Question Paper Set of

F.Y.B.SC.IT. – Sem-II

Regular Exam

University of Mumbai

April, 2017

Green computing

FY IT
26/04/17

Q. P. Code: 08234

BSC IT

(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. Explain how green computing effect on cost saving.
b. How hardware deployments can affect the environment?
c. What are the steps involved for Measuring of carbon footprint?
d. Describe the functions of Basel Action Network.
e. Mention the steps taken by CHINA in managing their own e-waste problem?
f. What StEP stands for? Explain objectives of StEP.

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

a. Explain MAID and RAID.
b. How computer monitor settings save energy?
c. What is polling? Give example.
d. How to achieve proper humidity levels?
e. How to prevent Recirculation of Equipment Exhaust?
f. State the advantages of custom centralized air-handling system.

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

a. What are the ways to control the use of water in organisation?
b. Which things are necessary for evaluating suppliers for their level of environmental responsibility?
c. Describe intranet? How to build it?
d. What is Telecommuting? Explain in brief.
e. Which things are needed to go paperless in organization?
f. Write a note on PDA and Tablet PC.

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

a. List various ways to clean a hard drive. Explain any two.
b. Write a short note on refurbishing.
c. Give advantages and disadvantages of buying equipment's.
d. Explain how remote desktop server is configured.
e. Explain Restriction of Hazardous Substances certification.
f. Define and explain the terms packaging and Toxins with respect to Hardware Considerations.

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

a. List and explain tools used for measuring and tracking our data.
b. What is the difference between Application Service Providers and Software as a Service?
c. Which area needs to be updated in organization to reduce the amount of waste?
d. Explain characteristics of Software as a Service.
e. Describe the work of Chief Green Officer.
f. List and explain key strategies to review action plan.

Microprocessor Archi

FY IT / 55

21/04/17

Q. P. Code: 08237

(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. Describe a Microprocessor based system.

b. Explain the terms:-
   i) Word
   ii) Byte
   iii) Nibble
   iv) Machine language
   v) Assembly language

c. Explain Tristate device logic and Buffer.

d. Write a short note on classification of memory.

e. Draw a neat label functional block diagram of 8085 microprocessor and explain the flags of the flag register.

f. Explain the timing diagram of the Memory Read Cycle.

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

a. Explain the working of the OUT instruction in 8085 microprocessor.

b. Explain the memory mapped I/O with STA 8000H stored at memory address 2050H.

c. List and explain the various data transfer instruction.

d. What is a instruction, instruction word size? Write types of instruction based on size?

e. Explain the following instruction
   i) ADI
   ii) JC
   iii) XRA
   iv) ORI
   v) JNZ

f. Write an assembly program for 8085 microprocessor to add the content of C030H and C031H . Store the sum in C040H and carry at C041H.

[TURN OVER]

3. Attempt *any three* of the following:

a. Write an assembly program for 8085 microprocessor to transfer the contents of 10 memory location from C030H- C039H to C040H - C041H.

b. Explain the various Rotate Instruction for 8085 microprocessor

c. Calculate the time delay for the 8085-based Microcomputer with 2 MHz clock frequency.

Label	Mnemonics	Operand	T cycle
	MVI	C,FFH	7
LOOP:	DCR	C	4
	JNZ	LOOP	10/7

d. Draw and explain a flowchart for a zero to nine counter.

e. What is a stack? What are the two operations on the stack? Explain with example.

f. Explain the execution of a CALL instruction for 8085 microprocessor and its effect on the stack pointer and program counter.

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

a. Write an assembly program for 8085 microprocessor to convert 72_{BCD} to its binary equivalent.

b. Explain the following instruction :-

i) LHLD and SHLD

ii) XCHG and XTHL

iii) SBB

c. Explain the following :-

i) Cross Assembler

ii) Loader

d. What is the function performed by a debugger?

e. Explain the steps of 8085 microprocessor interrupt process.

f. Write a short note on 8085 microprocessor vectored interrupts.

