and Machine Learning

Course Code : **21AI74H4**   **Date** :
Semester : **VII Semester**   **Time** :
Max Marks : **10 + 50**   **Duration** : **120 mins**

Artificial Intelligence Product Management
PART A QUIZ 1

Note: Answer all the Questions

Q. No		Questions	M	BT	CO
1	a)	Why is the neural network model also called the black box model? **ANS:** Due to the non-interpretable nature of the working of the neural networks	2	2	1
	b)	When do we prefer using unsupervised learning models in AI product development? **ANS:** Non-availability of labeled data, and data is costly to collect	1	3	1
	c)	To store raw clickstream data, audio recordings, and social media content for analysis, which type of data storage you prefer to use and why? **ANS:** Data lakes / Object Storage Systems mainly for Scalability and Cost-effectiveness	2	3	1
	d)	Write two essential characteristics of the Minimal Viable Product (MVP). **ANS: a.** It should include only critical features **b.** Scope for collecting the feedback	2	2	1
	e)	Write an essential advantage of using the Shadow Deployment Strategy. **ANS:** It will be used to test the product under the real-world conditions	1	1	2
	f)	Give the significance of the Research and Development stage in AI product development. **ANS:** Understanding the business goals and the feasibility of AI solutions	1	2	2
	g)	Define the role of ML engineers in AI product development. **ANS:** To build ML models for business problems and deploy the built models in production environment	1	1	2

PART B Questions	M	BT	CO
1 Which deployment strategy is most suitable for a healthcare provider introducing a new AI-based diagnostic tool for detecting medical conditions from X-ray images, and what are the key justifications for this choice? Please mention six reasons. **ANS:** **1.** Canary deployment Strategy: Rolling out the product to a small subset of users before going for full deployment **(1M)** **2.** Reasons (any six): **1.5 M x 6** a. Patient Safety b. Risk minimization c. Real-world adaptation d. Feedback gathering e. Validation and Compliance with regulatory bodies f. Minimum disturbance to the existing practices	10	3	1
2 Identify the ML model types for the following use cases with one line justification for the same:- **Each carries 2.5 Marks with Proper justification** a. Spam filtering b. Customer feedback analysis: Example: c. Disease prediction	10	3	1

	d. Stock price prediction			
3	What are the key considerations and challenges in the ideation phase of developing an AI-powered diagnostic tool for early-stage cancer detection? How do these factors impact the product's development? **ANS:** **At least Four points (Each carrying 2M) that include impact, like** 1. Type of Cancer/How significant it is/Resource utilization 2. Data availability/Privacy/Unreliable models due to insufficient data 3. Compliance with standards/Approvals/Delays 4. Selecting the proper AI algorithm/Accuracy vs Computation/Suitability in the real-world environment	10	3	2
4	By considering any popular AI product, highlight any two critical roles played by data engineers, data analysts, and data scientists. **ANS:** 1. Product identification and the purpose (2.5M), e.g., Spotify 2. **Data Engineer role:** Data collection, Processing and Storing (2.5M) 3. **Data Analysts role:** Insights generation, Reports creation, Business Dashboards creation, etc. (2.5M) 4. **Data Scientists role:** ML models development for predictions, testing, and validation (2.5M)	10	3	2
5	What AI technologies power the following product features? Provide a brief explanation for each: a.**Symptom Checkers:** Analyzing patient complaints to generate health insights. NLP/ML/Expert Systems **(2.5M)** b.**Defect Detection:** Spotting flaws in products during quality assurance. CV/DL **(2.5M)** c. **Dynamic Pricing Management:** Optimizing prices based on demand, inventory, and competitor activity. RL/Predictive Analytics/Optimization **(2.5M)** d. **Fraud Detection:** Detecting suspicious transactions by analyzing behavioral patterns in real-time. Unsupervised learning/Neural Networks **(2.5M)**	10	3	3