

# CBCS SCHEME

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18AI61

## Sixth Semester B.E. Degree Examination, June/July 2023 Machine Learning

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. List and explain the steps to design a learning system in detail. (08 Marks)  
b. List and explain the main types of Machine Learning. (04 Marks)  
c. Consider the EnjoySport concept and instance given below. Identify the general and specific hypotheses using Candidate Elimination Learning Algorithm.

Example	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

(08 Marks)

OR

- 2 a. Explain the different Challenges of Machine Learning. (10 Marks)  
b. Consider the "Japanese Economy Car" concept and instance given below, identify the hypotheses using Candidate Elimination Learning algorithm.

Origin	Manufacturer	Color	Decade	Type	Target Value
Japan	Honda	Blue	1980	Economy	Positive
Japan	Toyota	Green	1970	Sports	Negative
Japan	Toyota	Blue	1990	Economy	Positive
USA	Chrysler	Red	1980	Economy	Negative
Japan	Honda	White	1980	Economy	Positive

(10 Marks)

### Module-2

- 3 a. Explain the different steps to get the data. (10 Marks)  
b. In context to prepare the data for Machine Learning Algorithm, write a note on :  
i) Data Cleaning.  
ii) Handling text and Categorical attributes.  
iii) Feature Scaling. (10 Marks)

OR

- 4 a. Using Code Snippets, outline the concepts involved in :  
i) Measuring accuracy using cross validation.  
ii) Confusion Matrix.  
iii) Precision and Recall. (10 Marks)  
b. Explain i) Multiclass Classification ii) Multi Label Classification. (10 Marks)

### Module-3

- 5 a. Explain Batch Gradient Descent. (08 Marks)  
b. Explain the different Regularized Linear Models. (12 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
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OR

- 6 a. Explain how SVM's make predictions and how their training algorithm works. (12 Marks)  
b. Explain Logistic Regression. (08 Marks)

**Module-4**

- 7 a. Explain the concept of :  
i) Bagging and Pasting                      ii) Voting Classifiers. (10 Marks)  
b. Define Boosting. Explain the different variants of Boosting. (10 Marks)

OR

- 8 a. Write a note on :  
i) The CART Training Algorithm                      ii) Entropy. (10 Marks)  
b. Explain i) Out of Bag Evolution                      ii) Random Forests. (10 Marks)

**Module-5**

- 9 a. Explain Naïve Bayes Classifier with example. (10 Marks)  
b. Describe the concept of MDL. Obtain the equation of  $h_{MDL}$ . (10 Marks)

OR

- 10 a. Derive the EM Algorithm in detail. (10 Marks)  
b. Explain Bayesian Belief Network with example. (10 Marks)

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18AI62

## Sixth Semester B.E. Degree Examination, June/July 2023 Digital Image Processing

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. What is digital image processing? Explain the fundamental steps of image processing with block diagram. (08 Marks)  
b. With diagram explain image formation in an eye. (06 Marks)  
c. Explain the following with respect to relationship between pixels i) Adjacency (06 Marks)  
ii) Distance.

OR

- 2 a. Explain the process of image sampling and quantization. (10 Marks)  
b. Explain the following:  
i) Image acquisition using single sensor (10 Marks)  
ii) Image acquisition using sensor array.

### Module-2

- 3 a. Explain different types of piecewise linear transformations. (08 Marks)  
b. Explain order statistics filters and smoothing linear filters. (08 Marks)  
c. Write a note on selective filtering. (04 Marks)

OR

- 4 a. What is Histogram processing? Explain Histogram equalization technique. (08 Marks)  
b. Explain different image sharpening methods for filtering in frequency domain. (12 Marks)

### Module-3

- 5 a. Explain different noise probability density functions. (10 Marks)  
b. Explain adaptive median filter algorithm used for noise removal. (10 Marks)

OR

- 6 a. Explain the estimation of degradation function using i) Observation ii) Mathematical modeling. (10 Marks)  
b. Write a note on:  
i) Inverse filtering (10 Marks)  
ii) Wiener filtering.

### Module-4

- 7 a. Explain the opening and closing in morphological image processing. (10 Marks)  
b. Explain RGB and CMYK colour model. (10 Marks)

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OR

- 8 a. Explain the procedure for converting RGB to HSI colour model and vice-versa. (08 Marks)  
b. Write a note on:  
i) Intensity slicing  
ii) Hit or miss transformation. (12 Marks)

**Module-5**

- 9 a. Explain the following image segmentation techniques:  
i) Line detection (10 Marks)  
ii) Edge detection. (10 Marks)  
b. Explain any two types of region descriptors. (10 Marks)

OR

- 10 a. Explain region splitting and merging. (08 Marks)  
b. Explain any three types of boundary descriptors. (12 Marks)

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## Sixth Semester B.E. Degree Examination, June/July 2023 JAVA for Mobile Application