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

a. Explain the internal structure of the Pentium Pro Processor.

b. List any five Pentium instructions and explain the function of any two.

c. Explain the CPUID instruction in Pentium II.

d. Compare Core i3, i5 and i7 processors.

e. What are the features of the SPARC Architecture?

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

Object Oriented Programming

FY BSC IT 2014/17

Q. P. Code: 08242

BSC IT

(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. Write down advantages and disadvantages of procedure oriented language.
b. Explain object oriented development.
c. Write down benefits of using object oriented programming.
d. Write a short note on Data abstraction and data encapsulation.
e. Explain dynamic binding with example. Give proper example.
f. What is inheritance? Explain with example the concept of multiple inheritances.

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

a. What is friend function? Write a friend function to display mark sheet of the F. Y. B. Sc. IT student.
b. What is class? Explain with example how objects are passed as argument to member function and objects are returned from member function.
c. Write a C++ program to design a class - ***cours.e*** For reading and displaying the course information, the getInfo() and displayInfo() methods will be used respectively. The getInfo() will be private method. Write down C++ program to implement the class.
d. What is inline function? Explain with example.
e. What is use of constructor? Explain with example parameterized constructor.
f. Write a C++ program to demonstrate the use of constructor and destructor.

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

a. What is function overloading? Explain with example.
b. What is operator overloading? Write down the rules for operator overloading.
c. How binary operators are overloaded? Write a C++ program to overload binary operator +.
d. What is method overriding? Explain with example.
e. Explain with example abstract class.
f. Explain virtual destructor. Give suitable example.

[TURN OVER]

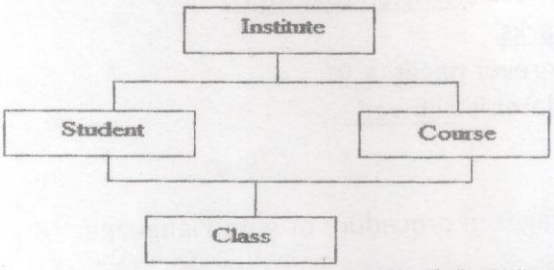
4. **Attempt *any three* of the following:** 15

a. Can private members of a base class are inheritable? Justify.

b. Explain with example multilevel inheritance.

c. Explain how a base class is derived in public and private mode.

d. Write a C++ program to implement following hierarchy.



e. What is exception? Explain exceptions handling mechanism?

f. What happen when raised exception is not caught by catch block? Explain with suitable example.

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

a. Explain with example how function templates are used.

b. Explain how compiler calls to a class and function template.

c. Write a C++ program which defines and uses student class template.

d. What is file? Write down the steps for manipulating files in C++.

e. Explain the hierarchy of file stream class.

f. What are different methods of opening a file? Write a program to open file and enter student details into the file using any method.

---

web programing

IT
24/04/17

Q. P. Code: 08246

BSC IT

(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 important applications of internet in brief.
b. Explain different approaches to style sheets.
c. Write a short note on internet address.
d. How hyperlinks are created in HTML? Explain with the help of an example.
e. What is search engine? Explain its working.
f. Write HTML code to design following web page:

A. Scripting Languages
  i. VB SCRIPT
  ii. JAVA SCRIPT
B. DBMS
  - ORACLE
  - MY SQL

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

a. What is image map? Write the difference between client-side and server-side image mapping.
b. Write the purpose of using: rowspan, colspan, cellspacing and cellpadding in Table tag. Give example.
c. Write HTML code for embedding an audio and video in a web page.
d. Explain the semantic tags of HTML5.
e. Write HTML code to design a form to enter name of the user, his/her password, and gender (radio button for male/female), hobbies (checkbox for reading/singing/sports), favorite color (list box red/green/blue) and submit and reset button.
f. Explain <DIV> tag with the help of suitable example.

