THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

JANUARY – APRIL 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

REGULAR PROGRAMME

CMT 402: WEB DEVELOPMENT

Date: APRIL 2015	Duration: 2 Hours
Instructions: Answer Question ONE and any other TWO Questions.	

Q1.   a)   "HTTP is a stateless protocol. However, sessions and cookies were developed to tackle this issue."

(6 marks)

b)   Compare GET and POST in terms of method of sending information, usage and limitations. Give a simple in both cases.

(3 marks)

c)   Several Web components work together to run a web page. Mention FOUR of these web components. Describe one of them.

(5 marks)

d)   By use of example, differentiate server-side scripting from client – side scripting.

(4 marks)

e)   Figure 1 below shows an HTmL form that contains different bits of information. Figure 2 shows the HTML code of this form.

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Figure 1: form

```
1.  <html>
2.  <head>
3.  <title>Form</title>
4.  </head>
5.  <body>
6.  <form onSubmit="return validate_form(this)>
7.  <strong>Name</strong>:
8.  <input type= "text" name="forename" size=30><br />
9.  <strong>Date</strong>:
10.    <input type= "text" name="day" size=2> -
11.    <input type= "text" name="month" size=2> -
12.    <input type= "text" name="year" size=4> <br />
13.    <input type="submit" value="Submit" /><br />
14.    <input type="reset" value="Reset" />
15.    </form>
16.    </body>
17.    </html>
```
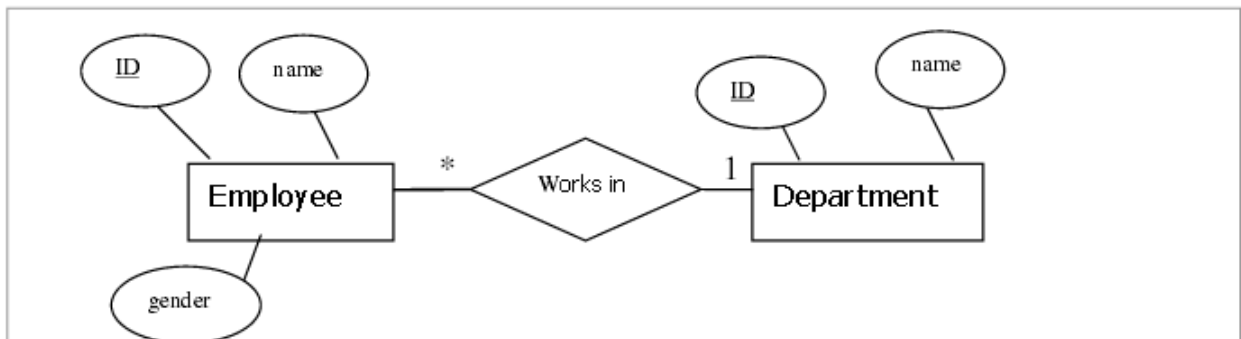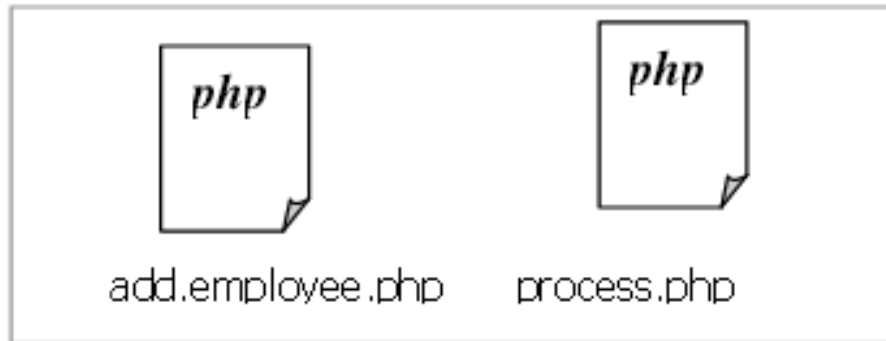
Figure 2: HTML code

Figure 3: System E-R diagram

Figure 4: System pages

```
1.  <html>
2.  <body>
3.  <form method="POST" action="process.php">
4.  Name:<input type="text" name="name" size="20">
5.  <br/>
6.  ID:<input type="text" name="ID" size="20">
7.  <br/>
8.  Department:<select size="1" name="department"></select>
9.  <br/>
10. Gender: <select size="1" name="gender">
11. <option selected value="Male">Male</option>
12. <option>Female</option>
13. </select>
14. <br/>
15. <input type="submit" value="submit" name="Submit"><input
    type="reset" value="reset" name="reset">
16. </form>
17. </body>
18. </html>
```

Figure 5: HTML code of add.employee.php

    i)   Write a Javascript function that will check that all the required fields are filled in first before user input is submitted.

