Question Paper Set of

F.Y.B.SC.IT. – Sem-II

Regular Exam

University of Mumbai

April, 2018

Q. P. Code : 33404

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

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

a. What is object oriented programming? State its applications.
b. Illustrate the relationship between object and class.
c. Explain the concept of abstraction with suitable example.
d. Explain in brief about reusability with suitable example.
e. What is polymorphism? Give suitable example for the same.
f. Write a note on dynamic binding.

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

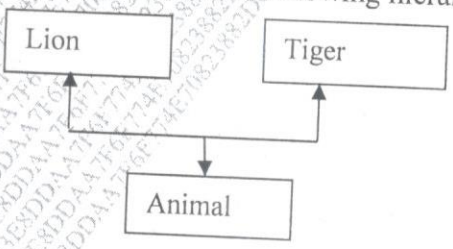
a. Explain the structure of C++ class.
b. Write a C++ program to create a class Bank with { acno, custname, bal} as its attributes. And implement the methods withdraw() , deposit() and showBalance().
c. Explain in brief the concept of friend function and class with suitable example.
d. What is constructor? State its characteristics.
e. Write a C++ program to implement the concept of constructor and destructor.
f. Explain the concept of pointer to object with suitable example.

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

a. Explain the concept of function overloading with suitable example.
b. Write a C++ program to overload binary (++) operator.
c. List the operators that cannot be overloaded. Explain the rules for overloading the operators.
d. What is static function? Explain how it is implemented.
e. What is pure virtual function? Explain how it is implemented.
f. Explain in brief the concept of abstract class.

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

a. Explain the concept of multilevel inheritances with suitable example.
b. Write a C++ program to implement the following hierarchy of inheritance.



c. Explain the concept of method overriding with suitable example.
d. Write a note on containership.
e. Explain the mechanism of handling the exception with suitable example.
f. Explain in brief about hybrid inheritance with suitable example.

[TURN OVER]

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

a. Explain the concept of function template with suitable example.

b. Write a C++ program to implement the concept of class template.

c. State and explain different file modes.

d. Write a C++ program to read the input from the user and write into the file. [Select a suitable file mode]

e. Write a C++ program to display the contents from the file in a console mode. [Select a suitable file mode]

f. Write a C++ program to copy the contents from one file to other file. [Select a suitable file mode]

FYBSCIT SEM - II

Q. P. Code : 33408

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

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

a. How does a Microprocessor work?
b. Explain the following in terms of Compilers:-
   i) Source code
   ii) Object code
c. How is a flip or a latch used as a storage element?
d. What are the different internal data operations and the register of the 8085 microprocessor?
e. Describe the various buses in the 8085 microprocessor.
f. Draw a neat labelled diagram of the 8085 Microprocessor,

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

a. Compare the working of an IN and OUT instruction in 8085 microprocessor
b. Write a short note on Memory mapped I/O techniques.
c. List and describe the various Arithmetic instructions in the 8085 microprocessor instruction set.
d. Write an assembly program to subtract the contents of memory location 2041H from 2040H and store the difference in 2050H.
e. Compare and explain the following instruction :-
   i. LDAX and STAX 2
   ii. JC and JNC 2
   iii. HLT and NOP 1
f. Explain the working of the instructions XRA A and the ANI FOH.

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

a. Write an assembly program for 8085 microprocessor to exchange the contents of memory location 2020H and 2021H
b. Explain how rotate instructions can be used to check the if the hexadecimal number is odd or an even number .
c. Calculate the time delay for the 8085-based Microcomputer with 2 MHz clock frequency.

Label	Mnemonics	Operand	T cycle
	LXI	B, 2384H	10
LOOP:	DCX	B	6
	MOV	A,C	4
	ORA	B	4
	JNZ	LOOP	10/7

d. Write a program to generate a Square wave of a 500 microsecond delay.
e. Explain the effect of the POP and PUSH instruction on the Stack Pointer.
f. List and describe the working of Various Calls and Returns instruction in 8085 microprocessor

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

a. Write an assembly program for 8085 microprocessor to convert $(1111\ 1111)_2$ to its BCD equivalent.

b. Explain the following instruction for 8085 microprocessor :-
   i) DAA
   ii) XCHG

c. Explain the working of an interrupt in 8085 microprocessor.

d. What is the function of an editor , assembler and loader?

e. List and describe of files generated after cross assembling

f. Write a short note on SIM instruction.

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

a. What are the features of Pentium Processor.

b. List and describe the special Pentium registers

c. Describe the memory management in Pentium and Pentium pro processors

d. Compare Core i5 and i7 processors.

e. Describe the general SPARC Architecture.

f. What are the various instruction format in the SPARC Architecture?