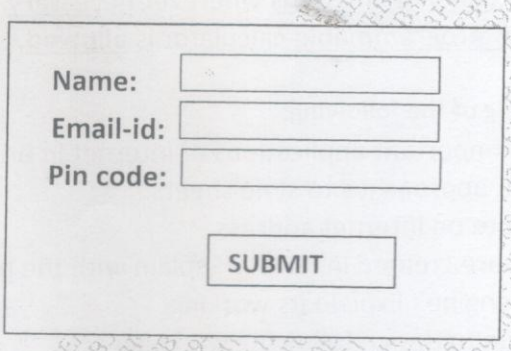
3. Attempt *any three* of the following: 15

a. Differentiate between client side and server side JavaScript.
b. Write a JavaScript program to display all the prime numbers between 1 and 100.
c. List and explain the methods of string object of JavaScript.

[TURN OVER]

d. Explain the following operators of JavaScript:
(i) new (ii) delete (iii) this (iv) void (v) ,(Comma)

e. Write the codes to design following web page and validate all the controls placed on the form using JavaScript as given:
Name should not be blank,
Check email-id is valid,
Check Pin code is 6 digits long.



f. Define events and event handlers. List various types of mouse event.

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

a. Write the difference between GET and POST methods in PHP.
b. Explain different types of arrays available in PHP.
c. Write a PHP program to demonstrate the use of different string functions.
d. Explain error handling in PHP.
e. Write a short note on variables in PHP.
f. Write a PHP program to create one dimensional array.

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

a. What is a cookie? How to store and retrieve the values in cookie in PHP?
b. Explain any five PHP/MYSQL functions with example.
c. Write a PHP program to send email with attachment.
d. How to start and destroy a session and how to store a session variable in PHP? Explain.
e. Write a short note on regular expressions in PHP.
f. Write a PHP code to create a database "Company" and to create a table "Employee" (emp_id, emp_name,emp_dept,emp_salary).

(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 a mathematical model? With the help of a flowchart, explain the of solving an engineering problem.

b. Create a hypothetical floating-point number set for a machine that stores information using 7-bit words. Employ the first bit for the sign of the number, the next three for the sign and the magnitude of the exponent, and the last three for the magnitude of the mantissa.

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 fourth-order Taylor series expansions to approximate the function

$$f(x) = -0.1x^4 - 0.15x^3 - 0.5x^2 - 0.25x + 1.2$$

from $x_i = 0$ with $h = 1$. That is, predict the function's value at $x_{i+1} = 1$.

e. Compute the condition number for

$$f(x) = tanx \; for \; \tilde{x} = \frac{\pi}{2} + 0.1\left(\frac{\pi}{2}\right)$$

$$f(x) = tanx \; for \; \tilde{x} = \frac{\pi}{2} + 0.01\left(\frac{\pi}{2}\right)$$

f. Explain blunders, formulation errors and data uncertainty.

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

a. Find the roots of the equation

$$x^3 - 12.2x^2 + 7.45x + 42 = 0$$

between 11 and 12 using Regula-Falsi method correct up to 4 decimal places.

b. Find the roots of the equation

$$xtanx = 1$$

near 4 using Newton Raphson method correct up to 4 decimal places.

c. Use the Secant method to find a solution to $x = cosx$ correct up to 4 decimal places.

d. Given log 2 = 0.3010, log 3 = 0.4771, log 5 = 0.6990 and log 7 = 0.8451. Find the value of log 47.

[TURN OVER]

e. The table below gives the value of $tan\theta$. Evaluate $tan67°20'$

θ	65°	66°	67°	68°	69°
$tan\theta$	2.1445	2.2460	2.3559	2.4751	2.6051

f. From the table of Bessel function $J_n(1)$, estimate the value of $J_{\frac{3}{2}}(1)$

n	-1	$-\frac{3}{4}$	$-\frac{1}{2}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1
$J_n(1)$	-0.4401	0.0447	0.4311	0.6694	0.7652	0.7522	0.6714	0.5587	0.4401

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

a. Solve the following simultaneous equations by Gauss – Jordan elimination method:

$$2x_1 + 6x_2 - x_3 = -14$$
$$5x_1 - x_2 + 2x_3 = 29$$
$$x_3 - 3x_1 - 4x_2 = 4$$

b. Solve the following simultaneous equations by Gauss – Seidel method:

$$3x_1 - 0.1x_2 - 0.2x_3 = 7.85$$
$$0.1x_1 + 7x_2 - 0.3x_3 = -19.3$$
$$0.3x_1 - 0.2x_2 + 10x_3 = 71.4$$

c. For the set of points (0, 2), (2, -2), (3, -1), evaluate $\left(\frac{dy}{dx}\right)_2$

d. Evaluate $\int_0^1 \frac{1-e^{-x}}{x}dx$ using trapezoidal rule and Simpson's 3/8 rule.

