

Total No. of Questions :7]

SEAT No. :

P1002

[5319]-1001

[Total No. of Pages :4

F.Y.B.C.A.

SCIENCE

**BCA - 101: Fundamentals of Computer
(2016 Pattern) (Semester-I)**

Time : 3Hours]

[Max. Marks :70

Instructions to the candidates :

- 1) *Question No.1 (A and B) are compulsory.*
- 2) *Attempt any two questions from Group-I.*
- 3) *Attempt any two questions from Group-II.*
- 4) *Figures to the right indicate full Marks.*

Q1) A) Choose the appropriate option. [7]

- a) _____ is a translator that translates source instruction into target instruction, on a one to one basis.
- | | |
|----------------|----------------------|
| i) Assembler | ii) Machine Compiler |
| iii) Converter | iv) Interpreter |
- b) M B R Stands for_____
- | | |
|-----------------------|-------------------------|
| i) Mini Boot Record | ii) Master Break Record |
| iii) Master Boot Race | iv) Master Boot Record |
- c) Which DOS Command is used to list all of the files in the current directory?
- | | |
|-----------|-----------------------|
| i) CLS | ii) DIR |
| iii) SHOW | iv) None of the above |
- d) GUI stands for_____
- | |
|----------------------------------|
| i) Geographical User Interchange |
| ii) Geometrical User Interface |
| iii) Graphical User Interface |
| iv) None of the above |

P.T.O.

- e) _____ is the process of consolidating fragmented data on a Volume so it will work more efficiently.
- i) Disk defragmentation ii) Program
 iii) Compression iv) Disk cleanup
- f) _____ is Volatile Memory device.
- i) PROM ii) EPROM
 iii) ROM iv) RAM
- g) _____ is a systematic approach to problem solving that is often used to find and correct issues with complex machines, electronics, computers and software system.
- i) Troubleshooting ii) PC Wizard
 iii) HW Info iv) None of the above

B) Define following terms: [7]

- a) PROM
 b) Compiler
 c) Vi editor
 d) Desktop
 e) Theme
 f) Registers
 g) Spreadsheet

GROUP - I

Q2) Answer the following.

- a) What is input devices? Explain at least two input devices in detail. [5]
- b) What is computer? What are the characteristics of computer. [5]
- c) Write notes on: [4]
- i) ROM
 ii) Application Software

Q3) Attempt the following.

- a) Explain Mainframe Computer in detail [4]
- b) Write short note on: [4]
 - i) BIOS
 - ii) Octal Number System
- c) Convert following decimal number in to binary number [3]
 - i) $(56)_{10}$
 - ii) $(187)_{10}$
- d) Explain the Usage of spreadsheet [3]

Q4) Answer the following.

- a) Explain block diagram of computer in detail [4]
- b) Explain CRT monitor in detail [4]
- c) Explain various Presentation tools [3]
- d) Explain various Spreadsheet Software [3]

GROUP-II

Q5) Answer the following.

- a) Define O.S? Explain any four function of O.S. [5]
- b) What do you mean by High level language?What are features of High level language? [5]
- c) Write Short note on: [4]
 - i) Motherboard
 - ii) Scanner

Q6) Answer the following.

- a) Explain any four networking related Problem with Solution [4]
- b) What is hardware? Explain types of Hardware [4]
- c) Write note on: [3]
 - i) Slide Animation
 - ii) Powerpoint Background
- d) Explain any three features of word processor [3]

Q7) Answer the following.

- a) Explain any four external DOS Commands with example [4]
- b) Write short note on: [4]
- i) Dot Matrix Printer
 - ii) Menu
- c) Convert the following. [3]
- i) $(14268)_{10} = (?)_{16}$
 - ii) $(436)_8 = (?)_2$
 - iii) $(1011)_2 = (?)_8$
- d) Solve the following. [3]
- i) $1100110 + 1001101$
 - ii) $1101 - 111$



Total No. of Questions :7]

SEAT No. :

P1003

[5319]-1002

[Total No. of Pages :4

F.Y.B.C.A.

SCIENCE

**BCA - 102: Basic Programming in 'c'
(2016 Pattern) (Semester-I)**

Time : 3Hours]

[Max. Marks :70

Instructions to the candidates :

- 1) Question No.1 (A and B) are compulsory.*
- 2) Attempt any two questions from Group-I.*
- 3) Attempt any two questions from Group-II.*
- 4) Figures to the right indicate full Marks.*

Q1) A) Choose Correct Option.

[7]

- a) The operator? : is a _____ operator.
- | | |
|--------------|--------------------|
| i) unary | ii) binary |
| iii) ternary | iv) none of these. |
- b) The Prototype of a function is used to _____
- | | |
|------------------------|------------------------|
| i) define a function | ii) declare a function |
| iii) delete a function | iv) all of these. |
- c) Which of the following is not an arithmetic operator.
- | | |
|-----------------|-----------------|
| i) $a * = 10$ | ii) $a / = 10$ |
| iii) $a ! = 10$ | iv) $a \% = 10$ |
- d) The value obtained in the function is given back to main by using keyword _____
- | | |
|-----------|--------------|
| i) return | ii) static |
| iii) new | iv) volatile |

P.T.O.

