(Part-I)

2. Write short answers to any FOUR (4) questions: (8)

(i) What does flow line work in flowchart?

Ans It is used to determine the flow of steps in a flowchart.

(ii) Write advantages of an algorithm.

Ans Following are the advantages of an algorithm:

1. Easy to write.
2. Techniques to write an algorithm are easy to understand.
3. To solve a large problem, algorithms are helpful.

(iii) Differentiate between validation and verification.

Ans Validation means to test if the solution is according to given problem. On the other hand, verification means whether the solution is giving the required results or not.

(iv) What do you know about decimal number system?

Ans The decimal number system has base 10 as it uses ten digits [0-9]. Each position represents a specific power of base 10.

(v) Convert $(1000001)_2$ to decimal number.

Ans
$$= 1 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$$
$$= 64 + 0 + 0 + 0 + 0 + 0 + 1$$
$$= (65)_{10}$$

(vi) Differentiate between bit and byte.

Ans The smallest amount of data to be stored in computer's memory is a 0 or 1. It is called a **bit**, while a collection of eight bits is called a **byte**.

3. Write short answers to any FOUR (4) questions: (8)

(i) Draw truth table for AND operator.

Ans

P	Q	P AND Q
T	T	T
T	F	F
F	T	F
F	F	F

(ii) What do we get by negating a negative proposition?

Ans By negating a negative proposition, we get a positive proposition. For example,

- P = It is sunny today.
- ¬P = It is not sunny today.
- ¬¬P = It is sunny today.

Similarly,

- Q = It is not Friday today.
- ¬Q = It is Friday today.
- ¬¬Q = It is not Friday today.

(iii) Differentiate file server and workstation.

Ans A computer providing the storage is called file server; and the computer accessing that space is called a workstation.

(iv) Define multipoint connection.

Ans In multipoint connection, there is a link between a sender and multiple receivers. So, more devices can share a single link. For example, in a Wi-Fi-based network, a single link is shared among multiple devices.

(v) What is ring topology?

Ans A ring topology connects a computer with exactly two other computers forming a ring of computers. A computer can send data to its immediate neighbour. A ring can be unidirectional or bidirectional. In a unidirectional ring topology, data is sent either clockwise or anticlockwise. In a bidirectional ring topology, data can travel in any direction.

(vi)   Define file transfer protocol (FTP).

Ans File Transfer Protocol is the standard TCP/IP protocol, which is used for the purpose of transferring files from one computer to another.

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4.   Write short answers to any FOUR (4) questions: (8)

(i)   What is copyright law?

Ans Copyright is different from a patent as copyright law says that some idea or product cannot be copied. The rights are reserved for copying. Usually, if a product is copyright protected, then we see a symbol of copyright.

(ii)   What do you mean by ciphertext?

Ans Encoding means conversion of the data to an unreadable format which is called ciphertext. Key is needed to read it.

(iii)   Define cyber crime.

Ans A crime in which computer network or devices are used is called a cyber crime.

(iv)   How much tags does an HTML document consist of?

Ans An HTML document primarily consists of two sections:

   1. Head Section   2. Body Section

(v)   Describe an unordered list in HTML.

Ans In an unordered list, the order of the list items is not important. In other words, shuffling of items in an unordered list has no effect. For example, list of cities in Pakistan. An unordered list is created inside the <ul> tags. Each list item is added with <li> tag.

(vi)   How to create a graphical hyperlink?

Ans You can also use an image as a hyperlink, by using the <img> tag inside the <a> tags. We can see this in the following example:

