F.Y.B.Sc.(I.T.) (Sem -II)

Web technologies

Con. 245-16.

FX-4138 June 2016

Total Marks : 100   Duration : 3 Hrs

Note: All Questions are compulsory

Q. 1

A   Explain the creation of button, checkbox and radio-button in HTML forms   5M

B   Write a short note on javascript while loop statement   5M

Q. 2   Attempt any three

A   Explain the working process of email system.   5M

B   Write a short note on ISP (Internet Service Providers).   5M

C   What is Domain Name System?   5M

D   What is proxy server? List down the advantages of using the proxy server.   5M

Q. 3   Attempt any three

A   List and explain different elements of <head> section in html.   5M

B   Explain the different types of HTML lists with its associated tags.   5M

C   List and explain the various attributes of <table> tag.   5M

D   Write short note on external, internal, and inline styles   5M

Q. 4   Attempt any three

A   Explain javascript 'this' object with an example.   5M

B   Explain the if-else statement in java script with an example.   5M

C   What are the three types of popup boxes in javascript   5M

D   Explain javascript 'Date' object. Explain its methods.   5M

Q. 5   Attempt any three

A   Explain the difference between HTML and XML   5M

B   With an example explain the concept of Internal DTD   5M

C   Describe the building blocks of XML documents   5M

D   Write a short note on Extensible Stylesheet Language   5M

Q. 6   Attempt any three

A   "PHP is a loosely types language" – justify the statement   5M

B   Explain PHP switch statement with an example   5M

C   Explain the different types of PHP arrays   5M

D   Explain $_GET and $_POST object of PHP   5M

Q. 7   Attempt any three

A   Describe the concept of PHP Cookie with an example   5M

B   Write a short note on PHP mysql_query() Function   5M

C   Write a PHP program to insert a form data (rollno, name, age) into a database table.   5M

D   Explain PHP Error Handling?   5M

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(1)

Time: 3hrs.   Marks:100

Note:- 1) All questions are compulsory.

   2) All questions carry equal marks.

   3) Figure to write indicate full marks.

Q.1] Attempt any One of the following:

a) Prove that $\int_0^\infty \frac{e^{-ax}-e^{-bx}}{x}\, dx = log\frac{b}{a}$. where a, b > 0.   [10]

b) If $|Z_1 + Z_2| = |Z_1 - Z_2|$ prove that the difference of the amplitude of Z_1 and Z_2 is $\frac{\pi}{2}$.   [10]

Q.2] Attempt any Three of the following:

a) Prove that $\cosh^{-1}(\sqrt{1+x^2}) = \sinh^{-1} x$.   [5]

b) If $z+\frac{1}{z} = 2\cos\theta$ then show that $z^n + \frac{1}{z^n} = 2\cos n\theta$.   [5]

c) Using De'Moivre's theorem prove that $\cos 4\theta = \cos^4\theta - 6\cos^2\theta\sin^2\theta + \sin^4\theta$.   [5]

d) Find the square roots of 6+8i.   [5]

Q.3] Attempt any Three of the following:

a) Show that f(z)= $\left|z^2\right|$ is not analytic function.   [5]

b) Evaluate $\int_C f(z)dz$, along the line form z = 2i to z = 4+i ,where $f(z) = \overline{z}$.   [5]

c) Find the residues of $f(z) = \dfrac{1}{z^2 +1}$.   [5]

d) Determine the bilinear transformation that maps 0, 1, 2 of Z-plane onto $-1, i, 1$ of W-plane.[5]

P.T.O.....

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Q.4] Attempt any Three of the following:

a) Evaluate $\int\limits_{0}^{1}\int\limits_{0}^{x}(x^2 + y^2)dydx$ by changing to polar coordinates.   [5]

b) Find the volume of the region S which is bounded by the paraboloid $x^2 + y^2 = 4 - z$

and the plane z=0.   [5]

c) Evaluate $I = \int\limits_{0}^{2\pi}\int\limits_{0}^{2}\int\limits_{0}^{4-r^2} rdzdrd\theta$.   [5]

d) Evaluate the integral: $\int\limits_{0}^{1}\int\limits_{x^2}^{x}(x^2 + 2xy + y^2)dxdy$.   [5]