- e) Size of an array can be evaluated by (assuming array declaration int a [10];) _____
- i) size of (a) ii) size of (*a)
 - iii) size of (a[10]) iv) size of (a) * 10
- f) ____ of the following is unconditional control statement.
- i) do - while ii) goto
 - iii) for iv) if - else
- g) The function 'getch' is define in _____ header file.
- i) < conio.h > ii) < stdio.h >
 - iii) < math.h > iv) < ctype.h >

B) Answer the following. [7]

- a) What is the use of printf statement?
- b) Define function.
- c) What is escape sequence for null character?
- d) What is the use of puts ().
- e) Define array. Give example.
- f) What is type casting.
- g) What does associativity specify?

GROUP - I

Q2) Attempt the following.

- a) Explain basic data types in 'c' language. [5]
- b) Give advantages and disadvantages of algorithm. [5]
- c) Draw a flowchart to find maximum of three numbers. [4]

Q3) Attempt the following.

- a) Describe the structure of 'c' program with the help of diagram. [4]
- b) Explain bitwise operator in detail. [4]
- c) Write an algorithm to check if the given number is prime or not [3]
- d) Explain enumerated data type with syntax. [3]

Q4) Attempt the following.

- a) What is recursion? Explain with example. [4]
- b) Trace the output with justification. [4]

```
int main ()  
{ int arr [] = { }  
printf ("% d", size of (arr) );  
return o ;  
}
```

- c) Give the difference between entry controlled loop and exit controlled loop. [3]
- d) Explain switch-case statement with an example. [3]

GROUP-II

Q5) Attempt the following.

- a) Explain "for" loop with syntax & example. [5]
- b) Write a "c" program to reverse the given number. [5]
- c) Explain different storage classes. [4]

Q6) Attempt the following.

- a) What is escape sequence? Explain with examples. [4]
- b) Explain with an example row and column major representation of two-dimensional array. [4]
- c) Explain call by reference with example. [3]
- d) Explain the following functions with an example. [3]
 - i) `getchar ()`
 - ii) `Putchar ()`
 - iii) `getch ()`

Q7) Attempt the following.

- a) Define a flow chart & explain its symbols. [4]
- b) Explain features of 'c' language. [4]
- c) Write an algorithm to convert temperature from celcius to Fahrenheit.[3]
- d) Explain different types of constants with an example. [3]



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SEAT No. :

P1004

[Total No. of Pages : 4

[5319] - 1003

F.Y.B.C.A. (Science)

BCA-103: APPLIED MATHEMATICS -I

(2016 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Question No. 1 (A and B) are compulsory.*
- 2) *Attempt any two questions from Group I*
- 3) *Attempt any two questions from Group II.*
- 4) *Figures to the right indicate full marks.*

Q1) A) Choose the correct alternatives.

[7]

a) If A and B are any two sets in universal set U then $(A \cap B)^c$ is

i) $A^c \cup B^c$

ii) $A^c \cap B^c$

iii) $A^c \cup B$

iv) None of these

b) Which of the following is correct

i) $N \subset Z \subset R$

ii) $R \subset Z \subset N$

iii) $N \subset R \subset Z$

iv) None of these

c) If $A = \{1, 2, 3\}$ then power set A is

i) $|P(A)| = 8$

ii) $|P(A)| = 9$

iii) $|P(A)| = 6$

iv) None of these

d) Sum the squares of the first n natural numbers is

i) n^2

ii) $\frac{n^2(n+1)^2}{4}$

iii) $\frac{n(n+1)(2n+1)}{6}$

iv) None of these

P.T.O.

e) Consider the following two equations

$$x^2 - 10x + 16 = 0 \text{ and } x^2 = 8x$$

The set of solutions of equations in z are

- i) same
- ii) disjoint
- iii) Not same
- iv) None of these

f) The permutation $f = 23514$ of (5) is an

- i) odd permutation
- ii) even permutation
- iii) Identity permutation
- iv) None of these

g) Every non-empty subset of N has

- i) a maximum element
- ii) a least element
- iii) zero element
- iv) none of these

B) Answer the following in one or two lines. [7]

a) Draw the functional digraph of permutation $f = 23416785$.

b) Determine the coefficient of $x^4 y^5$ in the expression of $(x + y)^9$.

c) What is the negation of statement "There is an honest politician".

d) Find the sum: $\sum_{x=1}^k X$.

e) Obtain the condition that the equation $x^2 + bx + c = 0$ has two distinct real solutions.

f) For $n \in N$, obtain a formula for $\sum_{i=1}^n n^i$.

g) Define: Combinations.

