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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) What do you understand by interface support for search process? Explain with example. **[9]**

b) What are the different starting points? **[9]**

OR

Q2) a) Write a short note on: **[9]**

i) Precision and Recall

ii) Evaluation of information retrieval system

b) Explain in detail MRR, F-Score and NDCG parameters with examples. **[9]**

Q3) a) Explain Distributed Information Retrieval. **[8]**

b) Explain one dimensional time series with example **[9]**

OR

Q4) a) Explain collection partitioning & source selection with respect to distributed information retrieval system. **[8]**

b) Write a short notes on MULTOS and GEMINI approach. **[9]**

P.T.O.

Q5) a) Explain Challenges involved in searching web. **[9]**

b) What are Meta searchers? Explain with suitable example. **[9]**

OR

Q6) a) Discuss the centralized architecture of search engine. Also discuss drawbacks of harvest distributed architecture. **[9]**

b) What is importance of Ranking in information retrieval. Explain any one ranking algorithm. **[9]**

Q7) a) State the difference between simple search and Metasearch with examples. **[9]**

b) Explain with block diagram working of Metasearch. **[8]**

OR

Q8) a) What is need and significance of Metasearch in information retrieval in Al systems. **[9]**

b) Write different examples of metasearch engines. **[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 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) Enlist the advantages of "Infrastructure as A Service" (IaaS)? Support your answer with a suitable diagram and example. **[9]**

b) Explain Microsoft Azure Services with supporting examples. **[8]**

OR

Q2) a) Enlist the advantages of "Software as A Service" (SaaS)? Support your answer with a suitable diagram and example. **[9]**

b) Narrate the situations wherein the following cloud services will be helpful. **[8]**

i) Amazon - Amazon Elastic Compute Cloud (EC2)

ii) Amazon Simple Storage Service (S3)

Q3) a) Explain the architecture of Google File System (GFS) and write a situation where in the use of GFS is suitable in IT Industry. **[6]**

b) What is Hadoop Distributed File System? Elaborate it with a diagram. **[6]**

c) Differentiate between Hbase and Dynamo file System. **[6]**

OR

P.T.O.

Q4) a) List the major cloud storage providers and devise their pros and cons. **[6]**

b) Write short notes on Data store and Simple DB. **[6]**

c) Describe virtual storage containers along with their advantages and disadvantages. **[6]**

Q5) a) Enlist the cloud security mechanism and explain any two of them in detail along with examples. **[6]**

b) Discuss hashing in cloud computing in detail. **[5]**

c) Explain the following : **[6]**

i) Encryption in cloud security

ii) Identity Access Management (IAM) in cloud security.

OR

Q6) a) Describe potential threats and vulnerability in cloud security. **[6]**

b) Explain Single Sign On (SSO) in detail. **[5]**

c) Write a short note on the following with reference to cloud security: **[6]**

i) Integrity

ii) authenticity

iii) Risks

Q7) a) Describe Docker workflow with suitable examples. **[5]**

b) Write notes on : **[5]**

i) SAML OAuth

ii) SSL/TLS

c) Explain Open Cloud Consortium with help of Open Virtualization Format. **[8]**

OR

Q8) a) Write notes on : **[5]**

i) Process Simplification

ii) Broad Support and adoption

b) Explain common standards for security in cloud computing. **[5]**

c) Explain the standard messaging protocol used in cloud computing. **[8]**

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

Q1) a) Compare the Difference Between a Feedforward Neural Network and Recurrent Neural Network? **[6]**

b) Interpret how LSTM proves efficient over RNN? **[6]**

c) Explain exploding gradient descent problem for RNN. **[6]**

OR

Q2) a) Explain working of LSTM in details. **[10]**

b) What are the applications of a Recurrent Neural Network (RNN)? Also explain which type of RNN it belongs to. **[8]**

Q3) a) What are the applications of autoencoders? **[10]**

b) Explain sparse autoencoders. **[7]**

OR

Q4) a) What is a hyperparameter? Explain different hyperparameters that must be set before training. **[8]**

b) Explain denoising autoencoders in detail. **[9]**

Q5) a) When will you use transfer learning? Explain with examples. **[6]**

b) Draw Densenet architecture. **[6]**

c) Explain distributed representation? **[6]**

OR

P.T.O.

Q6) a) Explain domain adaptation. **[6]**

b) What are the advantages of Densenet? **[6]**

c) Why is the network called a Greedy Layer wise pretraining network? **[6]**

Q7) a) Explain GAN with example. Describe all its variants. **[10]**

b) Explain generative and discriminative models in GANs. **[7]**

OR

Q8) a) What are the advantages and disadvantages of the GAN model? **[10]**

b) Write a note on IMAGEN **[7]**

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B.E. (Artificial Intelligence and Machine Learning)

AI IN DRONES

(2019 Pattern) (Semester-VII) (418544 C) (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) What is Payload? Describe its types and their importance in drone. **[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) Illustrate the different categories of antenna. **[9]**

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

b) Explain inertial navigation in detail. **[8]**

OR

Q4) a) Describe the waypoint navigation with appropriate example. **[8]**

b) What is path planning in drone? How does path planning work? **[9]**

Q5) a) What is flight control in drone? Explain in detail. **[9]**

b) Describe the use of transmitter and receiver in a drone? **[9]**

OR

P.T.O.

Q6) a) Describe the different types of electronic speed controllers? **[9]**

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

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

b) Describe survey and mapping using drone. **[8]**

OR

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

b) Illustrate the use of drone for building inspection? **[8]**

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B.E. (Artificial Intelligence and Machine Learning)

DEVOPS IN MACHINE LEARNING

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

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 side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Define Continuous deployment. What are its benefits? Explain how continuous Deployment is different from Continuous Monitoring? **[9]**

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

OR

Q2) a) Explain various deployment pipeline practices and Commit stage with suitable case studies. **[8]**

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

Q3) a) Differentiate between: **[8]**

i) Micro-services and containerization

ii) Orchestration and automation

b) Explain containerization using Dockers. **[9]**

OR

Q4) a) Explain Continuous integration with Jenkins. **[8]**

b) Explain Continuous deployment using Ansible. **[9]**

P.T.O.

Q5) a) Explain with suitable eg. solutions and Future trends in MLOPs. **[9]**

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

OR

Q6) a) Explain MLOPs maturity model levels with suitable diagram/case study. **[9]**

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

Q7) a) Explain the process of creating and deploying ML models with and without MLOPs. **[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) Different roles involved in MLOPs.

c) Git

d) Machine learning life cycle.