(3 Hours) **Total Marks: 80**

N.B.: (1) Question No.1 is compulsory.
(2) Attempt any three questions from the remaining five questions.
(3) Assume suitable data if required and mention it clearly
(4) Figures to right indicate full marks

1. **Solve any four**
   (a) What are the different phases of web application reconnaissance? **05**
   (b) What are some key differences between black-box and white-box vulnerability testing? **05**
   (c) Why should HTTPS be used everywhere in modern web applications? **05**
   (d) Explain the importance of encryption in maintaining the confidentiality and integrity of data in web applications. **05**
   (e) What are the benefits of integrating security in the SDLC? **05**
   (f) What are the key components of web application profiling? **05**

2. (a) What is Cross-Site Scripting (XSS), and what are its types? **10**
   (b) What are the benefits of using open-source security tools over commercial ones? **10**

3. (a) Discuss the security best practices for API development to prevent unauthorized access. **10**
   (b) Compare the impact of design flaws and security bugs in large-scale enterprise applications **10**

4. (a) Discuss the Secure Coding Practices. **10**
   (b) Explain how automation can improve application security in a DevSecOps environment. **10**

5. (a) Describe the importance of penetration testing in cybersecurity. **10**
   (b) Describe the role of CVSS in identifying and prioritizing vulnerabilities. **10**

6. Write a short note on **(Any Two)** **20**
   a) SAST and DAST.
   b) Threat modelling in different types of SDLC
   c)Secure hardware architecture.

[Time: 3 Hours] **[Marks:80]**

1. **Questions No. 1 is Compulsory.**
2. **Attempt any three out of remaining Questions.**
3. **Figures to the right Indicate full marks.**

Q.1 Attempt any Four. **20**

a) Explain any five Salient features of the Environment Protection Act, 1986.
b) Describe the current energy scenario in India. What challenges does India face in meeting its energy demands?
c) What is a food chain? How does it differ from a food web?
d) What are atomic and biomedical hazards?.
f) Explain the role of the government as a planning and regulatory agency.

Q.2 a) Discuss major environmental problems in India and their implications for public health and natural resources**.** **10**
b) Explain Ozone layer depletion? What are the Causes, effects and preventive measures of Ozone depletion? **10**

Q.3 a) Define ecosystem. Classify different types of Ecosystems? What are the biotic and abiotic components of an ecosystem? **10**
b) Discuss the role of Central Pollution Control Board (CPCB) in pollution monitoring. **10**

Q.4 a) What is ISO 14000? Explain its significance in environmental management and how it helps organizations reduce their environmental impact. **10**
b) What is Corporate Environmental Responsibility (CER)? Explain its importance and mention any three ways in which companies can practice CER to promote environmental sustainability**.** **10**

Q.5 a) Compare natural and human-made sources of greenhouse gases. Which ones have the greatest impact on global warming and why? Support your answer with examples **10**
b) What is Environmental Quality Management (EQM)? Explain its objectives in detail. **10**

Q.6 a) With reference to EMS, explain PDCA cycle with neat diagram. **10**
b) Critically evaluate the concept of sustainable development as a multidimensional approach. How does it reconcile the conflicting goals of economic growth, environmental conservation, and social equity? **10**

Duration:(3 hrs.) **[Maximum Marks : 80]**

NB:
(1) Question No. 1 is compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

Q1. ATTEMPT ANY FOUR [20]

a. Differentiate between Generative Adversarial Network and Variational Auto Encoder.
b. Explain Contractive autoencoders.
c. What are the benefits of pre-trained models?
d. Explain XGBoost regression.
e. Explain the limitations of 2D learning environments.

Q2. a. Explain WGAN in detail. [10]
b. Explain the MinMax loss function used in GAN, along with the components of GAN. [10]

Q3. a. Explain transfer learning. Describe different types of transfer learning. [10]
b Explain DCGAN in detail. [10]

Q4. a. Explain Sparse autoencoders in detail. [10]
b. Explain AdaBoost in detail. [10]

Q5. a. Explain Gaussian Mixture Models. [10]
b. Explain CycleGAN in detail. [10]

Q6. a. What is metaverse? Explain the characteristics and components of the metaverse. [10]
b. Explain Markov Random Field in detail. [10]

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(Time: 3 Hours) **[Total Marks: 80]**

N.B.: (1) Question **No.1** is **Compulsory**.
(2) Attempt **any three** questions from the **remaining** questions.
(3) Assume **suitable** data wherever required but **justify** the same.
(4) **Figures** to the **right** indicate **full marks**.
(5) Answer each new question to be started on a **fresh page**.

