

Asha M. Tarsadia Institute of Computer Science and Technology

Uka Tarsadia University

B. Tech. Computer Science and Engineering (CSE)/ B. Tech. CE (Software Engineering)/
B. Tech. CSE (Cloud Computing, Cyber security, Artificial Intelligence and Machine
Learning)/ B. Tech Computer Engineering/ B. Tech Information Technology

Internal Examination - 1

(CE5018) - Data Communication and Networking

Maximum Marks: 30

Date: 12/09/2024

Timing: 09:00 AM to 10.30 AM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1 Answer the following in brief. (Any 5) 10

- 1 Enlist any *four* components of data communication.
- 2 Describe following types of network with diagram:
 - LAN,
 - PAN
- 3 Explain Mesh, Star, Bus and Ring physical topologies of network.
- 4 Explain ARP with diagram
- 5 Explain Hidden and Exposed terminal?
- 6 Define the following terms:
 - Throughput
 - Latency
 - Bandwidth-Delay Product

Q-2 Do as directed. (Any 4) 20

- 1 Write down the difference between OSI model and TCP/IP model.
- 2 Explain CSMA technique with its different methods.
- 3 Given the data word “100100” and the divisor “ x^3+x^2+1 ”, show the generation of cyclic redundancy check codeword at the sender site and receiver site.
- 4 What is multiplexing? Explain following multiplexing techniques:
 - i. WDM
 - ii. TDM
- 5 Explain Scatternet with diagram?

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Internal Examination - 1

(IT5039) - Web Technologies with .NET

Maximum Marks: 30

Date: 12/09/2024

Timing: 02:00 PM to 02.30 PM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1	Answer the following in brief. (Any 2)	10
1	Explain any five features of ASP.NET core.	
2	Differentiate server render UI and client render UI with example.	
3	Write code snippet to demonstrate use of Response Caching and Caching Data using IMemoryCache.	
Q-2	Do as directed. (Any 4)	20
1	Write necessary code snippet, explain endpoints and HTML rendering.	
2	How C# reduce duplication of using statement, Discuss with appropriate example.	
3	Explain String interpolation and collection initializer with code snippet.	
4	List and explain any five method of IDistributed Cache.	
5	Explain pattern matching using appropriate code snippet	

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Internal Examination - 1

(IT5040) – Cross Platform Mobile Application Development

Maximum Marks: 30

Date: 13/09/2024
Timing: 09:00 AM to 10.30 AM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1 Answer the following in brief. (Any 2)

10

- 1 What is flutter? Explain four major features of flutter.
- 2 What is the use of pubspec.yaml file? Explain at least four information from it.
- 3 List at least four material widgets and explain anyone with a necessary code snippet.

Q-2 Do as directed. (Any 4)

20

- 1 Describe the key components of the Flutter architecture.
- 2 Discuss the difference between Navigator 1.0 and Navigator 2.0 and their impact on app navigation.
- 3 What are the differences between a navigation state object and a URL parser in Flutter?
- 4 Write the Dart code to display a simple GridView with 6 items in 2 columns.
- 5 Explain how the ListView.builder() works and how it is different from a normal ListView.

**Asha M. Tarsadia Institute of Computer Science and Technology
Uka Tarsadia University**

B.Tech. Computer Science and Engineering (CSE)/CSE (AI & ML)/CE/IT

Internal Examination – 1

Subject Name: AI5012 - Machine Learning

Maximum Marks: 30

Date: 13/09/2024

Timing: 02:00 PM to 03:30 PM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1 Answer the following in brief. (Any 3) 6

- 1 Describe machine learning by referring the definition of Tom Mitchell using Task, Environment, and Performance.
- 2 Discuss three major applications of machine learning.
- 3 Describe qualitative data along with its types.
- 4 State three properties of probability with required notations.

Q-2 Answer the following in detail. (Any 2) 12

- 1 Explain complete step-wise process of machine learning with necessary block diagram.
- 2 Explain Bayes' theorem. Discuss the use of Bayes' for classification.
- 3 Discuss the need of probability in machine learning.

Q-3 Answer the following in detail. (Any 2) 12

- 1 Explain support vector machine.
- 2 Discuss decision tree classifier with an example.
- 3 Explain unsupervised learning and discuss k-means clustering.

