

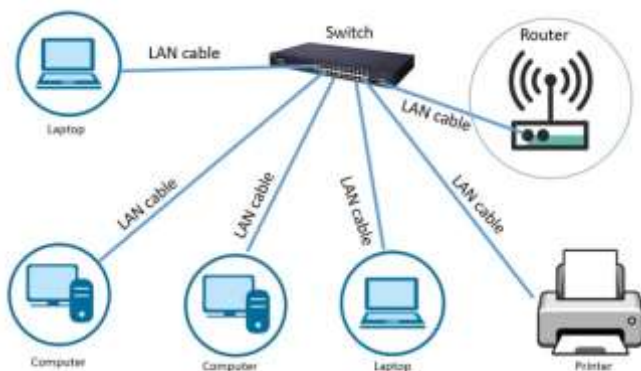
Model Paper 04 – MCQ Marking Scheme

1) 2	2) 3	3) 2	4) 3
5) 3	6) 1	7) 3	8) 2
9) 1	10) 1	11) 1	12) 3
13) 4	14) 4	15) 3	16) 3
17) 4	18) 4	19) 3	20) 4
21) 2	22) 3	23) 3	24) 1
25) 4	26) 1	27) 2	28) 1
29) 4	30) 4	31) 2	32) 3
33) 2	34) 4	35) 3	36) 3
37) 2	38) 1	39) 2	40) 1

Q1 –

A **device driver** is essential for enabling the operating system to communicate with hardware components like printers, graphic cards, and sound devices. Without drivers, the hardware cannot function properly. Other options (word processor, image editor, antivirus) rely on hardware and drivers being operational first.

Q4 –



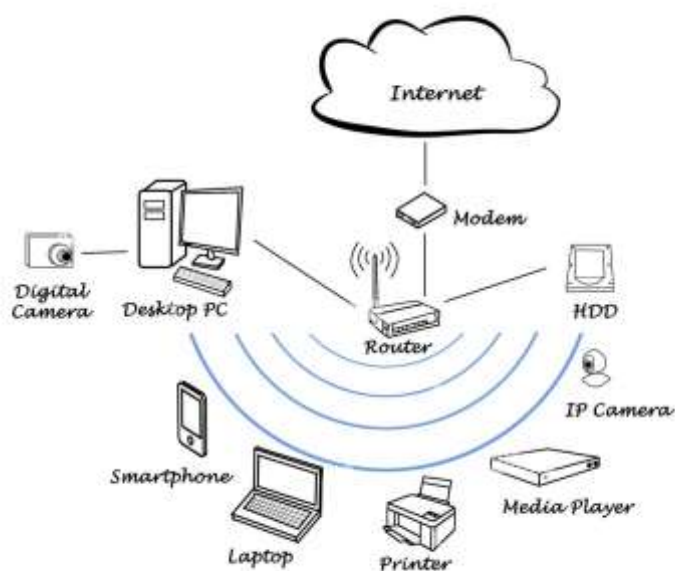
Local Area Network

Q5 –

💡 What is a Modem?

A **modem** (short for *modulator-demodulator*) is a device that:

- **Modulates** digital signals from a computer into analog signals to send over telephone lines.
- **Demodulates** incoming analog signals from the telephone line back into digital signals that your computer can understand.



2

☎ Why is a modem required for telephone lines?

Telephone lines were originally designed to carry **analog voice signals**, not digital data. So when you're accessing the Internet via a telephone line (e.g., in **DSL** or older **dial-up** connections):

- The **modem acts as a translator** between your digital device and the analog telephone network.
- Without a modem, your computer can't "talk" to the internet through the phone line.

💻 Summary:

Device	Function
Modem	Converts digital data to analog (and vice versa) for telephone lines
Router	Distributes internet to multiple devices (needs a modem first)
Switch	Connects multiple computers in a LAN (no internet access function)
Repeater	Boosts signals to extend network range (not used for internet access)

So, in telephone line-based internet access, the modem is **essential**.

