# GUJARAT TECHNOLOGICAL UNIVERSITY
## ME – SEMESTER – II(New)• EXAMINATION – SUMMER - 2020

**Subject Code:3720223**                                    **Date: 29/10/2020**
**Subject Name: Advanced Machine Learning**
**Time: 02:30 PM TO 05:00 PM**                     **Total Marks: 70**
**Instructions:**
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | What is Support Vector Machine? How does it work? Detailing the advantages and disadvantage of it. | **07** |
| | **(b)** | What is Supervised and Unsupervised Learning? Explain with the examples. | **07** |
| **Q.2** | **(a)** | What do you mean by Gain and Entropy? How is it used to build the Decision tree in algorithm? Illustrate using an example. | **07** |
| | **(b)** | Explain k-means clustering with example. | **07** |
| | | **OR** | |
| | **(b)** | What are the important objectives of Machine Learning? Discuss significant examples of it. | **07** |
| **Q.3** | **(a)** | Explain Bayesian belief network and conditional independence with example. | **07** |
| | **(b)** | What are ensemble methods in Machine Learning? Explain Bagging along with steps. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Describe EM Algorithm in brief. | **07** |
| | **(b)** | Explain Probabilistic Latent Semantic Analysis with suitable example. | **07** |
| **Q.4** | **(a)** | Why do we use Regression Analysis? Discuss Linear Regression Technique. | **07** |
| | **(b)** | Explain in detail Principal Component Analysis for Dimension Reduction. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Describe a procedure of model selection and the estimate of the generalization error, focusing on the case where a lot of data is available. | **07** |
| | **(b)** | Write a short note on Hidden Markov Model. | **07** |
| **Q.5** | **(a)** | Write a short note on Reinforcement Learning. | **07** |
| | **(b)** | Discuss Feature Selection and Feature Extraction in Machine Learning. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Describe Locally Linear Embedding algorithm. | **07** |
| | **(b)** | Explain Kernel Ridge Regression with suitable example. | **07** |

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