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Learning)/ B. Tech Computer Engineering/ B. Tech Information Technology

Internal Examination - 2

(CE5018) - Data Communication and Networking

Maximum Marks: 30

Date: 24/10/2024

Timing: 09:00 AM to 10.30 AM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1	Answer the following in brief. (Any 2)	06
1	Define FTP.	
2	Describe Telnet.	
3	Describe HTTP and HTTPS.	
Q-2	Do as directed. (Any 2)	12
1	Write the difference between TCP and UDP.	
2	Explain Go-Back-N protocol and Selective-Repeat protocol.	
3	Explain three-way handshaking approach for TCP connection establishment and termination.	
Q-3	Do as directed. (Any 2)	12
1	Explain subnetting with an appropriate example.	
2	Describe DHCP with an appropriate example.	
3	Explain IPV6 addressing.	

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Learning)/ B. Tech Computer Engineering/ B. Tech Information Technology

Internal Examination -2

(IT5039) - Web Technologies with .NET

Maximum Marks: 30

Date: 24/10/2024
Timing: 02:00 PM to 03.30 PM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1	Answer the following in brief. (Any 2)	10
1	Discuss Web Services and give any two reasons why Web Services are required?	
2	Describe REST. Explain any two advantages of RESTful Web Services.	
3	Draw the diagram and discuss the <i>Service Provider</i> and <i>Service Registry</i> role of WebServices.	
Q-2	Do as directed. (Any 2)	10
1	Explain <i>Write()</i> and <i>WriteLiteral()</i> with respect to Razor view with appropriate examples.	
2	Explain the concept of <i>View Imports</i> with code snippet.	
3	Explain is convention routing with at least two different examples.	
Q-3	Do as directed. (Any 2)	10
1	Describe model binding. Discuss where the default model binder looks for data values and in which sequence.	
2	Explain implicit validation in ASP.NET Core with two basic checks performed by implicit validation.	
3	Explain binding complex data type with an example and code snippet.	

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Internal Examination -2

(IT5040) - Cross Platform Mobile Application Development

Maximum Marks: 30

Date: 25/10/2024

Timing: 09:00 AM to 10.30 AM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only.
4. Attempt all the questions.

Q-1	Answer the following in brief. (Any 2)	10
1	Describe when to use shared preferences. Write Dart code and justify your answer with an appropriate example.	
2	Describe the use of chopper package. Explain at least two advantages of Chopper compare to <i>http</i> package.	
3	Explain Dart code demonstrating use of <i>json_annotation</i> and <i>json_serializable</i> with appropriate code snippet.	
Q-2	Do as directed. (Any 2)	10
1	Draw the diagram and explain working of <i>Redux</i> and <i>BLOC</i> .	
2	Discuss state management using <i>Inherited Widget</i> with necessary code snippet.	
3	Describe <i>Riverpod</i> with any two limitations of Provider which are solved by <i>Riverpod</i> .	
Q-3	Do as directed. (Any 2)	10
1	Discuss how to store data in <i>SQLitedatabase</i> using <i>sqflite</i> package with Dart code snippet.	
2	Discuss <i>Moor</i> with any four advantages.	
3	Explain stepwise how to set app icon and launch screen in flutter app for deploying on Android platform.	

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B.Tech. Computer Science and Engineering (CSE)/CSE (AI & ML)/CE/IT

Internal Examination – 2

Subject Name: AI5012 - Machine Learning

Maximum Marks: 30

Date: 25/10/2024

Timing: 02:00 PM to 03:30 PM

General Instructions:

1. Take appropriate assumptions whenever necessary.
2. Figures on the right indicate full marks allocated to the questions.
3. Draw Diagrams/Figures with pencil/black ink pen only. ,
4. Attempt all the questions.

Q-1	Answer the following in brief. (Any 1)	6
1	What are Generative models? Explain with their applications.	
2	Write a note on memory based learning.	
Q-2	Answer the following in detail. (Any 2)	12
1	Discuss back-propagation learning algorithm with its network topology.	
2	Explain perceptron network with its learning algorithm.	
3	Write a note on Convolutional neural network. Draw its network topology and describe several layers of CNN.	
Q-3	Answer the following in detail. (Any 2)	12
1	Discuss logistic regression with its application.	
2	What are prior and posterior probabilities? Describe with a real-world example.	
3	Explain polynomial regression model.	

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B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) (Semester 5)
 CE5018(2023-24)/CE5018(2024-25)
 Data Communication and Networking

Date : 18/11/2024

Time : 9:30AM- 12:30PM

Max. Marks: 60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 A) Name two types of connections with diagram. [2]

Q 1 B) Write a short note on any two physical topologies of network. [4]

OR

Q 1 B) Discuss the functionalities of layers in TCP/IP protocol suite.