Q8 –

Let's calculate the **total file size** to determine the **minimum USB flash drive size** Amal needs.

 Given File Sizes:

- presentation.pptx = **15 MB**
- photo.png = **2.3 MB**
- database.accdb = **120 MB**
- audio.mp3 = **900 MB**

 Total Size:

$$15 + 2.3 + 120 + 900 = 1037.3 \text{ MB}$$

 Convert to GB:

$$1 \text{ GB} = 1024 \text{ MB} \quad 1 \text{ GB} = \frac{1037.3 \text{ MB}}{1024} \approx 1.013 \text{ GB}$$

 Minimum Flash Drive Size:

Since 1 GB (1024 MB) is **just below** the total (1037.3 MB), **2 GB** is required to store all files safely.

 Final Answer: (2) 2 GB

 Reason: The total file size is slightly more than 1 GB, so a **2 GB USB drive** is the **smallest size** that can store all the files without exceeding the limit.

3

Q9 –

Both statements are correct because computers store characters and symbols using binary codes, and ASCII and Unicode are examples of such coding standards; therefore, Q gives relevant examples that support P, making option (1) the correct answer.

Q10 –

The correct answer is **(1)** because all listed items — Microsoft Word (word processor), GIMP (image editor), VLC Media Player (media player), and FileZilla (FTP client) — are **application software used to perform specific user tasks**, whereas the other options include **operating systems** like Windows, Ubuntu, Linux, Android, or MacOS, which are system software.

Q11 –

The correct answer is **(1)** because the icon with the left-pointing arrow represents the **Undo** function, which reverses the last action—such as accidentally deleting a table—restoring it immediately.

Q12:

The shortcut to **cut** selected text is **Ctrl+X**, and to **paste** it at a new location is **Ctrl+V**. Therefore, the correct answer is **(3) Ctrl+X and Ctrl+V**.

Q13:

In spreadsheets, **column names are made of letters only** (e.g., A, B, C, AA). Items like "C3" or "M9" are **cell references**, not column names. Also, "12A" is invalid because it contains numbers, and "D\$4" is also invalid because it includes a row number and the \$ symbol.

Q14:

- **I** is wrong → $\text{=MAX}(B2:E2, B3:E3, \dots)$ finds the max value from individual cell ranges, not the total per student.
 - **II** is wrong → $\text{=MAX}(B2+B3+\dots, C2+C3+\dots)$ finds the highest total **per column**, not per student.
 - **III** is correct → $\text{=MAX}(B2+C2+D2+E2, \dots)$ calculates totals for each student, then finds the highest.
- ✓ **Answer: Only III** → This matches (2) **I and III only** being wrong, so the correct option is **III only** (but since your choices are combined, correct one is (2) if it says "I and III only" is wrong—need to verify list).

Q15:

- \$ before row **locks the row number**, so G\$1 always points to row 1, even if copied.
 - Copying the formula from **F2** to **F4** changes row numbers for the B, C, D, E references, but keeps the row numbers in G fixed.
 - Result in **F4**:
 $\text{=(B4 * G\$1/100) + (C4 * G\$2/100) + (D4 * G\$3/100) + (E4 * G\$4/100)}$
- ✓ **Answer: (1)**

Q16 –



1. Content Planning

- **Define Your Purpose:** What is the goal? (Inform, persuade, educate, etc.)
- **Know Your Audience:** Tailor content based on age, knowledge level, and interests.
- **Structure Clearly:**
 - **Introduction:** Brief overview or agenda
 - **Body:** Main points, arguments, or findings
 - **Conclusion:** Summary and call to action (if needed)



2. Slide Design Principles

Feature	Best Practice
Slide Layout	Use consistent layouts and spacing
Fonts	Use readable fonts like Calibri, Arial, or Segoe UI (min size: 24pt)
Colors	Stick to 2–3 professional colors (use contrast: dark text on light background or vice versa)
Alignment	Keep text and visuals aligned for a clean look
Whitespace	Don't overcrowd—leave space to reduce cognitive load



