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PB-2444

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B.E. (Artificial Intelligence & Machine Learning)

INFORMATION RETRIEVAL IN AI

(2019 Pattern) (Semester - VII) (418541)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 Or Q.2, Q.3 Or Q.4, Q.5 Or Q.6 & Q.7 Or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Discuss in details Precision & recall with example. **[8]**

b) Write Short Note on : **[10]**

i) Query Specification

ii) Document Context

OR

Q2) a) Explain the Terms :

i) Mean Reciprocal Rank (MRR)

ii) Normalized Discounted cumulative gain (NDCG). **[10]**

b) Write Note on Swets model. **[8]**

Q3) a) Explain in Details : **[8]**

i) Collection Partitioning

ii) Query Processing

b) Discuss on Background-Spatial Access Method in details. **[9]**

OR

Q4) a) Explain One-Dimensional Time Series & Two-Dimensional color Images. **[8]**

b) Explain in details Generic Multimedia Indexing Approach & Automatic Feature Extraction. **[9]**

P.T.O.

Q5) a) Explain the Terms of Search Engines : **[9]**

i) Ranking

ii) Crawling

iii) Indices

b) How to characterize the web & What are the challenges of web? **[9]**

OR

Q6) a) Write Note on : **[9]**

i) Centralized Architecture

ii) Distributed Architecture

b) Explain in details Meta Searchers & Searching using Hyperlinks. **[9]**

Q7) a) Explain in detail about the Metasearch along with its advantages and disadvantages. **[9]**

b) Write Note on : **[8]**

i) Need of Metasearch

ii) Significance of Metasearch

OR

Q8) a) How a metasearch engine works? Explain in details Example of Metasearch engines. **[9]**

b) Difference between Simple Search & Metasearch. **[8]**

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B.E. (Artificial Intelligence and Machine Learning)

CLOUD COMPUTING

(2019 Pattern) (Semester - VII) (418542)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) List different cloud services and explain the following services with a diagram. **[6]**

i) Software-as-a-Service

ii) Infrastructure-as-a-service

b) Describe different EMC Technologies and Amazon EC2 Services. **[6]**

c) Write a note on Microsoft Azure Platformarchitecture. **[6]**

OR

Q2) a) Explain the steps to launch an EC2 instance in AWS Cloud. **[6]**

b) What is VMware Acquisition in the Cloud? And Explore Amazon S3 Service in the cloud. **[6]**

c) Write a note on: **[6]**

i) Database As- A Service

ii) Monitoring as a service

P.T.O.

Q3) a) Write a Note on : **[6]**

i) SimpleDB

ii) Dynamo Cloud data stores

b) Explain GFS Cloud File system with a diagram. **[6]**

c) Write any five Challenges of the cloud storage system. **[5]**

OR

Q4) a) Explain the virtual storage container in detail. **[6]**

b) Draw and explain the General Architecture of the Hadoop Distributed File System (HDFS). **[6]**

c) Differentiate between Big Table and Hbase Table in the Cloud Computing. **[5]**

Q5) a) Discuss the following cloud Security Terms: **[6]**

i) Confidentiality

ii) Authenticity

iii) Vulnerability

b) Define Encryption and elaborate Digital Signature in the cloud with a Diagram. **[6]**

c) Write notes on Identity Access Management (IAM) and Single-Sign On (SSO). **[6]**

OR

Q6) a) Explain Security Mechanisms and Security Policies in the cloud. **[6]**

b) Define Hashing and explain Public Key Infrastructure (PKI) in the Cloud. **[6]**

c) Write notes on **[6]**

i) Integrity

ii) Threat

iii) Availability.

Q7) a) What is an Open Cloud Consortium? Discuss Virtualization Format in the cloud. **[6]**

b) Discuss the following protocol **[6]**

i) SMTP

ii) POP

iii) IMAP

c) Explain different Glances of Docker. **[5]**

OR

Q8) a) Drawand explain DockerWorkflow. **[6]**

b) Explain common standards for security in cloud computing. **[6]**

c) Write a note on: **[5]**

i) Open Virtualization Format

ii) Standards for Application Developers

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PB-2446

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B.E.(Artificial Intelligence and Machine Learning)

DEEP LEARNING FOR AI

(2019 Pattern) (Semester - VII) (418543)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) What is Recurrent Neural Network (RNN)? State and explain types of RNN in brief. **[10]**

b) How exactly the vanishing gradient problem occurs in RNN? How to prevent vanishing gradient problem? **[8]**

