FYIT-Sem-II
April-2019

Q. P. Code: 08241

(Time: $2\frac{1}{2}$ hours)

[Marks: 75]

Please check whether you have got the right question paper.

N. B.: (1) **All** questions are **compulsory**.

(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.

(3) Answers to the **same question** must be **written together**.

(4) Numbers to the **right** indicate **marks**.

(5) Draw **neat labeled diagrams** wherever **necessary**.

(6) Use of **Non-programmable** calculator is **allowed**.

1. Attempt *any three* of the following: 15
a. What is procedure oriented Programming? What are its characteristics?
b. Differentiate between Object Oriented and Procedure Oriented Programming paradigms.
c. Discuss the need and advantages of Object Oriented Programming.
d. Discuss various applications of Object Oriented Programming.
e. What do you mean by Dynamic and static binding.
f. Write a short notes on (i)Object (ii)Class

2. Attempt *any three* of the following: 15
a. What is a class? Illustrate the use of class with a simple c++ program.
b. What are inline functions? How an outside function can be made inline?
c. What is a constructor? Explain its characteristics. List various types of constructors?
d. What are friend functions? What are their characteristics? Write a small program to illustrate the use of a friend function.
e. Explain the use of parameterized constructors with a programming example.
f. What do you understand from nesting of member functions? Explain with suitable programming example.

3. Attempt *any three* of the following: 15
a. What is function overloading? Explain with suitable example.
b. What is operator overloading? List the operators which can be overloaded and which cannot be overloaded.
c. Write a c++ program to overload unary minus operator.
d. What are virtual functions? Explain.
e. Define the following
    (i) Abstract Class   (ii) Pure Virtual Function
f. What is a *this* pointer? Write a program to illustrate its use.

[TURN OVER]

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4. **Attempt _any three_ of the following:** 15
a. What do you understand from the concept of inheritance? Explain its various types.
b. Explain the use of various visibility modes used in inheritance.
c. Discuss the role of constructors in derived classes in detail.
d. What is an exception? What are advantages of exception handling mechanism in a program?
e. Explain the concept of throw and catch with suitable example.
f. Write a c++ program to illustrate multilevel inheritance.

5. **Attempt _any three_ of the following:** 15
a. What are class templates? Explain their use. How a class template can be declared?
b. Explain function template with a programming example.
c. Write a c++ program to implement bubble sort using function template.
d. Explain the working of files in c++.
e. Explain various methods to detect end of file in a c++ program.
f. Explain the following
    (i) seekg()   (ii) seekp()

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FY BSC - IT - Sem-II   Q. P. Code : 33407

(2½ Hours) April-2019   [Total Marks: 75]

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  (5) Draw **neat labeled diagrams** wherever **necessary**.
  (6) Use of **Non-programmable** calculators is **allowed**.

1.   Attempt _any three_ of the following: **15**
a.   Explain different constituents of microprocessor system. Draw a neat diagram showing microprocessor based system with bus architecture
b.   Explain the difference between 8085 machine language and 8085 assembly language.
c.   With neat labled diagram explain how 8085 system bus is divided into three different sets of communication lines
d.   Illustrate the memory address range of a memory chip with 256 bytes of memory. Draw a neat diagram to show the memory map and explain how this memory chip is accessed by 8085 microprocessor.
e.   Explain how lower order data and address bus of 8085 microprocessor are demultiplexed.
f.   With proper timing diagram explain memory read cycle of 8085 microprocessor.

2.   Attempt _any three_ of the following: **15**
a.   Explain how eight DIP switches are interfaced with 8085 microprocessor using a decoder.
b.   How is testing and troubleshooting of I/O interfacing circuit is done?
c.   Discuss in brief the programming model of 8085 microprocessor.
d.   What is meant by hand assembly? How is hand assembling of a program done?
e.   Explain any one arithmetic and any one logical group one byte instruction from the instruction set of 8085 microprocessor.
f.   Write an assembly language program to add two 8 bit numbers stored at memory locations D200 H and D300 H. Store the answer at memory location D400 H. (Hex code for the program is not expected)

3.   Attempt _any three_ of the following: **15**
a.   What are different available conditional loops in the assembly language programming for 8085?
b.   Explain following logical instructions –
    i. RAL   ii. RLC
c.   What is time delay? Why is time delay needed in a program? What are different ways of generating a time delay in an assembly language program for 8085 microprocessor.
d.   Write an assembly language program for 8085 microprocessor to count continuously from FFH to 00H in a system with 0.05µs clock period. Set up a delay of 1 millisecond between two value.
e.   What is stack? How is stack used both by microprocessor and user?
f.   Explain following instructions for 8085 microprocessor –
    i. Restart   ii. Conditional call and return.