[GROUP - I]

Q2) Attempt the following questions:

- a) If X and Y are real numbers then show that $2XY \leq X^2 + Y^2$ and

$$XY \leq \left(\frac{X+Y}{2} \right)^2. \quad [5]$$

- b) Let $S = \{(x, y) \in \mathbb{N}^2 \mid (2-x)(2+y) > 2(y-x)\}$
and $T = \{(1, 1), (1, 2), (1, 3), (2, 1), (3, 1)\}$. Prove that $S = T$. [5]

- c) State any four field axioms for addition. [4]

Q3) Attempt the following questions:

- a) Show that $(P \rightarrow Q) \leftrightarrow ((\neg P) \vee Q)$ is a tautology. [4]

- b) Prove that $\sqrt{2}$ is an irrational. [4]

- c) Using mathematical induction, prove that $n < 2^n \forall n \in \mathbb{N}$. [3]

- d) Let $f, g : \mathbb{R} \rightarrow \mathbb{R}$ be functions. If f and g are bounded then show that $f + g$ is bounded. [3]

Q4) Attempt the following questions:

- a) If $a, r \in \mathbb{R}, r \neq 1$ and $n \in \mathbb{N}$, then prove that

$$\sum_{i=0}^n ar^i = a + ar + ar^2 + \dots + ar^n = a \left(\frac{r^{n+1} - 1}{r - 1} \right). \quad [4]$$

- b) For all $n \in \mathbb{N}$, show that $\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$. [4]

- c) Which integer is bigger $(222)_{(11)}$ or $(2222)_{(6)}$? Justify. [3]

- d) For $n \in \mathbb{N}$, find the formula for, $\sum_{k=1}^n \frac{1}{k(k+1)}$. [3]

[GROUP - II]

Q5) Attempt the following questions:

- a) Prove that, there is one-to-one correspondence between \mathbb{N} and \mathbb{Z} . [5]
- b) Determine whether the function $f : \mathbb{R} \rightarrow \mathbb{R}$ determined by $f(x) = \frac{1}{1+x^2}$ is bijection. [5]
- c) If there is a bijection $f : [m] \rightarrow [n]$ then prove that $m = n$. [4]

Q6) Attempt the following questions:

- a) Show that, $\mathbb{N} \times \mathbb{N}$ is countable. [4]
- b) Show that the total number of subsets of a set S with n elements is 2^n . [4]
- c) If $f = 132$ and $g = 213$ are permutations of $[3]$ then find functional digraph of $f \circ g$ and $g \circ f$. [3]
- d) Represent rotation by 90 degrees in permutation form. [3]

Q7) Attempt the following questions.

- a) If P is a prime number and $P \mid ab$ then prove that either P divides a or P divides b . [4]
- b) Show that there are infinitely many primes. [4]
- c) Solve the following Dart Board problem $2x + 3y = 1$. [3]
- d) Find g.c.d of $P = x^3 - 2x^2 + 6x - 5$ and $q = x^2 - 2x + 1$. [3]

EEE

Total No. of Questions :7]

P1005

SEAT No. :

[Total No. of Pages : 3

[5319]-1004

F.Y.BCA

SCIENCE

BCA-104: Communication Skills

(Semester-I) (2016 Pattern)

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No-1(a and b) are compulsory.*
- 2) *Attempt any two questions from group-I.*
- 3) *Attempt any two questions from group-II.*
- 4) *Figures to the right indicate full marks.*
- 5) *Draw Neat diagrams wherever necessary.*

Q1) A) Choose correct answer from the options.

[7]

- a) Stage fear is _____ barrier.
- | | |
|---------------|-------------------|
| i) Technical | ii) Physical |
| iii) Cultural | iv) Psychological |
- b) Memo is
- | | |
|----------------|------------------|
| i) Warning | ii) appreciation |
| iii) Promotion | iv) appology |
- c) Notice of meeting is _____
- | | |
|-------------------|-----------------|
| i) Agenda | ii) information |
| iii) legel action | iv) verbal |
- d) Gossip is _____ Communication.
- | | |
|-----------------|--------------|
| i) Emotional | ii) informal |
| iii) Non-verbal | iv) memo |
- e) Empathy means _____
- | | |
|---------------------------|-------------------|
| i) Conflict | ii) body language |
| iii) understanding others | iv) agenda |

P.T.O.

- f) Traffic signal is _____ communication.
- | | |
|-----------------|------------|
| i) Oral | ii) verbal |
| iii) Non-verbal | iv) Formal |
- g) Feedback is _____ of communication.
- | | |
|---------------|----------------|
| i) Conclusion | ii) Channel |
| iii) mode | iv) Formal way |

Q1) B) Answer briefly. [7]

- a) Silence - effective communication.
- b) Importance of feedback.
- c) Reasons of conflict.
- d) Manner of oral communication.
- e) Psychological barriers.
- f) objectives of Non-verbal communication.
- g) Informal communication.