OR

Q2) a) What is Long Short-Term Memory Network (LSTM)? Explain the general layout of a Long Short Term Memory Network with suitable diagram. **[10]**

b) Describe Recursive Neural Network and types of Recursive Neural Network. Explain its advantages. **[8]**

Q3) a) State applications of autoencoder. Explain any three applications in detail. **[10]**

b) Explain how the dimensionality reduction feature of autoencoder is useful in information retrieval task? **[7]**

OR

Q4) a) Explain the architecture of sparse autoencoder with suitable diagram. What are advantages of sparse encoder over usual autoencoder. **[10]**

b) Autoencoders use unsupervised learning approach. Justify the statement. **[7]**

P.T.O

Q5) a) Why the network is called Greedy Layer Wise Pretraining Network? **[10]**

b) Justify when to use domain adaptation and when to use transfer learning. **[8]**

OR

Q6) a) Explain distributed representation with example. **[10]**

b) What is transfer learning? Elaborate transfer learning domain adaptation. **[8]**

Q7) a) Explain Generative Adversarial Network Architecture and its Components with neat diagram. **[10]**

b) Explain Different Types of GAN Models. **[7]**

OR

Q8) a) What is Discriminator? Explain the different Applications of Generative Adversarial Networks? **[10]**

b) Write short note on Denoising and Sparcity. **[7]**

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B.E.(Artificial Intelligence & Machine Learning)

AI IN DRONES

(2019 Pattern) (Semester - VII) (418544C) (Elective - III)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Describe Payload. Explain the different types and their significance for drones. **[9]**

b) What are the communication methods used by drones? **[9]**

OR

Q2) a) What are the concepts of kinematics and dynamics in drone? **[9]**

b) Demonstrate the different Antenna categories in drone. **[9]**

Q3) a) What is Global Positioning System? Describe with appropriate example. **[9]**

b) Describe in detail inertial navigation in drone. **[8]**

OR

Q4) a) Explain waypoint navigation using a relevant example. **[8]**

b) What does drone path planning consist of? How is path planning carried out? **[9]**

Q5) a) What does drone flight control mean? Discuss in detail. **[9]**

b) Explain how a drone's transmitter and receiver work? **[9]**

OR

Q6) a) What are the different types of electronic speed controllers. **[9]**

b) Describe the different types of flight controllers? **[9]**

P.T.O

Q7) a) What do you mean by aerial photography? Explain with example. **[9]**

b) Explain drone mapping and surveying. **[8]**

OR

Q8) a) What are the applications of drones in precision agriculture? **[9]**

b) Explain with an example of how a drone is used to inspect a building. **[8]**

Total No. of Questions : 8]

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B.E. (Artificial Intelligence & Machine Learning)

DevOps IN MACHINE LEARNING

(2019 Pattern) (Semester-VII) (418545C) (Elective-IV)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Define Continuous deployment. What are its benefits? Explain Deployment pipeline with suitable diagram/case study. **[9]**

b) What is Test Driven Deployment? Explain different steps involved in TDD? **[8]**

OR

Q2) a) Differentiate between: **[8]**

i) Continuous Integration vs Continuous deployment

ii) Continuous Delivery vs Continuous deployment

b) What is Behaviour Driven Development (BDD)? Explain different steps involved in BDD? How BDD is different than TDD? **[9]**

Q3) a) Explain the concept of Virtualization and Containerization with appropriate diagram and eg. **[9]**

b) Explain how version control is achieved using Git? **[8]**

OR

Q4) a) Explain Continuous testing with Selenium. **[8]**

b) Explain Serverless orchestration in Kubernetes **[9]**

Q5) a) Explain with suitable diagram machine learning life cycle. How MLOPs is useful in this? **[9]**

b) Enlist and explain various tools to create ML pipelines. **[9]**

OR

P.T.O.

Q6) a) Explain different roles involved in MLOPs. How these roles are different than DevOps? **[9]**

b) Explain with suitable diagram components of MLOPs **[9]**

Q7) a) Define MLOPs. Explain various stages of CI/CD in MLOPs using suitable case study/diagram. **[9]**

b) Explain with suitable case study how data quality and integrity is maintained in MLOPs. **[9]**

OR

Q8) Write short notes on (Any 3) **[18]**

a) JIRA

b) MLOPS maturity model levels

c) Docker

d) Future trends in MLOPs