[TURN OVER]

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4. Attempt *any three* of the following: 15

a. Write a 8085 assembly language to convert a 8-bit binary number to unpacked BCD.

b. What is meant by table look up technique? How is it used for BCD to Seven Segment LED code conversion?

c. Explain the hardware features of a typical software development system.

d. What are advantages of an assembler?

e. Discuss various interrupts used by 8085 microprocessor and their priorities.

f. What is meant by vectored interrupt? Also explain use of SIM instruction.

5. Attempt *any three* of the following: 15

a. What are special Pentium Registers? Discuss the architecture of Special Pentium Registers.

b. Discuss the memory map of Pentium 2 processor

c. Explain the CPUID instruction used by Pentium 4.

d. Explain the architecture of SPARC.

e. List the components of SPARC processor. Discuss each in brief.

f. Explain the concept of windowed register of SPARC microprocessor.

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FYIT-Sem-II   Q. P. Code : 33402

(2½ Hours) April-2019   [Total Marks: 75]

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     (3) Answers to the **same question** must be **written together**.
     (4) Numbers to the **right** indicate **marks**.
     (5) Draw **neat labeled diagrams** wherever **necessary**.
     (6) Use of **Non-programmable** calculators is **allowed**.

1.   **Attempt *any three* of the following:**   **15**
a. What are the steps involved for Measuring of carbon footprint?
b. How hardware deployments can affect the environment?
c. Write a note on Equipment Disposal.
d. What are the steps taken by JAPAN for managing their own e-waste problem?
e. What are the Basel Action Network functions?
f. Explain any five e-waste laws of states in US.

2.   **Attempt *any three* of the following:**   **15**
a. Write a note on Data De-Duplication and Virtualization.
b. Explain MAID and RAID.
c. What is polling? Give example.
d. List and explain the issues regarding power consumption and cooling costs.
e. Explain Hot Aisle (path)/Cold Aisle and Raised Floors.
f. List and explain datacenters design and decision making issues.

3.   **Attempt *any three* of the following:**   **15**
a. List and explain decision making pyramid with its levels.
b. Which things are necessary for environmentally preferable purchasing plan?
c. How to find out which products have low levels of toxins?
d. Which things are needed to go paperless in organization?
e. What is the use of Microsoft Office SharePoint Server 2007? List its features.
f. What is Value Added Network? Give its benefits.

4.   **Attempt *any three* of the following:**   **15**
a. Explain the recycling problems in China and Africa.
b. How to determine the system's long life?
c. Which are benefits to leasing the equipment?
d. Write a short note on Electronic Product Environmental Assessment Tool(EPEAT) certification.
e. What is Blade server? Give its benefits.
f. What is the use of Remote Desktop? Explain its components.

5.   **Attempt *any three* of the following:**   **15**
a. How CRM segregate the people of organization in group?
b. What are the steps involved for good green procurement program?
c. Explain characteristics of Software as a Service.
d. Explain transitioning four-step process.
e. Write a note on SMART goals.
f. Which steps are involved to conduct energy audit?

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F YIT – Sem – II
April – 2019

Q.P. Code: 33413

(2½ Hours)

[Total Marks: 75]

N. B.: (1) **All** questions are **compulsory**.
      (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
      (3) Answers to the **same question** must be **written together**.
      (4) Numbers to the **right** indicate **marks**.
      (5) Draw **neat labelled diagrams** wherever **necessary**.
      (6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt _any three_ of the following:**   15
a. State the characteristics of typical mathematical models of physical world. Explain with example.
b. Discuss the conservation laws and engineering with respect to mathematical models.
c. Suppose that you have the task of measuring the lengths of a bridge and a rivet and come up with 9999 and 9 cm, respectively. If the true values are 10,000 and 10 cm, respectively, compute (i) the true error and (ii) the true percent relative error for each case.
d. Use zero- through third-order Taylor series expansions to predict f (3) for
$$f(x) = 25x^3 - 6x^2 + 7x - 88$$
using a base point at $x = 1$.
e. Determine the absolute and relative errors when approximating p by p^* when
    i. $p = 0.3000 \times 10^1$ and $p^* = 0.3100 \times 10^1$
    ii. $p = 0.3000 \times 10^{-3}$ and $p^* = 0.3100 \times 10^{-3}$
    iii. $p = 0.3000 \times 10^4$ and $p^* = 0.3100 \times 10^4$
f. Let p = 0.54617 and q = 0.54601. Use four-digit arithmetic to approximate p − q and determine the absolute and relative errors using (i) rounding and (ii) chopping.