3. Visual Elements

- Images: Use high-resolution, relevant visuals or icons
- Charts/Graphs: Simplify data visuals for clarity
- Icons: Use for visual interest and to reduce text
- Animations: Use subtle transitions (avoid excessive effects)



4. Text Content

- Keep it Concise: Use bullet points or short phrases

- Use Keywords: Avoid long paragraphs
- Highlight Key Terms: Bold or color important phrases
- Avoid Jargon: Unless you're sure the audience understands

5. Professionalism

- Use Company Branding: Logo, brand colors, fonts (if applicable)
- Consistent Format: Same title font, body font, alignment throughout
- Proofread: Eliminate grammar/spelling errors

6. Presentation Readiness

- Include a Cover Slide: With title, your name, and date
- Agenda Slide: Helps audience know what to expect
- Conclusion Slide: Recap key points or leave with a thought-provoking idea
- Q&A Slide: Invite questions from audience
- Backup Slides: Prepare extra data or explanations for potential questions

7. Tools for Polish

- Presenter Notes: Use for internal reminders
- Laser Pointer or Highlight: Focus attention
- Rehearse Timings: Stay within time limits

Bonus Tips:

- Follow the 6x6 Rule: No more than 6 bullet points per slide, 6 words per bullet.
- Include slide numbers if it's a formal setting.
- Use slide master to maintain consistent design.

17. (4) Book_ID + Supplier_ID — PURCHASE needs a unique row per book–supplier pair; that **composite key** uniquely identifies each purchase record (price is just an attribute).

18. (4) Supplier_ID in the PURCHASE table — it's a foreign key that links PURCHASE → SUPPLIER (similarly, Book_ID in PURCHASE links to BOOK, but from the options pick one).

19. (3) PURCHASE table only — SUP104 already exists in SUPPLIER; to record buying BK104 ("Web Development") from SUP104 you add a row in PURCHASE with Book_ID, Supplier_ID, and price.

20. (4) All A, B and C — foreign keys relate tables (A), a primary key is unique and non-null (B), and a composite key uses multiple columns for a unique identifier (C).

Q20 –

Answer: (4) All A, B and C

Explanation:

All three are accurate:

- A **foreign key** connects related data across tables.
- A **primary key** must be unique and not null to identify records.

- A **composite key** combines multiple fields to uniquely identify records when a single field isn't sufficient.

21. To calculate the angle of each slice, we only need the *total number of slices required* and the *total degrees in a circle*. The number of people attending is not directly necessary, because even if there are more or fewer people, the calculation of the angle depends only on how many slices the pizza is divided into. Since a circle has 360° , the program divides 360 by the number of slices to get the angle of each slice. Therefore, the correct inputs are **B and C only** → **option 2**.

22. A task that requires both repetition (looping) and selection (decision-making) is **calculating the factorial of a number only if it is positive**. This is because the program first needs to *check* (selection) whether the number is positive, and if it is, then it must *repeat* a process (multiplying numbers from 1 up to that number) to find the factorial. The other options use either repetition alone or selection alone, but not both together. Therefore, the answer is **option 3**.

24. The expression is $(6 + 4) * 3 - 18 \text{ div } 3$. First, inside the brackets: $6 + 4 = 10$. Then $10 * 3 = 30$. Next, $18 \text{ div } 3$ means integer division, which is 6. Finally, $30 - 6 = 24$. So the answer is **24** → **option 1**.

Step	Operation	Result
1	Brackets: $6 + 4$	10
2	Multiply: $10 * 3$	30
3	Integer div: $18 \text{ div } 3$	6
4	Subtract: $30 - 6$	24

25. The code starts with $x := 2$. The loop runs while $x < 12$. Inside the loop, x increases by 3 each time: $2 \rightarrow 5 \rightarrow 8 \rightarrow 11 \rightarrow 14$. When $x = 14$, the condition $x < 12$ becomes false, so the loop stops, and `writeln(x)` prints 14. Therefore, the answer is **14** → **option 2**.