(5 marks)

    ii)   Give the PHP code to be written in the file named adddetails.php that would pick what the user has entered in the form above and record it on a table named "users" in the "details" database.

(7 marks)

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Q2. a) Although the HTmL technology was used to provide web content for along time the W3C community sensed the need for making the CSS technology. Explain.

(6 marks)

b) What is Javascript? What advantages are there to using Javascript to manipulate a web page rather than sending all requests to the web server? What problems are there when using Javascript to manipulate a page?

(6 marks)

c) What advantages does a database offer over storing data directly in the file system? The file system over using a database?

(4 marks)

d) By use of valid examples, differentiate between SQL injection and cross-site scripting.

(4 marks)

Q3. a) What is the DOM? How is it useful?

(2 marks)

b) What are the THREE tiers of a three-tier, webapp architecture? Assign each of the programming language PHP, SQL and Javascript to the tier it is most closely associated with.

(6 marks)

c) There is much talk these days of "digital convergence," the trend for all varieties of media, and the activities that rest upon them, to converge on the one platform (the, often hand-held, "digital Computer"). What is it about digital representation that allows this convergence (compared, say, to analogue representation)?

(4 marks)

d) If you enter the search "click here" into google, you get the Adobe Acrobat PDF reader download page as the first result. Why?

(5 marks)

e) Your library is setting up a new website. It will have five main sections, with multiple sub-sections and pages. Different librarian will write content for different sections and new content and sub-sections will be added over time.

A graphic designer has been hired to produced a design for the site. The library director proposes to have people write each page in HTML using notepad (to save money on software licensing) It is a good idea to build such a site in static HTML? Why or why not? What other technologies could be used? Is the director right to be worried about software licensing costs? Which other services or support will be required?

(3 marks)

Q4. a) Develop a webpage in HTML with a style sheet (internal or external) in CSS. The web page should do the following:
- Have the title "Exam-Related causes of Panic"

- Place the title in the browser title bar.
- Place the title bar
- Place the title in large letters at the top of the page.
- Display the image at the following URL

http://upload.wikimedia.org/wikipedia/en/0/07/Neuro-Panic-Disorder_Norep.png

- Display the explanatory text "Norep Pathways in the brain" for the image for the visually disabled.
- List the following possible reasons for exam related panic:
  * Forgetting the exam time
  * Forgetting the exam location
  * Forgetting your own name
- Set the page background colour to red in CSS
- Set the title at the top of the page to Italics in CSS.

(10 marks)

b) Consider the following HTML page with an incomplete javascript function:

```
<html>
  <head>
        <script type = "text/Javascript">
           Function Setname ( )
               {
                  /* Code goes hear
               }
        </head)
<body onload = "setname ( )">
</body>
</html>
```

Required:
Write the content of the Javascript function, so that when the page loads, the following happens:
- The page asks the user "what is your name?"
- When the user types their name in, the page displays the user's name directly before the exclamation mark.
- The user's name is displayed in italics.

No other part of the page should be modified (Hint: You don't have to use CSS to display the name in italics if you don't want to)

(10 marks)

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Q5. Figure 3 below shows a part of the database of the Employee Affairs system of the co-operative bank, Kitui branch It simply contains two related tables; employees and department where one employee can work in one department and one department can contain many employees.

Figure 4 shows two web pages we consider. The first one titled add.employee.php. The second is process.php.

Figure 5 shows on HTML source of the page add.employee.php

Assumptions
- Your mySQL database is installed and ready to use
- The main DB server is SE
- Username and password are admin.
- The DB name is WEB.

Notes:
- Your situation must handle errors using try and catch mechanism.
- It is recommended you provide an object oriented solution.

Required:
Write PHP code that adds values inserted in the form of add. employee to the system Database. This PHP code shall be encapsulated within process. PHP. A success message shall be shown when added successfully. Otherwise, a failure message should be shown accompanying the error type.

(20 marks)

END

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