2. **Attempt _any three_ of the following:**   15
a. Use the Bisection method to find solutions accurate to within 10^{-2} for $x^3 - 7x^2 + 14x - 6 = 0$ in the interval [3.2,4].
b. The fourth-degree polynomial $f(x) = 230x^4 + 18x^3 + 9x^2 - 221x - 9$ in [0, 1] correct upto 4 decimal places using Regula-Falsi method.
c. Find the root of $4x^2 - e^x - e^{-x} = 0$ using Newton Raphson correct upto 4 decimal places using initial value as 1.
d. Given the cube of integers in the following table. Find the values of $(5.5)^3$ and 15^3 using Newton's interpolation formula.
e. Find f (0.9) if f (0.6) = −0.17694460, f (0.7) = 0.01375227, f (0.8) = 0.22363362, f(1.0) = 0.65809197 using Lagrange's Interpolation formula.
f. Using appropriate interpolation formula find $f(4.25)$ from the table:

X	4.0	4.1	4.2	4.3	4.4	4.5
f(x)	27.21	30.18	33.35	36.06	40.73	54.01

[TURN OVER]

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3.
a. **Attempt _any three_ of the following:**

Solve the following system by using the Gauss-Jordan elimination method.
$$a + b + 2c = 1$$
$$2a - b + d = -2$$
$$a - b - c - 2d = 4$$
$$2a - b + 2c - d = 0$$

b. Solve the following system by using the Gauss-Seidel iterative method.
$$10a - b + 2c = 6$$
$$-a + 11b - c + 3d = 25$$
$$2a - b + 10c - d = -11$$
$$3b - c + 8d = 15$$

c. Find $\left(\dfrac{dy}{dx}\right)_{x=5.2}$, if

x	4.9	5.0	5.1	5.2	5.3	5.4	5.5
y	134.290	148.413	164.022	181.272	200.337	221.406	244.692

d. Evaluate $\int_0^{0.3} \sqrt{1 - 8x^2}\, dx$ using Simpson's 3/8th rule.

e. Apply Taylor's method of order two with $N = 10$ to the initial-value problem
$$y' = y - t^2 + 1, \quad 0 \le t \le 2 \le, \quad y(0) = 0.5$$

f. Using modified Euler's method find the solution of
$$y' = \cos 2t + \sin 3t, \quad 0 \le t \le 1; \quad y(0) = 1 \text{ with } h = 0.25$$

15

4.
a. **Attempt _any three_ of the following:**

Fit an exponential model to:

x	0.4	0.8	1.2	1.6	2.0	2.3
y	800	975	1500	1950	2900	3600

b. Find the least square polynomial approximation of degree two to the data

x	0	1	2	3	4
y	-4	-1	4	11	20

c. Find the best-fit values of a and b so that $y = a + bx$ fits the data given in the table.

x	0	1	2	3	4
y	1	1.8	3.3	4.5	6.3

d. A painter has exactly 32 units of yellow dye and 54 units of green dye. He plans to mix as many gallons as possible of color A and color B. Each gallon of color A requires 4 units of yellow dye and 1 unit of green dye. Each gallon of color B requires 1 unit of yellow dye and 6 units of green dye. Find the maximum number of gallons he can mix graphically.

e. Rita wants to buy x oranges and y peaches from the store. She must buy at least 5 oranges and the number of oranges must be less than twice the number of peaches. An orange weighs150 grams and a peach weighs 100 grams. Joanne can carry not more than 3.6 kg of fruits home.

i) Write 3 inequalities to represent the information given above.

ii) Plot the inequalities on the Cartesian grid and show the region that satisfies all the inequalities. Label the region S.

iii) Oranges cost ₹ 0.70 each and peaches cost ₹ 0.90 each. Find the maximum that Rita can spend buying the fruits.

[TURN OVER]

f. Consider a calculator company which produces a scientific calculator and a graphing calculator. Long-term projections indicate an expected demand of at least 1000 scientific and 800 graphing calculators each month. Because of limitations on production capacity, no more than 2000 scientific and 1700 graphing calculators can be made monthly. To satisfy a supplying contract, a total of atleast 2000 calculators must be supplied each month. If each scientific calculator sold results in Rs.120 profit and each graphing calculator sold produces a Rs.150 profit, how many of each type of calculators should be made monthly to maximize the net profit?