Q 2 Answer the following in detail. (Any 2) [12]

- I) Explain packet switching and message switching technique with example.
- II) Discuss virtual circuit and datagram network.
- III) Define multiplexing. Discuss various multiplexing techniques.

Q 3 Answer the following in detail. (Any 2) [12]

- I) Discuss ARP protocol with suitable example.
- II) Given the data word "101001111" and the divisor "10111", show the generation of cyclic redundancy check codeword at the sender site.
- III) Explain CSMA/CD technique in detail.

SECTION - 2

Q 4 A) Write full form of URL and HTTP. [2]

Q 4 B) Write a short note on e-mail. [4]

OR

Q 4 B) Discuss echo client programming using UDP in C.

Q 5 Answer the following in detail. (Any 2) [12]

- I) Discuss various services of transport layer.
- II) Explain working of piggybacking protocol.
- III) Write a short note on TCP segment format.

Q 6 Answer the following in detail. (Any 2) [12]

- I) Explain subnetting with an appropriate example.
- II) Describe DHCP along with the necessary diagram.
- III) Explain IPv4 datagram header format with necessary figure.

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B.Tech (Computer Engineering)/B.Tech (Information Technology)/B.Tech CE (Software Engineering)/B.Tech CSE/B.Tech CSE (AI&ML)/B.Tech CSE (Cloud Computing)/B.Tech CSE (Cyber Security) (Semester 5)
 IT5039(2023-24)/IT5039(2024-25)
 Web Technologies with .NET

Date : 20/11/2024

Time : 9:30AM- 12:30PM

Max. Marks: 60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in detail. (Any 2)

[10]

- I) Write and explain any five advantages of ASP.NET Core.
- II) Write and explain content of launchSettings.json file.
- III) With suitable example code snippet of controller, model, and view, explain validation.

Q 2 Answer the following.

[10]

- A) Create ASP.NET Core controller and demonstrate use of null conditional operator and null-coalescing operator.

OR

- A) Develop C# class and explain "async", "await" with appropriate example.
- B) Explain use of following CookieOptions properties:
- Domain
 - HttpOnly
 - Path
 - SameSite
 - Secure

OR

- B) Explain three advantages and two limitations of HTTPS.

Q 3 Answer the following in detail. (Any 2)

[10]

- I) Discuss the caching in ASP.NET with its usage. Elaborate its limitations.
- II) Discuss several steps to incorporate the CSS Framework.
- III) Compare *IMemoryCache* and *IDistributedCache* testing in a tabular form.

SECTION - 2

Q 4 Answer the following.

[10]

- A) Draw the diagram and explain "Service Provider" and "Service Registry" role of Web Services.

OR

- A) Write and explain command(s) to send POST request from powershell to Web API.
- B) What is asynchronous action? "ASP.NET Core asynchronous controller actions don't produce responses any faster". Discuss.

OR

- B) Analyze following code snippet and explain "restricting the format received by an action method".

```

[HttpPost]
[Consumes("application/json")]
public string SaveProductJson(ProductBindingTarget product) {
    return $"JSON: {product.Name}";
}

[HttpPost]
[Consumes("application/xml")]
public string SaveProductXml(ProductBindingTarget product) {
    return $"XML: {product.Name}";
}
  
```

Q 5 Answer the following.

[10]

- A) Analyse the following code and explain "pass data to views".

```
public IActionResult SomeAction()
{
    ViewData["Greeting"] = "Hello";
    ViewData["Address"] = new Address()
    {
        Name = "Steve",
        Street = "123 Main St",
        City = "Hudson",
        State = "OH",
        PostalCode = "44236"
    };

    return View();
}
```

OR

- A) Describe different attributes of a partial elements.

- B) Analyse the following code and explain "working with Layouts".

```
<!DOCTYPE html>
<html>
<head>
    <title>@ViewBag.Title</title>
    <link href="/lib/bootstrap/css/bootstrap.min.css" rel="stylesheet" />
</head>
<body>
    <h1 class="bg-primary text-white text-center m-2 p-2">
        @(ViewBag.Title ?? "Layout")
    </h1>
    @RenderBody()
</body>
</html>
```

OR

- B) Enlist the useful Razor page <T> members and explain any four of them.

Q 6 Answer the following in detail. (Any 2)

[10]

- I) What is model binding? Where default model binder looks for data values and in which sequence? Discuss.
- II) What is implicit validation in ASP.NET Core? With appropriate example, explain two basic checks performed by implicit validation.
- III) Draw the diagram and explain client-side validation and server-side validation.