Group-I

Q2) a) 'Factors causing psychological barrier are internal' Explain. [5]

- b) What is Cultural barriers? Explain. [5]
- c) What is the significance of body language. [4]

Q3) a) Define verbal communication and state examples. [4]

- b) What are the aspects of report writing. [4]
- c) What is informal communication? How it is different from formal? [3]
- d) Write note on Body language. [3]

Q4) a) State the advantages of verbal communication. [4]

- b) What is the scope of language in communication? [4]
- c) What is principle of Selecting proper channel? [3]
- d) What is the process of communication? [3]

Group-II

- Q5)** a) How communication solve conflicts? [5]
b) Write a letter of enquiry asking for the rates of S.T Bus for industrial visit? [5]
c) Draft a report of Independence day Celebrated in your college? [4]
- Q6)** a) Write an application letter for the post of marketing manager? [4]
b) Draft a resume. [4]
c) How effective are SMS today? [3]
d) What is tele. Conferencing? [3]
- Q7)** a) What are steps of resolving conflict? [4]
b) What is negotiation skill? [4]
c) What are the aspects of interview? [3]
d) Why group discussion is important? [3]



Total No. of Questions :7]

SEAT No. :

P1006

[Total No. of Pages : 3

[5319]-2001

F.Y.B.C.A

SCIENCE

BCA-201; Computer Organization

(Semester-II)

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No-1 (A & B) are compulsory.*
- 2) *Attempt any two questions from group-I.*
- 3) *Attempt any two questions from group-II.*
- 4) *Figures to the right indicate full marks.*

Q1) A) Choose the correct option.

[7]

- a) Which combinational circuit is used for addition of two bits?
- | | |
|---------------|-----------------|
| i) Half Adder | ii) Multiplexer |
| iii) Encoder | iv) Subtractor |
- b) Which of the following is the example of weighted number system?
- | | |
|------------|-----------------|
| i) Gray | ii) Hexadecimal |
| iii) Ascll | iv) EBCDIC |
- c) Which Flip Flop is used to remove invalid condition?
- | | |
|-----------------|---------------------|
| i) SR | ii) JK |
| iii) Clocked SR | iv) Master slave JK |
- d) Pop operation is used to _____
- | | |
|-------------------------|----------------------------|
| i) Read data from stack | ii) Write data in to stack |
| iii) Write data to Rom | iv) None |
- e) _____ is the IC for 2 I/P OR gate operation.
- | | |
|-------------|------------|
| i) IC7400 | ii) IC7402 |
| iii) IE7432 | iv) IC7408 |

P.T.O.

- f) Which combinational circuit is used for subtraction of two bits.
- | | |
|---------------|-----------------|
| i) Half Adder | ii) Multiplexer |
| iii) Encoder | iv) Subtractor |
- g) Which of the following is not in memory hierarchy.
- | | |
|-----------|-----------------------|
| i) RAM | ii) ROM |
| iii) PROM | iv) None of the above |

- B) Define the terms: [7]
- | |
|-----------------|
| a) Pipe line |
| b) Ring counter |
| c) IVT |
| d) ALU |
| e) Cache memory |
| f) Encoder |
| g) Parity |

Group-I

Q2) Answer the following;

- | | |
|--|-----|
| a) Describe the working of RS flip flop with logic diagram & truth table. | [5] |
| b) Explain 1 to 4 Demultiplexer with circuit. Write applications of demultiplexer. | [5] |
| c) Write a short note on registers in 8086? | [4] |

Q3) Answer the following;

- | | |
|---|-----|
| a) How to implement full adder using two half adders. Draw logic diagram & its truth table. | [4] |
| b) Write a short note on weighted & unweighted codes with an example. | [4] |
| c) State De- Morgan's 2 nd Theorem & prove it. | [3] |
| d) Differentiate between synchronous and asynchronous counters with an example. | [3] |

Q4) Answer the following;

- a) What is stack? What are the different operation on a stack? [4]
- b) Draw neat diagram of 3-bit combined up down asynchronous counter & Explain its working. [4]
- c) Simplify $(A + \bar{A}) \cdot (BA + BA\bar{C})$ and draw simplified circuit. [3]
- d) What is an Interrupt? What are its types? [3]

Group-II

Q5) Answer the following;

- a) Draw block Diagram of 8086 and Explain the flag register. [5]
- b) Write a short note on memory hierarchy. [5]
- c) Perform the following conversions. [4]
 - i) $(234)_{10} = (?)_{16}$
 - ii) $(142)_{10} = (?)_2$
 - iii) $(1011)_2 = (?)_{\text{gray}}$
 - iv) $(1101)_{\text{gray}} = (?)_2$

Q6) Answer the following;

- a) Explain implementation of D and T flip flop and their applications. [4]
- b) Differentiate between RISC and CISC. [4]
- c) Build OR & AND gate using NOR gate. [3]
- d) Write a note on Excess-3 code. [3]

Q7) Answer the following;

- a) Draw logic gate, Boolean equation & truth table for all 3 I/P universal logic gates. [4]
- b) What are the different ways of serial data transfer? Explain the typical frame format of synchronous and asynchronous data. [4]
- c) Distinguish between serial and parallel data transfer. [3]
- d) Mention the functions of a CPU. [3]



Total No. of Questions : 7]

SEAT No. :

P1007

[Total No. of Pages : 4

[5319] - 2002

F.Y. B.C.A. (Science)

BCA -202: ADVANCED PROGRAMMING IN 'C'

(2016 Pattern) (Semester II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Question No.1 (a and b) are compulsory.*
- 2) *Attempt any two questions from Group-I.*
- 3) *Attempt any two questions from Group-II.*
- 4) *Figures to the right indicate full marks.*

Q1) a) Choose correct option:

[7]

i) _____ symbol is used to terminate a string.