5. **Attempt _any three_ of the following:**   15

a. The mileage C in thousands of miles which car owners get with a certain kind of tyre is a random variable having probability density function

$$f(x) = \frac{1}{20} e^{-\frac{x}{20}} \quad for\ x > 0$$
$$= 0, \quad for\ x \leq 0$$

Find the probabilities that one of these tyres will last
    i.   At most 10000 miles
    ii. Anywhere from 16000 to 24000 miles
    iii. At least 30000 miles

b. A petrol pump is supplied with petrol once a day. If its daily volume X of sales in thousands of litres is distributed by

$$f(x) = 5(1-x)^4, 0 \leq x \leq 1$$

what must be the capacity of its tank in order that the probability that its supply will be exhausted in a given day shall be 0.01?

c. A continuous random variable X has a p.d.f.
$$f(x) = 3x^2, \ 0 \leq x \leq 1$$

Find a and b such that
    i. $P(X \leq a) = P(X > a)$ and
    ii. $P(X > b) = 0.05$

d. What is the probability of getting a total of 9 (i) twice and (ii) at least twice in 6 tosses of a pair of dice?

e. In a precision bombing attack there is a 50% chance that any one bomb will strike the target. Two direct hits are required to destroy the target completely. How many bombs must be dropped to give a 99% chance or better of completely destroying the target?

f. A car hire firm has two cars which it fires out day by day. The number of demands for a car on each day is distributed as Poisson variate with mean 1.5. Calculate the proportion of days on which (i) neither car is used, and (ii) some demand is refused.

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F YIT— Sem —II
April—2019

Q. P. Code : 33411

(2½ Hours)

[Total Marks: 75]

N. B.: (1) **All** questions are **compulsory**.
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    (5) Draw **neat labeled diagrams** wherever **necessary**.
    (6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt _any three_ of the following:**   **15**
a. What is WWW? Write difference between WWW and Internet.
b. List and explain different types of CSS selectors with example.
c. Write short note on Uniform Resource Locator.
d. Explain the following HTML tags with the help of example:
    (i) < br>   (ii)<pre>   (iii) <h6>   (iv) <p>   (v) <a>
e. What is proxy server? Discuss its application with reference to internet.
f. Explain different types of lists available in HTML with the help of example.

2. **Attempt _any three_ of the following:**   **15**
a. How to format and position a division on a web page? Explain with example.
b. Write HTML code to design given web page using Table tags.

Sales Report			
ITEM CODE	UNITS	RATE	SALES
1	2	100	200
2	5	50	250
3	10	250	2500
		Total Sales	2950

c. How will you create graphical navigation bar? Explain with example.
d. Explain <audio> and <video> tags in HTML 5.
e. Write HTML Code to design a web page with Image Maps.
f. List and explain any five HTML Form controls with example.

3. **Attempt _any three_ of the following:**   **15**
a. Write a short note on "for….in" looping statement in JavaScript.
b. Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split ( ) function).
c. Explain following events:
    (i)onclick   (ii) onfocus   (iii) onmouseover   (iv) onload   (v) onerror
d. Write a JavaScript program using various methods of Date Object.
e. Write a short note on comparison and logical operators in JavaScript.
f. List various features of JavaScript.

4. **Attempt _any three_ of the following:**   **15**
a. What is PHP? Write the advantages of using PHP for server-side web scripting.
b. Write a PHP code to find the greater of two numbers. Accept the numbers from the user.

[TURN OVER]

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c. Explain any five string functions available in PHP with example.
d. What are the different methods available in PHP for passing the information from one page to another? Explain.
e. Write a short note on PHP data types.
f. Explain associative array in PHP with the help of example.

5. **Attempt _any three_ of the following:**   15
a. Explain following PHP/MYSQL functions:
    (i) mysql_connect ( )   (ii) mysql_close ( )   (iii) mysql_query ( )
    (iv) mysql_select_db ( )   (v) mysql_error ( )
b. Write a PHP program to demonstrate the use of cookies in PHP.
c. Compare POSIX and PERL style Regular expressions of PHP.
d. List various HTTP functions available in PHP. Explain header ( ) function in detail.
e. Write a PHP program to create a database named "employee". Create a table named "salary" with following fields (eid, ename, esalary). Insert 3 records of your choice. Display the names of the employees whose salary is between 15000 to 20000 in a tabular format.
f. Write a short note on PHP Session.