Iteration	x (before)	Condition $x < 12$	Update $x := x + 3$	x (after)
start	2	true	+3	5
2	5	true	+3	8
3	8	true	+3	11
4	11	true	+3	14
5	14	false	—	14

26. The loop runs for $i := 1$ to 5. Inside, it checks if $i \bmod 2 \neq 0$ (which means if i is odd). The odd numbers from 1 to 5 are 1, 3, and 5. These get printed without spaces, so the output is **135** → **option 1**.

i	$i \bmod 2 \neq 0$ (Odd?)	Printed So Far
1	true	1
2	false	1
3	true	1 3
4	false	1 3
5	true	1 3 5

27. When `score = 35`: it is not ≥ 40 , but it is ≥ 30 , so output is “Good”. When `score = 15`: it is not ≥ 40 , not ≥ 30 , not ≥ 20 , so it falls into the last `else` and prints “Poor”. Therefore, the outputs are “Good” and “Poor” → **option 2**.

Score	Check ≥ 40	Next ≥ 30	Next ≥ 20	Output
35	No	Yes	—	Good
15	No	No	No	Poor

28. In Pascal, arrays start at the first index given and end at the last index given. Here the array is declared as `marks: array[1..10]`, so the first element is `marks[1]` and the last element is `marks[10]`. Therefore, the answer is `marks[10]` → **option 1**.

Index Range	First Element	Last Element
1 .. 10	<code>marks[1]</code>	<code>marks[10]</code>

29. Statement A is correct because a compiler converts high-level language into machine code. Statement B is correct because Pascal is indeed a structured language. Statement C is also correct because an interpreter runs code line by line without compiling it into machine code first. Since all three are correct, the answer is **All A, B and C** → **option 4**.

Q29 –

Answer: (4) All A, B and C

✓ Explanation:

- A **compiler** does translate high-level code to machine code.
- **Pascal** is indeed a structured programming language.
- An **interpreter** executes code line-by-line without producing machine code first.

Summary Table

Feature	Compiler	Interpreter
Translation	Whole program at once	Line-by-line
Speed	Faster (after compiling)	Slower
Error Handling	Shows errors after full compile	Shows errors instantly
Examples	C, C++, Pascal	Python, JavaScript, PHP

30. In the software development lifecycle, *Design* involves creating diagrams and system architecture, *Implementation* means writing and integrating code, *Testing* is about trial runs and fixing bugs. But *Deployment* does not involve requirement gathering or feedback analysis; deployment means releasing the software to users. Requirement gathering belongs to the *Analysis* stage. So the incorrect match is **Deployment** → **feedback analysis, requirement gathering** → **option 4**.

31. A URL (Uniform Resource Locator) is not limited to homepages and does not always start with “www”. A correct URL contains the protocol (like `http` or `https`), the domain name (like `example.com`), and may also include a path to a specific page or file. This means the correct answer is **option 2**.

32. A DNS (Domain Name System) server does not host websites; instead, it translates a domain name (like `google.com`) into its IP address. A web server, on the other hand, stores and provides the actual web pages when requested. Therefore, the correct statement is that a DNS server provides the IP address, and a web server delivers the web page → **option 3**.

33. Spreadsheet files use extensions like `.ods` and `.csv`, audio files use `.wav` and `.flac`, and video files use `.mp4` and `.mov`. The other options mix up file types incorrectly. So the correct matching is **option 2**.

34. A raster image is made of pixels, and when it is enlarged from $3'' \times 3''$ to $6'' \times 6''$, both the width and the height are doubled. This means the total area increases by $2 \times 2 = 4$ times. Therefore, the number of pixels becomes $4N$. The answer is **option 3**.

35. Vector images can be scaled without losing quality, and raster images are made of pixels and lose clarity when enlarged too much. The incorrect statement is that “vector images are preferred for high-resolution photographs” because photographs are better stored as raster images, not vector. So the incorrect statement is **option 3**.