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Explain Java enumerations and write a code to demonstrate how varieties of apple can be represented through enumerations. (08 Marks)
- b. Explain following methods with suitable code snippet: (i) Values (ii) ValueOf (04 Marks)
- c. Explain type wrappers along with its importance and write a Java program to demonstrate how to use a numeric type wrapper to encapsulate a value and then extract that value. (08 Marks)

OR

- 2 a. Write a Java code that uses reflection to display the annotation associated with a method. Illustrate all methods used in the program. (10 Marks)
- b. Write a Java code to demonstrate auto boxing/unboxing occurs in expressions. (10 Marks)

### Module-2

- 3 a. Explain the following collection classes with suitable code snippet:  
(i) The ArrayList Class (ii) The LinkedList Class (10 Marks)
- b. Explain the collection framework core interfaces. Describe any two methods associated with Collection Interface. (10 Marks)

OR

- 4 a. Explain below listed methods with respect to algorithm defined inside collection framework  
(i) reverseOrder (ii) Shuffle (10 Marks)
- b. Write a Java code to demonstrate custom comparator, which implements the compare( ) method for string that operates in reverse of normal. (10 Marks)

### Module-3

- 5 a. Explain the two string methods that returns the first occurrence of a character and last occurrence of a character. Illustrate same with suitable Java code. (10 Marks)
- b. Illustrate how to modify a string using a following methods:  
(i) substring( ) (ii) concat( ) (iii) replace( ) (iv) trim( ) (10 Marks)

OR

- 6 a. With relevant example, explain the following String Buffer methods:  
(i) ensureCapacity( ) (ii) setLength( ) (iii) append( ) (iv) insert( ) (10 Marks)
- b. Demonstrate how following methods can be used in character extraction:  
(i) charAt( ) (ii) getChars( ) (iii) getBytes( ) (iv) toCharArray( ) (10 Marks)

### Module-4

- 7 a. With a neat block diagram, explain the architecture of android. (10 Marks)
- b. With suitable code snippet, explain linking activities using intents. (10 Marks)

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OR

- 8 a. What is an activity? With a neat diagram, explain the Activity Life Cycle. Describe all the events associated. (10 Marks)
- b. Summarize the states, a fragments goes through after its creation. List the different methods that are called when fragment transists from one state to another. (10 Marks)

**Module-5**

- 9 a. Describe the following layout available in android: (i) Linear layout (ii) Relative layout (10 Marks)
- b. Describe progress bar view with suitable code snippet. (10 Marks)

OR

- 10 a. Write a code to build mobile application to retrieve contacts from database. (10 Marks)
- b. Write a Java code to build a Quiz Application by using Radio Group Class. Consider a suitable view for designing the front end. (10 Marks)

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18AI643

Sixth Semester B.E. Degree Examination, June/July 2023

## Web Programming

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Describe the cascade principles used by CSS to deal with conflicts. (10 Marks)
- b. Discuss the three main aims to HTML5 and explain the elements and attributes of HTML. (06 Marks)
- c. Explain Ordered and Unordered list with examples. (04 Marks)

OR

- 2 a. With a neat diagram, briefly explain the concepts of box model. (10 Marks)
- b. Define CSS. List and explain the benefits of CSS. (06 Marks)
- c. List and explain the advantages of Semantic HTML Markup. (04 Marks)

### Module-2

- 3 a. List the key advantages and disadvantages of GET and POST methods. Explain different form related HTML elements. (08 Marks)
- b. Explain liquid layout design for website with an example. List the advantages and disadvantages of fluid layout. (08 Marks)
- c. Explain how User's form input works. (04 Marks)

OR

- 4 a. Explain positioning elements in CSS. (08 Marks)
- b. Illustrate the process of microformats with an example. (08 Marks)
- c. Define responsive design. List four key components of responsive design. (04 Marks)

### Module-3

- 5 a. Explain different server side technologies for creating web applications. (10 Marks)
- b. Explain JavaScript layers with neat diagram. (10 Marks)

OR

- 6 a. With suitable diagrams, explain PHP module in apache. Describe the role of apache threads in web application execution. (10 Marks)
- b. Briefly describe the document object model. (10 Marks)

### Module-4

- 7 a. What are superglobal variables in PHP? Explain the \$\_GET and \$\_POST superglobal variables with examples. (10 Marks)
- b. Explain the concept of Inheritance in PHP. Draw an UML class diagram showing inheritance. (10 Marks)

OR

- 8 a. Explain with examples, the process of opening, reading and writing text files in PHP. (10 Marks)
- b. Explain classes and objects in PHP with an example. (10 Marks)

### Module-5

- 9 a. Define Cookies. Explain the working of Cookies. (10 Marks)
- b. What is AJAX? Explain AJAX request by writing UML diagram. (10 Marks)

OR

- 10 a. Define jQuery. Explain jQuery selectors with the suitable example. (10 Marks)
- b. What is Caching? Explain two strategies used for Caching web applications. (10 Marks)

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