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IT5040(2023-24)/IT5040(2024-25)
Cross Platform Mobile Application Development

Date :22/11/2024

Time :9:30AM- 12:30PM

Max. Marks:60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in detail. (Any 2)

[10]

- I) What is flutter? Explain four major features of flutter.
- II) Write sample code snippet and explain use of Scaffold, AppBar, SafeArea, and Container.
- III) Analyze the following code snippet and explain it:

```
return Scaffold(  
    appBar: AppBar(  
        title: Text(widget.recipe.label),  
, // AppBar  
    body: SafeArea(  
        child: Column(  
            children: <Widget>[  
                SizedBox(  
                    height: 300,  
                    width: double.infinity,  
                    child: Image(  
                        image: AssetImage(widget.recipe.imageUrl),  
, // Image  
, // SizedBox  
                const SizedBox(  
                    height: 4,  
, // SizedBox  
                Text(  
                    widget.recipe.label,  
                    style: const TextStyle(fontSize: 18),  
, // Text
```

Q 2 Answer the following.

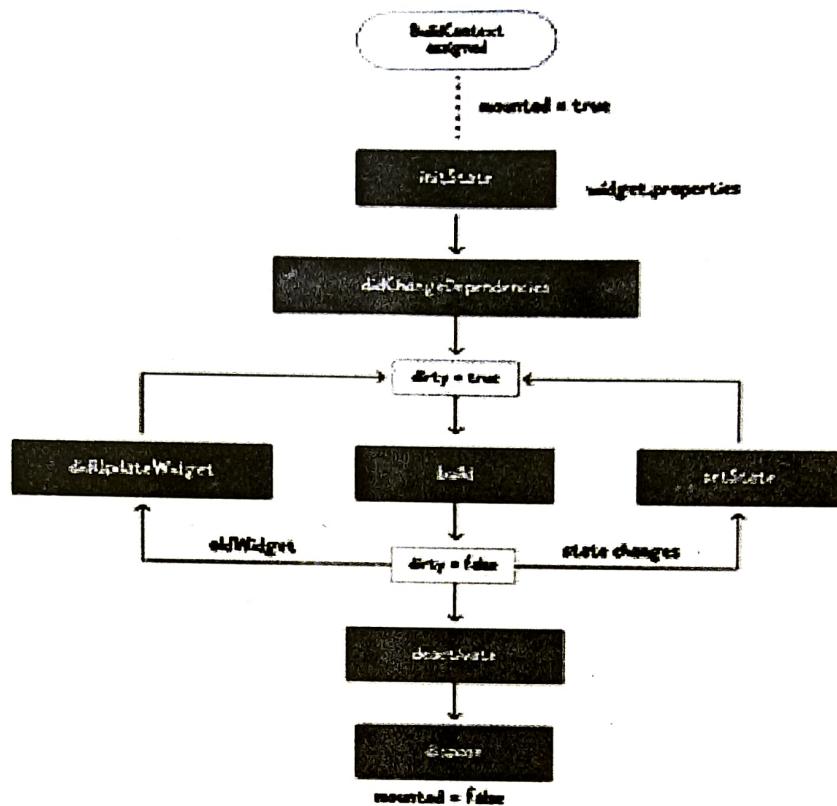
[10]

- A) List at least four layout widgets and explain any one with necessary code snippet.

OR

- A) Explain BottomNavigationBar of Scaffold with appropriate example and code snippet.

B) Analyze and explain the following diagram:



OR

B) What is Scaffold? Analyze and explain following code:

```
import 'package:flutter/material.dart';

// 1
class Home extends StatefulWidget {
  const Home({Key? key}) : super(key: key);
  @override
  _HomeState createState() => _HomeState();
}

class _HomeState extends State<Home> {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Fooderlich'),
        // 2
        style: Theme.of(context).textTheme.titleLarge!, /-
      body: Center(
        child: Text('Let\'s get cooking !',
          // 3
          style: Theme.of(context).textTheme.displayLarge!),
      ); // Scaffold
    );
}
```

Q 3 Answer the following in detail. (Any 2)

[10]

- I) Write sample code snippet and explain use of MaterialButton.
- II) Mr. Manoj is learning flutter development. He is struggling with adding dependency in the flutter project. Step-by-step explain, how he can add dependency in his flutter project. By mistake, Mr. Manoj has added older version of dependency. How to correct this mistake? Discuss.

- III) Which flutter package is useful if you want to provide color selection in your flutter project? Write code snippet and discuss.

