THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE III

INTERNET BASED PROGRAMMING

3 hours

INSTRUCTIONS TO CANDIDATES

This paper consists of EIGHT questions.
Answer FIVE of the EIGHT questions in the answer booklet provided.
Candidates should answer the questions in English.

This paper consists of 6 printed pages.

Candidates should check the question paper to ascertain that all the
pages are printed as indicated and that no questions are missing.

1. (a) Explain each of the following terms as used in the Internet:

   (i) web documents; *downloaded from a particular website* (2 marks)

   (ii) web servers; *Used to provide Information to the client server* (2 marks)

   (iii) protocols. *Guidelines used in the internet* (2 marks)

   (b) Explain the function of each of the following applications in web design:

   (i) Database tools; *tool help to design database* (2 marks)

   (ii) Graphic editors. *Used to add graphics on a website or web document* (2 marks)
   changes when a client tries to change content in the website

   (c) Distinguish between *static website* and *dynamic website* as used in the Internet. *do not change* *change* (4 marks)

   (d) Write a HTML code that would display the following listed items as they appear when run on a web browser. (6 marks)

   A. History of Kenya
   3. Early History
   2. The Turkana Fossils
   ▪ The Missing Links
   ▪ The early man
   1. Post-independence period
   B. Future of Kenya

   `<!Doctype>`
   `<html>`
   `<head>`
   `< History of Kenya`

   Kenya
   A country lies across the equator on the east coast of Africa
   Fossils
   The remains of a prehistoric plant or animal embedded in rock.

2. (a) Explain the function of *Common Gateway Interface* (CGI) in the Internet. (2 marks)

   (b) Explain the role of each of the following body tag attributes in HTML:

   (i) link; (2 marks)

   (ii) vlink; (2 marks)

   (iii) alink. (2 marks)

   (c) Skynote is a company whose core function is to develop enterprise web applications for its clients.

   (i) Explain **three** advantages that the company would realise by using server-side programs when creating these web applications. (6 marks)

   (ii) List **three** examples of server-side programs that the company could be using. (3 marks)

(d) Figure 1 shows text formatting options marked in a web authoring tool when creating a web document. Use it to answer the question that follows.

☑ Underline	☐ Small caps	☐ Sample
☑ Strikethrough	☐ All caps	☑ Definition
☐ Overline	☐ Capitalize	☐ Citation
☐ Blink	☐ Hidden	☐ Variable
☐ Superscript	☑ Strong	☐ Keyboard
☑ Subscript	☐ Emphasis	☑ Code

Figure 1

Write HTML statements that would be generated in the code window if the options are applied on the document. (3 marks)

3. (a) (i) Outline the function of each of the following tags as used in HTML.

   (I)   <address> (1 mark)

   (II) <button> (1 mark)

   (III) <code> (1 mark)

   (IV) <source> (1 mark)

   (ii) Identify web browsing software from the following list:

   Adobe Dreamweaver; Fireworks; Opera; Google Chrome; Microsoft Edge;

   Microsoft Frontpage; Mozilla Firefox; MS Outlook. (2 marks)

(b) A manufacturing company opted to develop a website for advertising their products. Outline **four** benefits the company would derive from the use of the website. (4 marks)

(c) Distinguish between *checkboxes* and *radio buttons* controls as used in HTML forms. (4 marks)

(d) Write a JavaScript code embedded in HTML that uses a function to generate the following pattern when run on a browser. (6 marks)

```
*
**
***
****
*****
******
*******
```

<!DOCTYPE>
<html>
<body>
<Col = 1 ...