17104118 F4BSc IT

Q. P. Code :33410

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

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

a. What is E-Commerce? Explain the advantages, disadvantages and types of E-Commerce.

b. Differentiate between Internet and WWW.

c. List and explain the common features used by all major browsers.

d. Explain the use of RGB Color Values and Hex Values in changing the color of an element in HTML. Give suitable examples.

e. Name the tag used to create a hyperlink. Explain its attributes. Give an example to create a relative hyperlink.

f. Write HTML Code to design the following web page:

MOBILE OPERATING SYSTEMS

1. Android
2. iPhone
3. Symbian

MOBILE MANUFACTURERS

- Samsung
- Apple
- HTC

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

a. Design an HTML page with a client-side image map having clickable areas of shapes – rectangle, polygon and circle.

b. What is the use of redirection to another URL? Design an HTML page that automatically redirects the user to page "fy.html" after 5 seconds.

c. Explain the following Semantic Tags with example.
i. <header> **ii.** <nav> **iii.** <figcaption>

d. Write HTML Code to design the following web page:

Weather	
City	Temperature
Mumbai	33
Delhi	20
Kolkatta	28
Chennai	30

[TURN OVER]

e. How are the following controls created on a form? – Checkboxes, Search Field, Date Field, Submit Button

f. Explain the <audio> tag with all its attributes.

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

a. What is an assignment operator? Explain any four assignment operators with example.

b. Write a JavaScript program to accept a number from the user and display the sum of its digits.

c. How are statements labelled in JavaScript? Explain with the help of an example.

d. What is an Array? Explain any four methods of Array Object with examples.

e. Explain the following methods of Math object with example – ceil(), max(), random(), round(), sqrt().

f. What are events? Explain the following events:
i. onMouseOut **ii.** onKeyUp **iii.** onSubmit **iv.** onLoad

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

a. Explain the different data types in PHP.

b. Write a short note on functions in PHP.

c. Explain the following string functions with example:
i. lcfirst() **ii.** str_shuffle() **iii.** strrev() **iv.** str_replace() **v.** substr()

d. Write a PHP program that removes the first and last element of a one-dimensional array and then displays the remaining elements of the array.

e. Write a PHP program to find the greater of 2 numbers. Accept the numbers from the user.

f. Explain the superglobals in PHP.

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

a. Write a PHP program that uses regular expression functions to display all the uppercase characters from the string "This is a demonstration of PHP Regular Expression".

b. Write a short note on sessions in PHP.

c. Write a PHP program to accept Roll No., Student Name and Percentage from the user and save the values in table Student (rno, sname, percentage) in database College.

d. Explain the mail() function.

e. Write a PHP program to create a cookie using PHP and retrieve its value.

f. Explain the following PHP/MySQL functions with example:
i. mysql_query () **ii.** mysql_error()

---

o/c 18/4/18

Q. P. Code : 33414

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

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

a. Explain Conservation Laws and Engineering Problems.
b. Explain the following with examples
   i) Blunders
   ii) Formulation Errors
   iii) Data Uncertainty
   iv) Total Numerical Errors
c. Explain Floating Point representation and Errors in floating point arithmetic.
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. Compute the true percent relative error for each approximation.
e. Evaluate $y = x^3 - 7x^2 + 8x - 0.35$ at 1.37 use 3 digit and 4 digit arithmetic and find the significant digits lost. Also find the relative error after rounding-off.
f. Evaluate f(1) using Taylors series for f(x), where, $f(x) = x^3 - 3x^2 + 5x - 10$

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

a. Define and express each of the Δ, ∇, δ, and μ in terms of E.
b. Find the polynomial using Lagrange's interpolation polynomial which agrees with the table below given values. Hence obtain the value of f(x) at x = 2

x	0	1	3	4
f(x)	-12	0	6	12

c. Find the Newton's forward difference interpolation polynomial which agrees with the table below given values. Hence obtain the value of f(x) at x = 6

x	0	1	2	3	4	5
f(x)	-5	-10	-9	4	35	90

d. Obtain the root for each of the following equations using Regula Falsi Method by 5 iterations.
   $F(x) = x^3 - 8x + 40 = 0$ upto 4 decimal places with $x_0 = -5$ and $x_1 = -4$.
e. Obtain the root for each of the following equations by Newton Raphson Method by 5 iterations.
   $F(x) = 2x^3 + 5x^2 + 5x + 3 = 0$ up to 4 decimal places
f. Explain Bisection method. Find the approximate root of $x^3 - x - 4 = 0$ by Bisection method up to 4 decimal places. Perform 4 iterations.

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

a. Solve the following system of equation by Gauss-Jordan elimination method.
   $5x - y + z = 10$; $2x + 4y = 12$; $x + y + 5z = -1$
b. Solve the following system of equation, correct to four places of decimals by Gauss-Seidal method perform 4 iteration use pivoting if necessary:
   $30x - 2y + 3z = 75$; $2x + 2y + 18z = 30$; $x + 17y - 2z = 48$

[TURN OVER]

c. Evaluate $\int_0^2 \log(1+x)^{1/2}\,dx$ using Simpson's one third rule with 8 sub-intervals.

d. Evaluate $\int_0^{10} (x+1/x)\,dx$ by Trapezoidal Rule with 10 sub-intervals and find the error.

e. Find the values of y(0.1) and y(0.2) using Euler's modified methods with h = 0.1 given that $dy/dx + y/x = y^2$, y(1) = 1.