36. In audio editing software like Audacity, reducing background noise requires first selecting a small part of the audio that contains only the noise, then going to the *Effects* menu and choosing *Noise Reduction*. This helps the software recognize and remove that background noise from the entire track. The other options like Amplify, Normalize, or Export do not reduce noise. Therefore, the correct answer is **option 3**.

37. The resolution of the grayscale image is 300×300 pixels. Since each pixel needs 1 byte, the total size = $300 \times 300 = 90,000$ bytes. Therefore, the correct answer is **option 2**.

38. The list shown with bullet points (`• Biology, • Chemistry, • Physics`) is an unordered list in HTML. This is written using the `<ul>` tag (unordered list) with each item inside `<li>` tags (list item). So, the correct tag pair is **option 1**.

39. A web page is accessed through a *link (P)*, and users view and interact with it using a *browser (Q)*. The data is transmitted using *HTTP (R)*, and to make a website live, it must be stored on a *server (S)*. So, the correct replacement sequence is **option 1**.

40. To reduce e-waste, it is better to donate working devices to others and to upgrade software instead of unnecessarily buying new hardware. Buying new devices every time a new model is released actually increases e-waste. So the actions that help are **A and B only** → **option 1**.

Part II

Q1 –

(i)

- The **fastest route** between any two towns. **(1.0)**
- The **estimated travel time** between towns. **(1.0)**

Example:

Travel time from M to N = Distance / Speed = 30 km / 60 km/h = **0.5 hours**

(ii)

- (a) DisplayPort cable end → **D (0.5)**
- (b) Lightning cable end → **B (0.5)**
- (c) USB Type-C cable end → **E (0.5)**
- (d) DVI cable end → **A (0.5)**

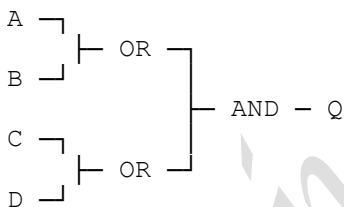
(iii)

- **Binary of 58₁₀** → 111010
- **Hexadecimal of 250₁₀** → FA

(iv) Use:

- **2 OR gates** → One for (A + B), one for (C + D)
- **1 AND gate** → To combine the output of the two OR gates

Diagram (Text format):



(v) **Given List:**

1 - Operating System
3 – Speakers

2 - Audio Editing Software
4 - Hardware

Diagram Labels:

- A → B
- C → D

Correct replacement:

- A → 1 (Operating System) **(0.5)**
- B → 2 (Audio Editing Software like Audacity) **(0.5)**
- C → 4 (Hardware, e.g., sound card, processing unit) **(0.5)**
- D → 3 (Speakers) **(0.5)**

✓ **Final Answer:**

A → 1, B → 2, C → 4, D → 3

(vi) **Scenario Summary:**

- Power on the computer
- Use spreadsheet application
- Open a web browser
- Shut down

List:

- 1 - Web Browser
- 2 - Operating System
- 3 - Spreadsheet Application
- 4 - Power-On Self Test

Correct Order (Based on flow: A → B → C → D → E):

- A → 4 (Power-On Self Test)
- B → 2 (Operating System) (0.5)
- C → 3 (Spreadsheet Application) (0.5)
- D → 1 (Web Browser) (0.5)
- E → 2 (Operating System again, for shutdown) (0.5)

✓ **Final Answer:**

A → 4, B → 2, C → 3, D → 1, E → 2

(viii) (a) ✓ **Answer:**

Wireframes are simple visual guides or blueprints used during the design phase of software development to outline the layout and structure of a user interface without focusing on visual design or content details. (1.0)

(b) Given:

System Analysis → Implementation → A → B → Evaluation

✓ **Answer:**

- A → **Testing** (0.5)
- B → **Maintenance** (0.5)