e. Solve $\frac{dy}{dx} = x + y$; y(1) = 1 for the interval 1 (0.1) 1.2, using method of Taylor series.

f. Solve $\frac{dy}{dx} = \frac{y-x}{y+x}$, where y(0) = 1, to find y(0.1) using Runge-Kutta method.

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

a Fit a straight line to the x and y values in the two rows:

x	1	2	3	4	5	6	7
y	0.5	2.5	2.0	4.0	3.5	6.0	5.2

b Fit a second degree parabola for the following:

x	2.5	3	3.5	4	4.5	5	5.5
y	4.32	4.83	5.27	5.47	6.26	6.79	7.23

c Fit the function $f(x; a_0, a_1) = a_0(1 - e^{-a_1 x})$ to the data:

x	0.25	0.75	1.25	1.75	2.25
y	0.28	0.57	0.68	0.74	0.79

using initial guesses $a_0 = 1$ *and* $a_1 = 1$. (Use Gauss Newton Method)

[TURN OVER]

d Maximize $50x+100y$ subject to $10x+5y \le 2500$; $4x+10y \le 2000$; $x+1.5y \le 450$ and $x \ge 0; y \ge 0$.

e A firm makes two types of furniture – chairs and tables. The contribution for each product as calculated by the accounting department is Rs. 20 per chair and Rs. 30 per table. Both products are processed on three machines M_1, M_2 and M_3. The time required in hours by each product and total time available in hours per week on each machine are as follows: 15

MACHINE	CHAIR	TABLE	AVAILABLE TIME
M_1	3	3	36
M_2	5	2	50
M_3	2	6	60

How should the manufacturer schedule his production in order maximize contribution?

f An aged person must receive 4000 units of vitamin, 50 units of minerals and 1400 calories a day. A dietician advises to thrive on two foods F1 and F2 that cost Rs 4 and Rs 2 respectively per unit of food. It one unit of F1 contains 200 units of vitamins, 1 unit of mineral and 40 calories and one unit of F2 Contains 100 units of vitamins 2 units of minerals and 40 calories, formulate a linear programming model to minimize the cost of diet.

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

a. The diameter of an electric cable; say X, is assumed to be a continuous random variable with p.d. f. $f(x) = 6x(1-x), 0 \le x \le 1$.
(i) Check that above is p.d.f,
(ii) Determine a number b such that P (X < b) = P (X> b)

b. Define and explain the concept of probability density function.

c. The probability mass function of a random variable X is zero except at the points $i = 0, 1, 2$. At these points it has the values $p(0) = 3c^3$, $p(1) = 4c - 10c^2$, $p(2) = 5c - 1$ for some $c > 0$.
(i) Determine the value of *c*.
(ii) Compute the following probabilities, $P(X < 2)$ *and* $P(1 < X \le 2)$.
(iii) Describe the distribution function and draw its graph.
(iv) Find the largest *x* such *that* $F(x) < \frac{1}{2}$.
(v) Find the smallest *x* such that $F(x) \ge \frac{1}{3}$.

d. What is exponential distribution? Suppose the time till death after infection with Cancer, is exponentially distributed with mean equal to 8 years. If X represents the time till death after infection with Cancer, then find the percentage of people who die within five years after infection with Cancer.

e. The price for a litre of whole milk is uniformly distributed between Rs. 45 and Rs. 55 during July in Mumbai. Give the equation and graph the pdf for X, the price per litre of whole milk during July. Also determine the percent of stores that charge more than Rs. 54 per litre.

f. The monthly worldwide average number of airplane crashes of commercial airlines is 2.2. What is the probability that there will be (i) more than 2 such accidents in the next month? (ii) more than 4 such accidents in the next 2 months?