- | | |
|---------|-------|
| 1) NULL | 2) \0 |
| 3) . | 4) /0 |

ii) Trace the output.

```
char str [20] = "Bye";
```

```
printf ( " % C " , * str ) ;
```

- | | |
|--------|----------|
| 1) Bye | 2) B |
| 3) y | 4) Error |

iii) Which of the following is macro continuation preprocessor operator.

- | | |
|------|--------|
| 1) # | 2) # # |
| 3) / | 4) \ |

P.T.O.

- iv) Which of the following is appropriate for reading multi - word string?
 - 1) `printf ()`
 - 2) `scanf ()`
 - 3) `gets ()`
 - 4) `puts ()`
- v) Data written into a file using `fwrite ()`
Can be read back using
 - 1) `fscanf ()`
 - 2) `fread ()`
 - 3) `fgets ()`
 - 4) All of the above
- vi) If variable is a pointer to a structure, then which of the following operator is used to access data members of the structure.
 - 1) `&`
 - 2) `.`
 - 3) `*`
 - 4) `→`
- vii) Which of the following is compiler control directive?
 - 1) `# ifdef`
 - 2) `# define`
 - 3) `# include`
 - 4) All of the above

b) Answer the following: [7]

- i) What is # pragma directive?
- ii) What is purpose of `strtok ()` Function?
- iii) Define pointer to pointer.
- iv) How is a union declared?
- v) Give syntax of `fseek ()` function.
- vi) Find memory required for the following:

```

struct demo
{
    int x ;
    char y [15] ;
} d ;

```

[Note - Assume 'int' takes 4 bytes]

- vii) What is significance of `orgv [0]`?

Group - I

Q2) Attempt the following:

- a) What do you mean by 'Array of pointers' and 'pointer to array'? Explain with an example. [5]
- b) Write a C program that accepts 'n' words and display the longest word. [5]
- c) Explain Bitfield concept with an example. [4]

Q3) Attempt the following:

- a) Write a C program to check whether a string is palindrome or not. [4]
- b) Write a difference between structure and union with example. [4]
- c) Trace the out put and Justify. [3]

```
int main()
{
    static char s [ ] = "Tendulkar" ;
    char * P ;
    P = &S [8] - 8 ;
    while ( * P )
        printf ( " % C " * p++ ) ;
}
```

- d) Explain nested structure with an example. [3]

Q4) Attempt the following:

- a) Explain 'Function returning pointer' concept. [4]
- b) Write a C program to copy contents of one file into another file. [4]
- c) Trace the output and Justify. [3]

```
union exam
{
    int a, b;
};
union exame ;
e.a = 5;
e.b =7
printf ( " % d ", e.a );
```

- d) List any three string handling function with their usage. [3]

Group - II

Q5) Attempt the following:

- a) Write a C program to accept and display book details of 'n' books as book-title, author, publisher and cost. [5]
- b) Write user defined functions to copy one string into another string and reverse the string without using standard library functions. [5]
- c) Define Dynamic memory Allocation. What are the advantages of dynamic memory allocation over static allocation? [4]

Q6) Attempt the following:

- a) Explain fseek () function in detail. [4]
- b) Compare Macro and Function. [4]
- c) Trace the output and Justify. [3]

struct student

{

int roll ;

char name [10];

} S1, * P, S[5];

printf ("% d % d % d", sizeof (S1), sizeof (P), sizeof (S));

- d) Define union. Explain how to access it's member. Give example.[3]

Q7) Attempt the following:

- a) Explain 'pointer to structure' concept with example. [4]
- b) Discuss file opening modes in detail. [4]
- c) Explain any three predefined macros. [3]
- d) Explain the purpose of each of the following. [3]

declarations

i) int *P [5]

ii) int f1 (int *P [])

iii) int * f2 (int *P [])



Total No. of Questions :7]

SEAT No. :

P1009

[5319]-2004

[Total No. of Pages : 4

F.Y.B.C.A. (Science)

BCA - 204 : Relational Database Management System

(2016 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Question 1 is compulsory.*
- 2) *Attempt any two questions from Group-1 & Group-2*
- 3) *Figures to the right indicate full marks.*

Q1) A) Attempt all of the following:

[7×1=7]

- a) Which of the following is not the type of file organisation.
 - i) heap
 - ii) sort
 - iii) hash
 - iv) sparse
- b) A set of logically related record forms a _____.
 - i) database
 - ii) file
 - iii) record
 - iv) None
- c) In ER diagram, weak entity is represented by _____.
 - i) double rectangle
 - ii) Rectangle
 - iii) double ellipse
 - iv) dashed ellipse
- d) In relational model, relations are termed as _____.
 - i) tuples
 - ii) attributes
 - iii) tables
 - iv) rows
- e) The language that require a user to specify the data to be retrieved without specifying exact to get it is _____.
 - i) procedural DML
 - ii) non-procedural DML
 - iii) procedural DDL
 - iv) non-procedural DDL
- f) SQL uses logical connectives not as _____.
 - i) and
 - ii) or
 - iii) not
 - iv) as

P.T.O.