(ix) (a) ✓ **Answer:**

2001:0db8:85a3:0000:0000:8a2e:0370:7334

(or simplified: 2001:db8:85a3::8a2e:370:7334)

(b) A - **True** ✓

B - **False** ✗ (Reply sends only to sender; "Reply All" sends to all recipients)

C - **False** ✗ (Emails can end with other domains like .org, .net, .edu, etc.) (2.0)

(x) (a) ✓ **Answer:**

Scan the USB drive for viruses/malware before and after use. (1.0)

(b) ✓ **Answer:**

Follow the 20-20-20 rule – every 20 minutes, look at something 20 feet away for 20 seconds. (1.0)

Q2 –

(i) Cell E5 formula:

To calculate total amount = Quantity × Unit Price

✓ =C5*D5 (1.0)

(ii) (a) Cell E9 – Total Income:

✓ =E5+E6+E7 / =SUM(E5:E7) (1.0)

(b) Cell E17 – Total Expenses:

✓ =E11+E12+E13+E14+E15 / =SUM(E11:E15) (1.0)

(iii) Cell E19 – Net Income:

✓ =E9 - E17 (1.0)

(iv) Formula to repeat value 25 in C5 and C11:

✓ =C2

(Assuming c2 contains the number of schools, which is 25) (1.0)

(v) Formatting types:

- E21 (46.7%) → ✓ 4 - Percentage (1.0)
- D1 (Friday, May 23, 2025) → ✓ 1 - Date (1.0)

(vi) (a) Bar chart is suitable for displaying total amounts of **different Income and Expense components** (1.0)

(b) Pie chart is suitable for displaying the total amounts of the different **Income components as percentages** (1.0)

(vii) Formula:

= D11 * C5 / 2 + (E12 - C6^2)

Values:

- D11 = 200
- C5 = 25
- E12 = 45000
- C6 = 1

Substitute:

= 200 * 25 / 2 + (45000 - 1^2)
= 5000 / 2 + (45000 - 1)
= 2500 + 44999

✓ **Final Result:** 47499 (1.0)

Q3 –

(i)

- MEMBER → (M005, Ethan) (1.0)
- BORROW → (B002, M005, 10/02/2025) (1.0)

(ii) You need to join the following **three tables**:

☒ BOOK, BORROW, and MEMBER (1.0)

Join condition:

- BOOK.B_id = BORROW.B_id (0.5)
- BORROW.M_id = MEMBER.M_id (0.5)

(iii) ☒ BOOK table (1.0)

Because the borrow duration is defined **per book**, not per borrow or member. (1.0)

(iv) ☒ BORROW table (1.0)

Because each borrowing transaction needs its own return date. (1.0)

(v) To manage librarians by genre **without data duplication**:

(a) ☒ Table Name: LIBRARIAN_GENRE

Fields:

- Genre
- Librarian_name
- Librarian_contact (1.0)

(b) No changes needed to existing tables because the new table will **map genres to librarians** independently, avoiding duplication in the BOOK table. (1.0)

Q4 –

(a) (i) Odd numbers from 1 to 15:

$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = 64$ (2.0)

✓ Output:

Sum of odd numbers from 1 to 15 is: 64

(ii)

```
Number := 1;
while Number <= 20 do
begin
    if Number mod 2 = 0 then
        Sum := Sum + Number;
    Number := Number + 1;
end; (4.0)
```

(b) (i) This prints odd numbers from 1 to 11 by incrementing by 2:

✓ Output:

```
1
3
5
7
9
11 (3.0)
```

(ii)

- WHILE Counter ≤ 11 → WHILE Counter ≤ 15
- Counter ← Counter + 2 → Counter ← Counter + 3

This will print numbers starting from 1 and increase by 3 until it exceeds 15:

✓ Output:

```
1
4
7
10
13 (1.0)
```

(iii) Without the increment line, Counter will always be 1.

So the condition WHILE Counter ≤ 11 will **never become false**, causing an **infinite loop**.