Q.5] Attempt any Three of the following:

a) Prove $\int\limits_{0}^{\pi/2}\sqrt{\tan\theta} = \dfrac{\pi}{\sqrt{2}}$.   [5]

b) Evaluate $\int\limits_{0}^{1}(x\log x)^4 dx$.   [5]

c) Evaluate $\int\limits_{0}^{\infty}\sqrt{y}e^{-y^3} dy$.   [5]

d) Prove that $\text{erf}(-x) = -\text{erf}(x)$.   [5]

Q.6] Attempt any Three of the following:

a) Find the Laplace transform of cost cos2t cos3t.   [5]

P.T.O....

b) Find the Laplace transform: $\int\limits_{0}^{\infty} \dfrac{e^{-t}(\cos 3t - \cos 2t)}{t} dt$.   [5]

c) Find the inverse Laplace transform: $\dfrac{s}{(s^2+1)(s^2+4)}$.   [5]

d) Find inverse Laplace transform of $\log\left(\dfrac{s^2+1}{s(s+1)}\right)$.   [5]

Q.7] Attempt any Three of the following:

a).Find the Fourier Transform of $F\{t\}$ $\begin{cases} t \text{ for } |t| < a \\ 0 \text{ for } |t| > a \end{cases}$ [5]

b) Find the Fourier series of the function $f(x) = x\sin x$ in the interval $0 \le x \le 2\pi$.   [5]

c) Find the Fourier sine transform of $F(t) = e^{-t} + 2e^{-2t} + 3e^{-3t}$.   [5]

d) Express $f(x) = x$ as a half-range sine series in $(0, 2)$.   [5]

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(3 Hours)   **[Total Marks : 100**

Q.1   Attempt following questions

a) Write a note on PSW register in 8051.   5

b) Distinguish between SRAM and DRAM.   5

Q.2   Attempt any three questions from the following.

a) What are the tri-state device?   5
b) With the help of block diagram explain decoder.   5
c) What is latch? Describe its function.   5
d) Write a short note on Flash memory.   5

Q.3   Attempt any three questions from the following.

a) Write a short note on interrupts in 8085   5
b) Explain flag register in 8085.   5
c) Write a short note on address bus and data bus in 8085   5
d) Draw and describe basic organization of microprocessor based system.   5

Q.4   Attempt any three questions from the following.

a) Explain the following instructions
     i. XRA R   ii. CMA   iii. JNZ label iv. MOV A, M   v) ADD M   5
b) What are different addressing modes in 8085? Explain with examples.   5
c) Classify the instructions on the basis of byte length with example.   5
d) With the help of examples explain data transfer operations.   5

Q.5   Attempt any three questions from the following.

a) What is PCI bus? Why PCI bus is needed?   5
b) Explain the concept of cache memory.   5
c) Write a short note on RAID level 0.   5
d) Explain the function of modern day computer system with diagram.   5

Q.6   Attempt any three questions from the following.

a) Explain the features of 8051 microcontroller.   5
b) Explain the following terms
   i. Stack pointer   ii. Program counter   5
c) What do you mean by SFR? Explain few with example.   5
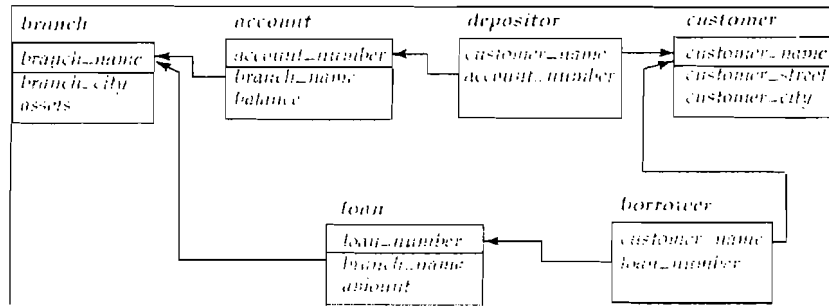d) List and explain various assembler directives of the 8051.   5

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Q.7 **Attempt any three questions from the following.**

   a) Explain with the help of examples   5

      i. Immediate addressing mode

      ii. Register addressing mode

   b) Explain port 0 in 8051 microcontroller.   5

   c)˙ Explain the following instructions   5

      i.   MOV DPTR, #3050 H   ii. DA A   iii. DIV AB   iv. SUBB A, 45 H v. JNC label

   d) Write an assembly language program to multiply two numbers.   5

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F.Y.B.Sc.(I.T.) (Sem-II)

Database management systems

Con. 248-16.