   An image that is a hyperlink:

```
<a href="https://www.google.com">
<img src="smiley.gif" alt="Go to google!" width="50"
                               height="50" border="1">
</a>
```
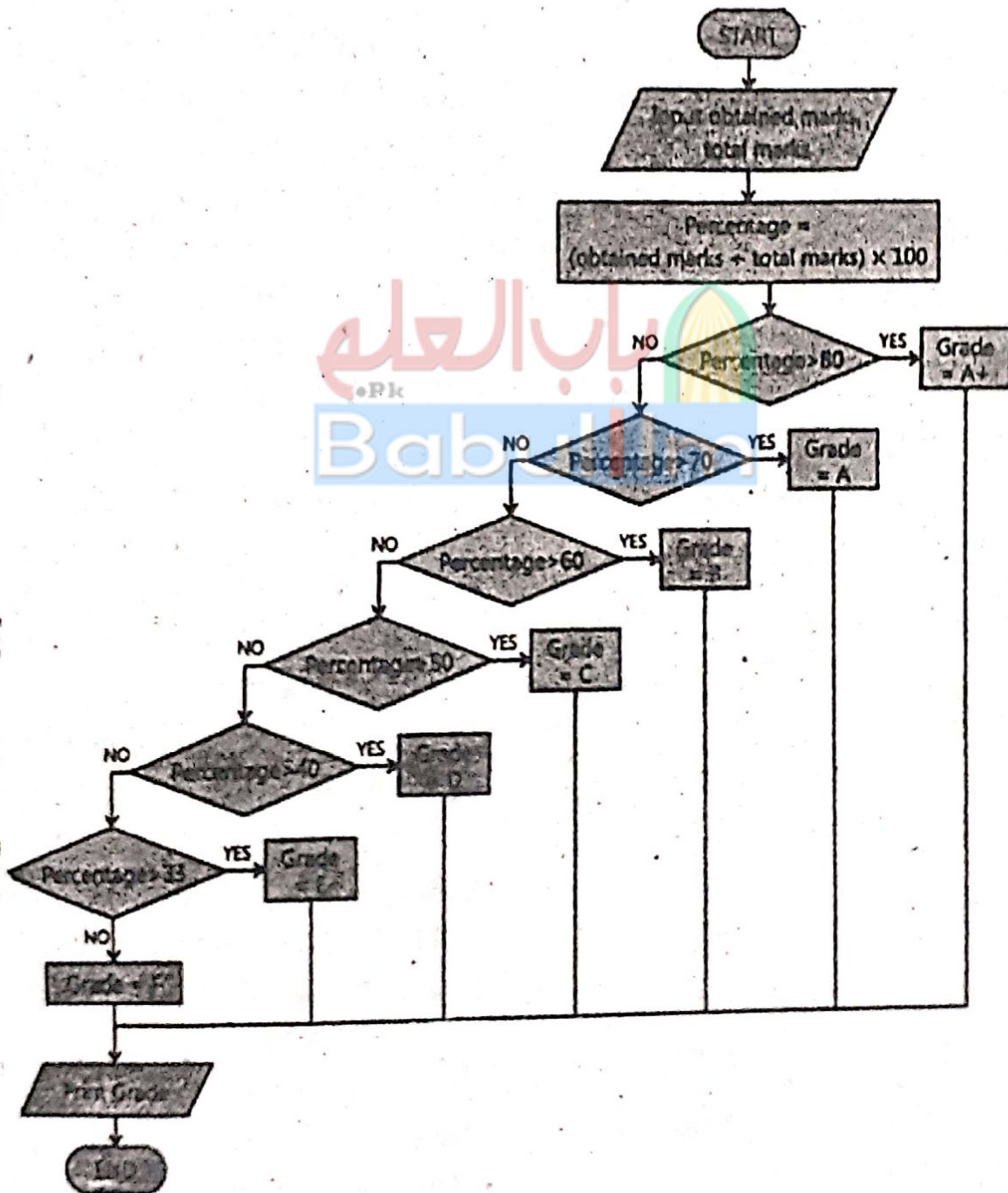
(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5. Draw a flowchart to assign grade to a subject based as total marks and obtained marks. (8)

Ans

Q.6. Differentiate between postal system and layered network. (8)

Ans

Postal System	Layered Network
In which a letter, you consider only writing proper message without concerning about the names of the post office staff who will handle the envelope. Moreover, you do not need to know the details of the mail delivery system. You simply put it in an envelope and write the street address.	While chatting you are concerned only about the message without bothering about the kind of network, *i.e.,* wireless or wired. This is called application layer where you type a message and send on the network. The address of the receiving device is provided in the form of header before message content.
You write sender and receiver information over the envelope and put it in the letterbox. If the address is incomplete, you may get your letter back. If everything is fine, you simply trust on the postal system. The name of the specific person is mentioned who can open and read the letter.	Transport layer establishes connection between a client and a server. It tries to send message but if there is some error like your computer is disconnected from the network, then it informs the application program. If the network is fine, then the application trusts the transport layer that the message will reach at its destination. At this stage, port number is added with message header for indication of specific application at destination. A port number is used to identify the application which can accept a message.
A letter is moved to other city (Islamabad in this example) by road or air.	A program running on the network layer moves the data to the other network. So, a chat message is transferred to other Wi-Fi router of your friend from where it is

	delivered to your friend and he/she can see it on screen.
Handling of letters is same either if they are letters with photographs, Eid card, or containing text, etc.	A network handles all messages in the same way either if they are emails, pictures, or voice messages, etc.
Bikes or vans may carry your letter from letterbox to general post office.	Data link layer sends a message to the server connected with sender. If you are chatting at home with a Wi-Fi connection, then the data link layer sends message from your computer to the Wi-Fi router.
For your letter delivery, there is usage of roads, train tracks and may be airlines.	Physical layer is about the physical medium used in communication, like cabling etc.

Q.7. Write the characteristics of a phishing attack. (8)

Ans **Characteristics of a Phishing Attack:**

Phishing is the fraudulent attempt by sending emails to obtain sensitive information such as usernames, password and credit card details.

• **Characteristics of Phishing Emails:**

1. It normally appears as an important notice, urgent update or alert. The subject of such email is set in a way that the email recipient believes that the email has come from a trusted source.

2. It sometimes contains messages that sound attractive rather than threatening e.g., promising the recipients a prize or a reward.

3. It normally uses forged sender's address. For example, admin@facebook.com, info@gmail.com. etc. You can also open an email if it is from principal@yourschool.edu.pk. In email, there can be some link that has no relation with your school. So, while filling online forms, take care of the URL (Uniform Resource Locator) appearing in the address bar of the web browser.

4. It usually takes contents such as logos, images from the actual website to make the fraudulent email look like a genuine email.

5. It may contain a form for the recipient to fill in personal/financial information and let recipient submit it. This information is submitted to a different database.

- **Characteristics of a Phishing Website:**

1. It looks like original due to same contents such as images, texts, logos, colour scheme, etc.

2. It may contain actual links to web contents of the legitimate website such as contact us, privacy or disclaimer to trick the visitors.

3. It may use similar name as that of the actual website.

4. It may use forms to collect visitors' information where these forms are similar to those in the legitimate website.