✓ Answer:

It will result in an **infinite loop** because the loop control variable is never updated. (1.0)

Q5 –**(i) Matching Descriptions with List Items:**

- **A → 2**
(A programming language used to style web content → CSS)
- **B → 1**
(A markup language used to structure content on the web → HTML)
- **C → 5**
(A web browser that lets users view websites → Chrome)
- **D → 6**
(A web platform for sharing and watching educational videos → YouTube)
- **E → 3**
(A protocol used to securely transfer files over the internet → FTP)
- **F → 7**
(A web service that provides cloud-based storage and file sharing → Google Drive)
- **G → 10**
(A tool used to test website responsiveness on different devices → Responsinator)
- **H → 4**
(A protocol used for transferring web pages → HTTPS)
- **I → 8**
(A domain name registration service → GoDaddy)
- **J → 9**
(A tool used to track and analyze website traffic → Google Analytics) **(5.0)**

(ii) (1.0)

Planet	Moons
Mars	
Jupiter	79
Earth	1

- (iii) 1 - <head> 2 - null 3 - <body> 4 - </body> 5 - <h1>
- 6 - </h1> 7 - <p> 8 - </p> 9 - 10 -
- 11 - 12 - 13 - <p> 14 - <a> 15 - </p>
- 16 - <title> **(4.0)**

Q6 –

(i) (a) Use a **real-time calendar view** that displays only the **unbooked time slots** for the selected date. This avoids double bookings and ensures clarity for patients. **(1.0)**

(b)

1. Full Name
2. Contact Number
3. Date of Birth or NIC
4. Preferred Appointment Date and Time **(4.0)**

(c) Send an **SMS** or **Email notification** immediately after booking confirmation. **(1.0)**

(d) **Waterfall Model** – because:

- The system is **not large-scale**
- Requirements are **clear and unlikely to change**
- It allows a structured approach with distinct phases (planning, design, implementation, testing) **(1.0)**

(e) **Pilot Deployment** – because:

- The system is small, so testing with a limited group ensures issues can be identified before full rollout.
- It reduces risk and allows feedback before full deployment. **(1.0)**

(ii)

1. Create **separate user accounts** for each user to maintain file separation and permissions.
2. Set up **automated backup or version control** to prevent loss or overwriting of files. **(2.0)**

(iii) It ensures **academic integrity**, avoids **plagiarism**, and gives **credit to the original author**. **(1.0)**

(iv) (a) Developers can **build and deploy applications quickly** without managing the underlying infrastructure. **(1.0)**

(b) **Vendor lock-in** – It's difficult to switch providers once the app is tightly integrated with a specific PaaS platform. **(1.0)**

Q7 –(i) **(5.0)**

Task	Insert Tab Number
(a) Inserting a table with 3 rows and 4 columns	6
(b) Inserting a photo saved on your computer	7
(c) Adding a heart-shaped symbol	13
(d) Drawing an arrow using shapes	1
(e) Creating a text box to highlight a note	1
(f) Inserting a video from YouTube	8
(g) Adding page numbers to the document	11
(h) Inserting an equation using symbols	13
(i) Adding a footer with your name	10
(j) Linking a word to a website	9

(ii) **Media** (Number 8) – allows insertion of videos, audio, and online content. **(1.0)**

(iii)

- The **Icons** feature provides built-in, **scalable vector graphics** (SVGs) that are professional-looking and don't pixelate.
- **Why students might prefer it:**
 - Easy to insert and customize.
 - No need to download external images, saving time and storage.
 - More suitable for assignments and presentations that need a clean design. **(1.0)**

(iv)

- **Difference:**
 - **Header** appears at the **top** of every page.
 - **Footer** appears at the **bottom** of every page.
- **Example in a school report:**
 - **Header:** Student name, school name, or subject.
 - **Footer:** Page numbers or submission date. **(2.0)**

(v)

- **Purpose:** To include special characters that are not available on the standard keyboard.
- **Example:** Using the © (copyright) symbol when referencing protected materials. **(1.0)**