- g) If $A \rightarrow C, CD \rightarrow E$ then $A \rightarrow E$ is, _____
- i) transitivity rule ii) pseudo transitivity rule
 iii) union rule iv) none

B) Attempt all of the following: [7×1=7]

- What do you mean by physical and logical file?
- Define variable length record.
- Define : instance of database.
- Define : weak entity set
- What do you mean by a domain?
- Explain the use of order by clause.
- What do you mean by decomposition?

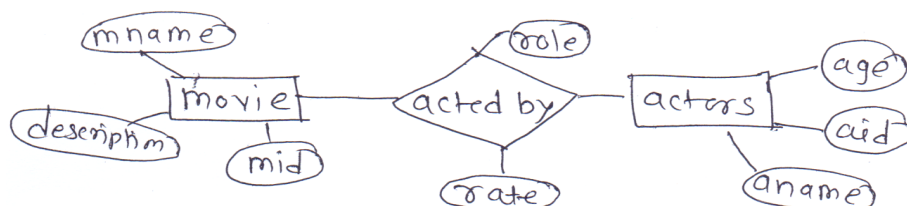
GROUP-I

Q2) Attempt all of the following: [5+5+4=14]

- Differentiate between ISAM & B+tree structure?
- A motor vehicle branch administors driving tests and issues driver's licenses. Any person who wants a driver's licence must first take a learner's exam at any motor vehicle branch in the province. If he/she fails the exam, he can take the exam again any time after a week of the failed exam date, at any branch. If he passes the exam, he is issued a license (type=learners) with a unique licence number. The person may take his drives exam at any branch any time before the learner's licence expiry date (Which is usually set at six months after the licence issue date). If he passes the exam, branch issues him a driver's licence. Identify the entities and attributes. Draw ER diagram.
- Write a short note on key constraints.

Q3) Attempt all of the following: [4+4+3+3=14]

- Define constraint state & explain any two types of constraint.
- Define a key. Differentiate between primary key, candidate key & superkey.
- Consider following entity relationship diagram and convert it into relational model



- Explain basic structure at SQL queries.

Q4) Attempt all of the following

[4+4+3+3=14]

- a) Consider, $R(A, B, C, D, G, H, I)$ & Set of functional dependency are $F = \{ A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H \}$
Compute F^+ .
- b) What are the types of SQL joins?
- c) Consider following relational schema.
Game (gno, gname, no. of players, coach name, captain)
Player (Pno, Pname).
Game and player are related with many-many.
Draw an ER diagram.
- d) What is DBA? Explain any two functions of DBA.

GROUP-II

Q5) Attempt all of the following:

[5+5+4=14]

- a) Consider the following
Wholesaler (wno, wname, addr, city)
Product (Pno, Pname)
Wholesaler and product are related with m-m. Create a relational dB for above & convert it in 3NF & solve following queries
 - i) List all the wholesaler of product books.
 - ii) Count the number at wholesaler in city Mumbai.
 - iii) To print wholesalerwise product.
- b) Consider following relation.
Person (pnumber, pname, birthdate, in come)
Area (aname, area-type)
Area can have 1/more person living in it but person belongs to exactly one area.
An attribute area type can have vaule urban/rural. Convert dB into 3NF and solve.
 - i) List names of all people in rural area
 - ii) Give count of people whose income is below 30,000
 - iii) List names of all people whose birthday is in January
- c) What are SQL clauses to modify to database? Explain.

Q6) Attempt all of the following:

[4+4+3+3=14]

- a) Explain the aggregate functions is SQL
- b) Explain set membership & set comparison in SQL.

- c) Explain the 3NF algorithm
- d) What are advantages and disadvantages of DBMS?

Q7) Attempt all of the following;

[4+4+3+3=14]

- a) Consider, $R = \{A, B, C, D, E, F, G, H\}$

$$F = \{A \rightarrow D, AB \rightarrow DE, CE \rightarrow G, E \rightarrow H\}$$

Determine AB^+ & CF^+ .

- b) What is decomposition? What are desirable properties of decomposition?
- c) Explain pitfalls in RDBMS.
- d) Explain different data types in SQL.