1.	(a)	What is vectorization in the context of backtesting trading strategies?	**(5)**
	(b)	Explain various Digital Driven process used in Technology	**(5)**
	(c)	What are two commonly used representations for deploying fraud analytics models	**(5)**
	(d)	Discuss on Markov Regime Switching Model	**(5)**
2.	(a)	What is the Wishart distribution, and how is it related to covariance matrices?	**(10)**
	(b)	Explain Sharpe Ratio and show with example how Sharpe Ratio can be used to evaluate income statement growth	**(10)**
3.	(a)	Describe key components of Capital Asset Pricing Model in detail.	**(10)**
	(b)	Compare Between Stop Loss (SL), Trailing Stop Loss (TSL), and Take Profit (TP) orders in trading and Explain each with example.	**(10)**
4.	(a)	1) Why is it important for a prediction-based trading strategy to accurately forecast large market movements?	**(5)**
		2)Explain Gift City in Detail.	**(5)**
	(b)	Explain the steps involved in the K-means clustering Algorithm and work's in partitioning data.	**(10)**
5.	(a)	Explain-in detail Visualizing Covariance and Precision Matrices	**(10)**
	(b)	What is the relationship between prior and posterior distributions in Bayesian analysis?	**(10)**
6.	(a)	1)Explain concept of infallibility in financial and banking operation.	**(5)**
		2)What is undirected Graph and why is it used	**(5)**
	(b)	Explain Traffic light indicator in detail? How does the traffic light indicator approach help in the representation of fraud analytics model outcomes?	**(10)**

Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1 Attempt any FOUR [20]

a Draw and explain the Social Media Analytics Cycle with a detailed description of each stage. 5

b Explain Tie strength and trust. What is significance of weak ties in a social network? 5

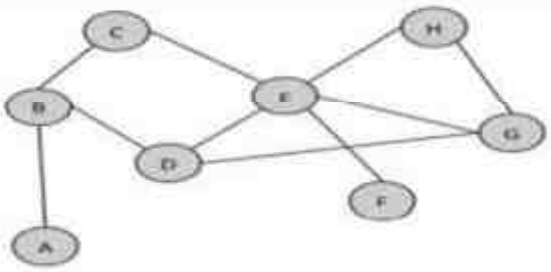
c What is mobile analytics? Explain characteristics of mobile Apps. 5

d Explain types of search engines. 5

e Explain data privacy, privacy policies and settings, issues related to data ownership on social media in the context of social media platforms. How can individuals protect their personal data when using digital platforms? 5

2 a Explain in detail the "Seven Layers of Social Media Analytics." Also, discuss the tools commonly used for each layer with suitable examples. [10]

b [10]



Answer the following questions about this graph.

a. What is the degree distribution for this graph? [2mark]
b. What is the density of this graph? [1 mark]
c. Which node(s) have the highest degree? What is the degree? [1 mark]
d. Which node(s) have the lowest degree? What is the degree? [1 mark]
e. Which node has the highest closeness centrality? Calculate it. [2 mark]
f. Which node has the highest degree centrality? [1 mark]
g. Draw the 1.5 egocentric network of node D. [1 mark]
h. Draw 1 egocentric network of node D. [1 mark]

3	a	Explain types of social media text.What are text analytics and explain text analytics steps.	[10]
	b	Explain Social Media Hyperlink Analytics by discussing the types of hyperlinks, types of hyperlink analytics, and commonly used hyperlink analytics tools.	[5]
	c	Explain what action analytics is. Identify some of the existing social media and types of actions used in them.	[5]
4	a	Explain categories of location analytics. What are applications of each category of location analytics?	[10]
	b	Explain Search Engine Analytics. Also, discuss the concepts of Search Engine Optimization (SEO) and Search Trend Analytics. Further, describe the different types of analytics provided by Google Trends with examples.	[10]
5	a	Describe Automated Recommendation Systems and compare Traditional Recommendation Systems with Social Recommendation Systems.	[8]
	b	Discuss the key steps involved in Formulating a Social Media Strategy and highlight how organizations can Manage Social Media Risks effectively.	[6]
	c	Explain the importance of Understanding Social Media and Business Alignment, and describe key Social Media KPIs used to measure performance.	[6]
6	a	Discuss a case study highlighting effective use of social media in the public sector.	[10]
	b	Discuss how businesses can measure the success of their social media initiatives. Explain the importance of interaction and monitoring in business social media strategies.	[10]

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