FX-4062

June 2016

(3 Hours)

[Total Marks : 100

- All questions are compulsory
- Attempt any 3 sub-questions out of 4 from Question No. 2 to Question No. 7
- Draw neat and labelled diagram wherever necessary
- Write answer to a new question on a fresh page

1. Given below is the banking schema (10)

(a) Solve the queries below using relational algebra
  i. Find the names of all customers who have a loan at the Kurla branch.
  ii. Find the names of all customers who have a loan at the Dadar branch but do not have an account at any branch of the bank.
  iii. Find the names of all customers who have a loan at the Colaba branch.
  iv. Find the names of all customers who have a loan and an account at bank.
  v. Find all customers who have an account at all branches located in Pune.

(b) Solve the queries below using SQL
  i. Find the names of all branches in the loan relations, and remove duplicates
  ii. Find the name and loan amount of all customers having a loan at the Pune branch.
  iii. Find the names of all customers whose street includes the substring "main".
  iv. List in alphabetic order the names of all customers having a loan in Andheri branch.
  v. Find all customers who have both an account and a loan at the bank.

2. (a) What are the problems associated with file systems? (15)
  (b) List and explain the different types of database users.
  (c) Write a short note on database architecture.
  (d) What are the disadvantages of database systems?

3. (a) Explain the merits and demerits of hierarchical database model. (15)
  (b) What is a relationship? Explain the different types of relationships with examples?
  (c) What is data abstraction? Explain the different levels of data abstraction.
  (d) What are the advantages and disadvantages of entity relationship data model?

4. (a) List & explain the different types of keys? (15)
  (b) What is UML? Explain any 3 types of UML diagrams?
  (c) Explain the terms generalization, specialization and aggregation?
  (d) What is a relational table? What are the characteristics of a relational table?

5. (a) Explain the different SET operators in relational algebra? (15)
  (b) Explain the various types of joins in relational algebra?
  (c) Write a short note on relational calculus.
  (d) Differentiate between relational algebra and relational calculus?

6. (a) Explain primary key & foreign key constraints? (15)
  (b) What is a view? What are the advantages of views?
  (c) Define view. Differentiate between tables and views.
  (d) List and explain the different types of joins with examples.

7. (a) Define a transaction? State the ACID properties of transactions? (15)
  (b) What states does a transaction pass through during its lifetime?
  (c) What are the disadvantages of using lock – based protocols?
  (d) Write short note on time – stamp based protocols.

Time: 3 hours   Marks: 100

N.B.:   1. All questions are compulsory (Q1-Q7)

2. Attempt any 3 sub questions out of 4 from Q2 to Q7

3. Draw neat and labelled diagram wherever necessary.

Q1	a	What is protocol? Explain the elements of protocol.	5m
	b	Explain the bandwidth of signal.	5m

Q2	a	What are the components of a data communication system?	5m
	b	Define computer network and categorize.	5m
	c	Explain the characteristics of an Analog signal.	5m
	d	Explain the difference between	5m
		1. Lowpass and Bandpass channel	
		2. Narrowband and wideband channel	

Q3	a	What is the OSI model? List its layers and explain their responsibility in brief.	5m
	b	Explain structure of an IPV4 Address with example.	5m
	c	Explain the structure of TCP/IP protocol.	5m
	d	Differentiate between the working of Data link layer, Network layer and Transport layer.	5m

Q4	a	Explain Checksum with example.	5m
	b	Explain error classification.	5m
	c	What is quantization?	5m
	d	Explain analog modulation methods: 1. Amplitude modulation (AM) 2. Frequency modulation (FM) 3. Phase modulation (PM).	5m

Q5	a	What are the different possible ways of transmitting data?	5m
	b	Explain transmission impairment.	5m
	c	Differentiate in between wired and wireless media.	5m
	d	Write short notes on unguided media : a) Radio waves b) Microwaves c) Infrared	5m

Q6	a	What is routing? Explain routing metrices.	5m
	b	Explain Bus Topology in detail with advantages and disadvantages.	5m
	c	Explain Time division switching.	5m
	d	Explain virtual circuit packet switching.	5m

Q7	a	What is Dynamic Host Configuration Protocol (DHCP) using IPv6?	5m
	b	Explain IPv6 auto configuration.	5m
	c	Explain IPv6 addresses.	5m
	d	Compare IPv4 header vs. IPv6 header.	5m

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