✓ ✓ ✓

Total No. of Questions : 7]

SEAT No. :

P1010

[Total No. of Pages : 4

[5319] - 3001

S.Y.B.C.A. (Science)

BCA-301: DATA STRUCTURE

(2016 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Question No. 1 is compulsory.*
- 2) *Attempt any two questions from Group I and any two questions from Group II.*
- 3) *All questions carry equal marks.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data if necessary.*

Q1) A) Attempt the following:

[7]

- a) An array is a _____ datatype.
 - i) user-defined
 - ii) derived
 - iii) enumerated
 - iv) none of these
- b) The complexity of linear search is _____.
 - i) $O(\log(n))$
 - ii) $O(n)$
 - iii) $O(n \log n)$
 - iv) none of these
- c) An empty linked list consists of _____.
 - i) a variable
 - ii) data and a link
 - iii) two nodes
 - iv) a null head pointer
- d) State true/false

Stack allow us to add and remove elements from one end i.e top.

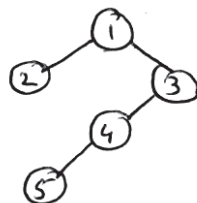
- i) true
- ii) false

P.T.O.

- e) Queue _____.
- can be created by setting up an ordinary contiguous array to hold the items
 - can take care of delete operation automatically
 - need one pointer to handle addition and deletion of an item
 - none of these
- f) The indegree of _____ of a tree is always zero.
- any node
 - branch node
 - the root node
 - a leaf node
- g) The number of distinct simple graph upto 3 nodes is _____.
- 15
 - 10
 - 7
 - 9

B) Attempt the following: [7]

- Define: Data object.
- Calculate address of A (2, 3) of integer array of size 4×4 with base address 100.
- Define: Linked list
- List the different primitive stack operations.
- Traverse the following tree in:
 - Preorder
 - Inorder



- Define complete graph.
- List the applications of queue.

GROUP-I

Q2) Attempt the following:

- a) Describe different types of linked list. [5]
- b) Sort the given array using quick sort algorithm
35 45 42 57 26 [5]
- c) Explain the derived data types. [4]

Q3) Attempt the following:

- a) Write the algorithm for bubble sort. [4]
- b) Write an algorithm for traversing a linked list and also give its function. [4]
- c) Explain the row-major representation of an array. [3]
- d) List the applications of linked list and explain any one. [3]

Q4) Attempt the following:

- a) Consider the postfix expression $PQ+RS-*$. Give the steps for evaluation when $P = 9$, $Q = 8$, $R = 7$ and $S = 4$. [4]
- b) What is a circular queue. Give its advantages. [4]
- c) Define the terms: [3]
 - i) Node
 - ii) Edge
 - iii) Path
- d) What is a critical path. [3]

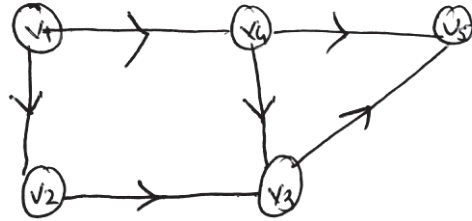
GROUP-II

Q5) Attempt the following:

- a) What are the different tree traversal methods. Explain with example. [5]
- b) Illustrate different forms of writing an arithmetic expression with proper example. [5]
- c) Write the functions to implement following operations on queue [4]
 - i) insert
 - ii) delete
 - iii) isfull
 - iv) isempty

Q6) Attempt the following:

- a) Write the function to count leaf nodes of a binary tree. [4]
- b) Construct adjacency matrix and adjacency list for the following graph. [4]



- c) What is Priority Queue. How are they implemented. [3]
- d) Construct a Binary search tree for the following elements: [3]

16 12 14 9 10 18

Q7) Attempt the following:

- a) Draw the generalised list for given polynomial [4]

$$P(x) = 3x^5 + 9x^2 + 15x + 3$$

- b) Explain the static implementation of stack. [4]
- c) State the disadvantages of array representation of linked list. [3]
- d) Define algorithm. Give its characteristics. [3]

EEE

Total No. of Questions :7]

SEAT No. :

P1011

[Total No. of Pages :4

[5319]-3002

S.Y.B.C.A.

SCIENCE

**BCA - 302: Advanced Relational Database Management System
(2016 pattern) (Semester-III)**

Time : 3Hours]

[Max. Marks :70

Instructions to the candidates :

- 1) **Question No.1 is compulsory.**
- 2) **Attempt any two questions from Group-I & any two questions from Group-II.**
- 3) **All questions carry equal marks.**
- 4) **Figures to the right indicate full Marks.**

Q1) Attempt the following.

A) Answer the following.

[7]

- a) _____ attribute is used to declare a variable with datatype of referenced data base object.
 - i) \$ type
 - ii) * type
 - iii) @ type
 - iv) % type
- b) Isolation of transaction is ensured by _____.
 - i) System Server
 - ii) Recovery Manager.
 - iii) Application Programmer
 - iv) Concurrency control.
- c) Which technique is used to restore a database upto the last consistent state after system failure.
 - i) Backup
 - ii) Recovery
 - iii) Both (i) & (ii)
 - iv) None
- d) Database security involves _____.
 - i) data encryption
 - ii) a view
 - iii) finger print
 - iv) all

P.T.O.

