MODULE 1 – THEORY ANSWERS

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1.WHAT IS A PROGRAM? (EXPLAIN IN YOUR OWN WORDS WHAT A PROGRAM IS AND HOW IT FUNCTIONS.)

A program is a set of instructions written to make a computer perform a specific task. For example, printing 'Hello World' on the screen.

2.WHAT IS PROGRAMMING? (WHAT ARE THE KEY STEPS INVOLVED IN THE PROGRAMMING PROCESS?)

Programming is the process of writing instructions (code) that a computer can understand and use to perform tasks.

3. TYPES OF PROGRAMMING LANGUAGES

Programming languages are:
- High-level: Easy to understand (e.g., Python, Java)
- Low-level: Close to machine language (e.g., Assembly)
- Scripting: For automation or small tasks (e.g., JavaScript)
- Object-Oriented: Uses objects and classes (e.g., Java, C++)

4. WORLD WIDE WEB & HOW INTERNET WORKS (इंटरनेट कैसे काम करता है?)

When we open a website, our browser sends a request through the internet to a server. The server sends back a response, and the website appears on the screen.

Client Request → DNS Resolution → Web Server Response → HTML Rendered in Browser

5. NETWORK LAYERS(नेटवर्क लेयर्स क्या होती हैं?)

Data travels through 4 main layers:
1. Application Layer
2. Transport Layer (TCP)
3. Network Layer (IP)
4. Link Layer

6. CLIENT AND SERVER COMMUNICATION(क्लाइंट-सर्वर संचार कैसे होता है?)

The client (like a browser) sends a request to the server. The server processes it and sends back data. This is how websites work.

7. TYPES OF INTERNET CONNECTIONS(इंटरनेट कनेक्शन के प्रकार)

- Broadband: Common and good speed
- Fiber: Very high speed, more expensive
- Satellite: For remote areas, slower and costly

8. PROTOCOLS (HTTP AND FTP)

- HTTP: Used to load websites
- HTTPS: Secure version of HTTP
- FTP: Used for uploading and downloading files

9. APPLICATION SECURITY(एप्लिकेशन को सुरक्षित कैसे रखा जाए?)

To keep apps safe, we use:
- Data encryption
- Input validation
- Strong login systems

10. SOFTWARE APPLICATIONS AND ITS TYPES(सॉफ्टवेयर के प्रकार)

- System Software: Runs the computer (e.g., Windows)
- Application Software: Does user tasks (e.g., MS Word)
- Utility Software: Supports the system (e.g., antivirus, file manager)

11. SOFTWARE ARCHITECTURE(सॉफ़्टवेयर आर्किटेक्चर क्या होता है?)

Software architecture is how a software system is organized into parts like UI, logic, and database.

User Interface → Business Logic Layer → Data Access Layer

12. LAYERS IN SOFTWARE ARCHITECTURE(सॉफ़्टवेयर लेयर क्यों जरूरी हैं?)

- Presentation Layer: What users see
- Business Logic Layer: Main processing
- Data Access Layer: Works with data and database

13. SOFTWARE ENVIRONMENTS(सॉफ़्टवेयर एनवायरनमेंट्स क्या होते हैं?)

- Development: For writing code
- Testing: For checking the software
- Production: Where real users use it

14. SOURCE CODE(SOURCE CODE और MACHINE CODE में फर्क?)

Source code is written by programmers. It is converted to machine code which the computer understands.

15. GITHUB AND INTRODUCTIONS

GitHub is an online platform to store code, share it, and work with teams.

16. STUDENT ACCOUNT IN GITHUB

Students can create free accounts on GitHub, learn to code, build projects, and collaborate.

17. TYPES OF SOFTWARE

- Open-source: Free and source code is public (e.g., Linux)
- Proprietary: Paid software, code is private (e.g., Windows)

18. GIT AND GITHUB TRAINING(GIT टीमवर्क में कैसे मदद करता है?)

GIT is a version control tool that helps manage code changes and teamwork.

19. APPLICATION SOFTWARE(: WHAT IS THE ROLE OF APPLICATION SOFTWARE IN BUSINESSES?)

Application software like Excel or Tally makes office and business work easier.

20. SOFTWARE DEVELOPMENT PROCESS

Steps to build software:
1. Requirement Gathering
2. Design
3. Development
4. Testing
5. Deployment
6. Maintenance

21. SOFTWARE REQUIREMENT(REQUIREMENT ANALYSIS क्यों जरूरी है?)

Requirement analysis helps us understand what the client or user wants before building the software.

22. SOFTWARE ANALYSIS(सॉफ़्टवेयर ANALYSIS का काम क्या होता है?)

Software analysis identifies the features and functions the software must have.

23. SYSTEM DESIGN(SYSTEM DESIGN के मुख्य भाग क्या हैं?)

System design shows how software will handle inputs, process them, and give outputs.

24. SOFTWARE TESTING

Testing ensures that the software works correctly and finds any bugs.

25. MAINTENANCE (SOFTWARE MAINTENANCE कितने प्रकार की होती है?)

Software maintenance means fixing bugs, improving performance, or adding new features.

3 types:

1. Corrective: Fixing bugs

2. Adaptive: Adapting to the new system

3. Perfective: Making the software even better

26. DEVELOPMENT(WEB और DESKTOP ऐप्स में अंतर क्या है?)

- Web App: Runs on the internet, no need to install
- Desktop App: Installed on a computer, works offline

27. WEB APPLICATION(WEB APP के फायदे क्या हैं?)

Web apps work on any device, can be updated easily, and do not need installation.

- **Web apps can run on any device**
- **They are easy to update**
- **No installation is required**
- **Users can access them from anywhere**

28. DESIGNING(UI/UX DESIGN का रोल क्या होता है?)

UI/UX design makes the app look good and easy to use.

29. MOBILE APPLICATION(NATIVE और HYBRID ऐप में फर्क क्या है?)

- Native App: Built for one platform (like Android)
- Hybrid App: Works on many platforms

30. DFD – DATA FLOW DIAGRAM

DFD shows how data flows in a system – where it comes from, how it's processed, and where it goes.

External Entity → Input Processing → System Transformation → Data Store

31. DESKTOP APPLICATION

Desktop apps are installed and work without internet, but need to be installed on each device.

32. FLOW CHART

A flowchart shows steps of a process clearly in diagram form. It helps understand the logic.

Start → Input → Conditional → Process → Output → End