f. Find y(0.2) and y(0.4) taking h(0.2) by second order Runge-Kutta method given that $dy/dx = (y-x)/(y+x)$, y(0) = 1

4. Attempt <u>any three</u> of the following: **15**

a. An electrical firm manufactures circuit boards in two configurations, say (1) and (2). Each circuit board in configuration (1) requires 1 component of A, 2 components of B and 2 components of C, each circuit board in configuration (2) requires 2 components of A, 2 components of B and 1 Component of C. Total components available are 30, 30 and 25 of A, B and C respectively. If the profit realized upon sale is Rs 200 per circuit board in configuration (1) and Rs 150 per circuit in configuration (2). How many circuit boards of each configuration should the firm manufacture so as to maximize profit? Formulate the problem as Linear programming model and solve graphically.

b. A diet is to contain at least 400 units of carbohydrates, 500 units of fat and 300 units of protein. Two foods are available F1 which costs Rs 2 per units and F2 which costs Rs 4 per unit. A unit of food F1 contain 10 units of carbohydrates, 20 units of fat and 15 units of protein and a unit of food F2 contains 25 units of carbohydrates, 10 units of fat and 20 units of protein. Find the minimum cost for a diet that consists of a mixture of these two foods and also meets the minimum nutrition requirements. Formulate the problem as Linear programming model.

c. Explain the Applications of Linear Programming in Business and Industry.

d. Find the straight line approximation to the following data.

X	71	68	73	69	67	65	66	67
Y	69	72	70	70	68	67	68	64

e. Find the least square polynomial approximation of degree two equation from data below:

X	1	2	3	4	5	6	7	8	9
Y	2	6	7	8	10	11	11	10	9

f. Obtain a regression plane by using multiple regression to fit the following data.

X	0	1	2	3	4
Z	1	2	3	4	5
Y	13	17	19	21	26

5. Attempt <u>any three</u> of the following: **15**

a. Explain the following
   i) Random Variable
   ii) Probability density function
   iii) Probability mass function

b. The probability distribution function of a discrete random variable X is given by

X	-2	-1	0	1	2
P(X=x)	0.1	0.15	0.2	0.15	0.4

Find i) P(X<=0) ii) P(X>= -1). Also obtain the probability distribution of $y = x^2$

[TURN OVER]

c. A random variable X has the following probability distribution.

X	1	2	3	4	5	6
P(X=x)	3C	5C	7C	9C	11C	13C

i) Find C ii) P(X>=2) iii) P(0<X<4)

d. If $X \sim N(\mu = 30, \sigma = 7)$. Find

i) P(X<20)
ii) P (33<X<45)
iii) P (15 < X < 25)

e. It is observed that 20% of the students in a class are vegetarians. If 4 students are selected at random from this class, what is the probability that

i) Exactly one student is vegetarian
ii) At least two of them are vegetarian

f. A senior citizen receives on an average 2.5 telephone calls during his afternoon nap period 1400-1405 hrs. Find the probability that on a certain day, he receives

i) No telephone calls ii) Exactly 4 calls during the same period. [Given $e^{-2.5} = 0.0821$]

FYBSC.IT Sem. II 19/04/18

Q. P. Code: 08232

(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. List and explain the various toxins present in computer systems.
b. What is carbon footprint? Briefly explain how to compute company's carbon footprint?
c. Discuss about cost saving in power consumption by desktops and data centers.
d. Write a short note on United Nation's Solving the E-waste Problem (StEP).
e. Discuss the European Union's e-waste management WEEE and its RoHs directives.
f. Write a short note on Basel Action Network.

2. **Attempt *any three* of the following:** 15
a. Explain the features and hardware specification of NorhTec and Excito.
b. How can you minimize excessive power output from wireless devices?
c. Explain the ways of reducing power consumption in storage.
d. How to calculate cooling requirement of a system? Explain using suitable example.
e. Write a note on cooling optimization by data center design.
f. Explain any two best practices that can help optimize the airflow around servers and other networking equipment.

3. **Attempt *any three* of the following:** 15
a. Briefly explain steps in setting up a telecommuting program.
b. Write a note on Environmentally Preferable Purchasing Plan.
c. List the tips to keep water usage under control. List the issues to prevent wasted water.
d. Write a short note on intranet.
e. What is Microsoft Office SharePoint Server 2007?
f. What are the advantages and obstacles in using EDI in an organization?

4. **Attempt *any three* of the following:** 15
a. What is refurbishing? What is commercial and non-commercial refurbishing?
b. Briefly explain the phases of a computer product's life cycle.
c. How to clean a hard drive?
d. Write a note on energy star program for computers.
e. Explain benefits and features of blade server.
f. How to configure a remote desktop server?

[TURN OVER]

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

a. How BI tools and MS SQL Server are useful in order to measure and track data?

b. Write a note on Customer Relationship Management. Explain its technology components.

c. What is Green Procurement?

d. Write a note on SMART Goals.

e. Explain the role of Chief Green Officer?

f. What is baseline data, benchmarking and data analysis in equipment checkup.