4   (a)   Outline **four** uses of <meta> in HTML.   (4 marks)

(b)   Figure 2 shows a web authoring tool dialog box used to insert a hyperlink during web design. Use it to answer the question that follow.

```
┌─────────────────────────────────────────────┐
│ Hyperlink                                ╳   │
│                                              │
│        Text: [                ]  (Cancel)    │
│        Link: [            ][V]🗐  ( OK )      │
│      Target: [        ][V]       ( Help )    │
│       Title: [                ]              │
│  Acess key: [    ]                           │
│   Tab Index: [    ]                          │
└─────────────────────────────────────────────┘
```

Figure 2

Explain the function of each of the following fields:

(i)   Text;   (2 marks)

(ii)   Target;   (2 marks)

(iii)   Tab Index.   (2 marks)

(c)   (i)   Draw the frames layout that would be displayed when the following HTML code is run on a browser, showing the dimensions of the frames relative to the screen as it would appear.   (6 marks)

```
<HTML>
<head> </head>
<frameset rows="1*,1*,2*" frameborder=yes    border="1">
<frameset cols="1*,1*,1*">
      <frame name="leftbottom"  src = "page.html" />
      <frame name="centrebottom" src = "page.html" />
      <frame name="rightbottom" src = "page.html" />
</frameset>

<frame name="centre" src = "page.html" />

<frameset cols="50%,*">
      <frame name="leftbottom"  src = "page.html" />
      <frame name="rightbottom" src = "page.html" />
</frameset>
<noframes>
<body>Your browser does not support frames.</body>
</noframes>
</frameset>
</HTML>
```

(ii)   Outline **four** reasons why frames are rarely used in web programming.   (4 marks)

5.   (a)   Explain the function of each of the following operators as used in JavaScript programs.

(i)   &&   (2 marks)

(ii) || (2 marks)

(iii) !   (2 marks)

(b) Figure 3 shows the interface of a web authoring tool. Use it to answer the question that follows.

Figure 3

Outline the function of the commands labelled (i) and (ii).   (2 marks)

(c) Interpret the following JavaScript code embedded in HTML.   (5 marks)

```
<html>
<body>

<h1 id="demo"></h1>

<script>
var person = {
  firstName: "Susan",
  lastName: "Ayieko",
};

document.getElementById("demo").innerHTML =
person.firstName + " is " + person.age;
</script>
</body> </html>
```

(d) Write a HTML code that would display Table 1 with the following additional specifications:

- background colour code: lime
  - Cell6 height: 100 pixels   (7 marks)

Cell1	Cell2	
Cell4	Cell5	Cell3
Cell6		

Table 1

6. (a) Distinguish between *applets* and *servlets* as used in the Internet.   (4 marks)

   (b) (i) Explain **one** cause of each of the following threats in the Internet:

        (I)   cross-site scripting attack;   (2 marks)

        (II) broken authentication and session management.   (2 marks)

(ii)   Outline **three** measures that a company would implement to ensure security standards of threats in (b)(i) are achieved.   (3 marks)

(c)   Write a HTML code that would display the following form as it appears in Figure 4 when the code is run on a browser.   (9 marks)

Name
First Name: [   ]   Last Name: [   ]

Gender
○ Male ○ Female

Contact Details
Email Address: [   ]   Phone Number: [   ]

Password [Enter Password]   [Submit] [Reset]

Figure 4

7.   (a)   Distinguish between <em> and <i> as used in HTML.   (4 marks)

(b)   A web developer was advised to use compound web authoring tools (pure WYSIWG + pure code) instead of *plain text editors* to develop large websites.

(i)   State **four** examples of plain text editors the developer may have used. (2 marks)

(ii)   Explain **three** advantages the developer would realise when using compound editors.   (6 marks)

(c)   Write a JavaScript code embedded in HTML that assign the strings "John", "Ann", "Aaron", "Edwin", "Elizabeth" into an array. The program should then display the strings in the array on the screen. Use the for loop.   (8 marks)

8.   (a)   With the aid of an example in each case, distinguish between *HTML elements* and *HTML tags*.   (5 marks)

(b)   A web authoring tool has a feature that allows a site to be linked to an object. Outline **four** types of link menus that the tool could have.   (4 marks)

(c)   Describe each of the following tests carried out during web development:

(i)   usability test;   (2 marks)

(ii)   performance test.   (2 marks)

(d)   Write a JavaScript program embedded in HTML that would display the comment "Even numbers less than 20" followed by a list of the even numbers less than 20 in a single line. The program should then display a horizontal line followed by the sum of the numbers. Use the *do...while* loop.   (7 marks)

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