SECTION - 2

Q 4 Answer the following in detail. (Any 2)

[10]

- I) When to use shared preferences? Write Dart code and justify your answer with appropriate example.
- II) What is JSON serialization? Write and explain Dart code demonstrating use of "json_annotation" and "json_serializable".
- III) Write and explain Dart code for a flutter application to download data from web API using http package and display on screen.

Q 5 Answer the following.

[10]

- A) Analyze and explain use of InheritedWidget from following code snippet:

```
class RecipeWidget extends InheritedWidget {  
    final Recipe recipe;  
    const RecipeWidget({super.key,  
        required this.recipe, required Widget child})  
        : super(child: child);  
  
    @override  
    bool updateShouldNotify(RecipeWidget oldWidget) =>  
        recipe != oldWidget.recipe;  
    static RecipeWidget? of(BuildContext context) =>  
        context.dependOnInheritedWidgetOfExactType<RecipeWidget>();  
}
```

OR

- A) With appropriate example and necessary code snippet, explain use of context.select<T, R>().

- B) When to use context.read<T>()? Analyze the following code snippet and explain usage of context.watch<T>().

```
class MyApp extends StatelessWidget {  
    const MyApp({super.key});  
  
    @override  
    Widget build(BuildContext context) {  
        final dateTime = context.watch<Clock>().dateTime;  
        final count = context.watch<Counter>().count;  
        return Center(  
            child: RichText(  
                text: TextSpan(  
                    text: "$dateTime\n\n$count",  
                    style: const TextStyle(fontSize: 36),  
                ), // TextSpan  
                textDirection: TextDirection.ltr,  
            ), // RichText  
        ); // Center  
    }  
}
```

OR

B) What is the use of ChangeNotifierProxyProvider? Analyze the following code and explain:

```
class MainApp extends StatelessWidget {
  const MainApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MultiProvider(
      providers: [
        Provider(create: (context) => CatalogModel()),
        ChangeNotifierProxyProvider<CatalogModel, CartModel>(
          create: (context) => CartModel(),
          update: (context, catalog, cart) {
            if (cart == null) throw ArgumentError.notNull('cart');
            cart.catalog = catalog;
            return cart;
          },
        ), // ChangeNotifierProxyProvider
      ],
      child: MaterialApp.router(
        title: 'Provider Demo',
        theme: appTheme,
        routerConfig: router(),
      ), // MaterialApp.router
    ); // MultiProvider
  }
}
```

Q 6 Answer the following in detail. (Any 2)

[10]

- I) Describe the concept of streams in Flutter and how they are used to handle asynchronous data flow. What are the two main types of streams.
- II) Describe how you would implement an SQLite repository in a Flutter app to interact with the database. Provide code examples demonstrating how you would perform CRUD (Create, Read, Update, Delete) operations using the repository.
- III) Discuss the role of databases in Flutter app development and why they are used for storing persistent data. What are the advantages of using a database over other storage solutions?

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B.Tech (Computer Engineering)/B.Tech (Information Technology)/
B.Tech CSE/B.Tech CSE (AI&ML)
(Semester 5)
AI5012(2023-24)/AI5012(2024-25)
Machine Learning

Date :25/11/2024

Time :9:30AM- 12:30PM

Max. Marks:60

Instructions :

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Draw diagrams/figures whenever necessary.
5. Figures to the right indicate full marks allocated to that question.
6. Follow usual meaning of notations/abbreviations.

SECTION - 1

Q 1 Answer the following in Detail (Any 2)

[6]

- I) State and define any two types of learning each with an example.
- II) What are qualitative data? Describe with an example.
- III) State the differences between dimensionality reduction and feature selection.

Q 2 Answer the following in detail. (Any 2)

[12]

- I) Write a note on lazy vs. eager learner.
- II) Explain F-measure with a necessary example.
- III) Discuss tuning of model parameter with an example.

Q 3 Answer the following in detail. (Any 2)

[12]

- I) Explain feature engineering.
- II) When can a feature be termed as irrelevant? How can it be measured?
- III) Write a note on feature subset selection.

SECTION - 2

Q 4 A) What are generative models? Discuss their applications.

[6]

OR

Q 4 A) Write a note on active learning.

Q 5 Answer the following in detail. (Any 2)

[12]

- I) Discuss partitioning with an example.
- II) Explain Hebb network with its learning algorithm.
- III) Write a note on Convolutional neural network.

Q 6 Answer the following in detail. (Any 2)

[12]

- I) Write a note on regression and describe polynomial regression.
- II) Discuss Naïve Bayes' classifier with an example.
- III) Discuss SVM along with its advantages and limitations.