- e) _____ is used to store files on fast hard disk.
- i) print server ii) fax service
- iii) file server iv) transaction ser.
- f) A schedule where operation of each transaction are executed consecutively without interruption is _____
- i) Serial Schedule ii) Aborted schedule
- iii) Concurrent Schedule iv) Committed schedule.
- g) A _____ is a Process Which provides services to more than one client.
- i) Server ii) Network
- iii) Layer iv) Tower.

B) Answer the following. [7]

- a) List any two features of PL/PgSQL.
- b) Define : i) Transaction ii) Atomicity.
- c) What are various entries in System log.
- d) State different levels of Security.
- e) What are client Components.
- f) What is Schedule. Give types of schedule.
- g) What do you mean by backup?

GROUP - I

Q2) Attempt the following.

- a) What is stored procedure? How to create it Explain with example. [5]
- b) List and explain Properties of transaction. [5]
- c) What are various datatypes available in PL/PgSQL. [4]

Q3) Attempt the following.

- a) Consider the following entities & the relationship. Employee (eno, ename, sex, joining date, designation, salary, dno) Dept (dno, dname) Write a PL/SQL block to list the names of all employees. Who are Male & are earning the maximum salary in their department. [4]
- b) Explain how 2PL ensures serializability. [4]
- c) What are types of triggers. [3]
- d) What is multiple granularity. [3]

Q4) Attempt the following.

- a) Write a short note on log based recovery. [4]
- b) What are different privileges that can be granted, on a relation, to the database users. [4]
- c) State the Properties that any client- server database must satisfy. [3]
- d) Write short note on checkpoints. [3]

GROUP-II

Q5) Attempt the following.

- a) Explain the recovery with concurrent transaction. [5]
- b) Write short note on encryption techniques in database security. [5]
- c) Explain client - server architecture interaction with diagram. [4]

Q6) Attempt the following.

- a) Write short note on Aries algorithm. [4]
- b) Explain different types of services provided by different servers in a client-server environment. [4]
- c) Write short note on Buffer Management. [3]
- d) What are types of client- server architecture. Explain with diagram. [3]

Q7) Attempt the following.

a) Consider the transact

T ₁	T ₂
Read (x)	Read (y)
x=x -70	y= y+10
Write (x)	Write (y)
Read (y)	Read (z)
b:= b+70;	z= z- 5;
Write (y)	Read (x)
	Write (z)
	x= x- 15
	Write (x)

Give atleast 2 non-serial schedule that are serializable. **[4]**

b) What is a cursor. How to declare it explain with e.g. **[4]**

c) State & Explain Thomas write Rule. **[3]**

d) How triggers are declared & implemented.Explain with example. **[3]**



Total No. of Questions :7]

SEAT No. :

[Total No. of Pages :4

P1012

[5319] - 3003

S.Y.B.C.A.

SCIENCE

BCA - 303 : Software Engineering

(2016 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question 1 is compulsory.*
- 2) *Attempt any two questions from Group - I & any two questions from Group - II.*
- 3) *All questions carry equal marks.*
- 4) *Figures to the right indicate full marks.*

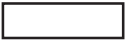



Q1) Attempt the following.

A) Multiple Choice Questions:

[7]

- 1) Which of the following is not the element of the system.
 - a) Control
 - b) Feed back
 - c) Risk
 - d) Envionment.
- 2) Robotics comes under which category
 - a) System software
 - b) Artificial intelligence
 - c) Business software
 - d) Net sourcing
- 3) Checking the individual programs for correctness means _____.
 - a) System Testing
 - b) Unit Testing
 - c) Integration Testing
 - d) Alpha Testing

P.T.O.

- 4) Which of the following is not a fact finding technique?
- a) Specification b) Interview
- c) Questionnaire d) Observation.
- 5) Identify the symbol used for Data Store in DFD.
- a)  b) 
- c)  d) 
- 6) _____ is the primary requirements validation mechanism.
- a) Megotiation b) Formal Technical Review
- c) Elaboration d) Specification
- 7) Which of the following is not a type of software maintenance.
- a) Corrective b) adaptive
- c) Preventive d) Quality

B) Attempt the following.

[7]

- a) Define software.
- b) List two advantages of waterfall model.
- c) Define Data Dictionary.
- d) List the types of maintenance.
- e) Define validation.
- f) What is forward Engineering.
- g) What is Agility.

Group - I

Q2) Attempt the following.

- a) Write a short note on Mc call's Quality factors. [5]
- b) What is prototyping? Explain the steps in prototyping. [5]
- c) List & Explain any 4 tasks involved in Requirement Engineering. [4]

Q3) Attempt the following.

- a) Write a short note on preliminary Investigation of SDLC. [4]
- b) Compare Structured Interview with unstructured Interview. [4]
- c) Explain advantages of spiral model. [3]
- d) Explain characteristics of system. [3]

Q4) Attempt the following.

- a) State all symbols of DFD. [4]
- b) Write a short note on Stress Testing. [4]
- c) What is Data Dictionary? Explain the importance of Data Dictionary. [3]
- d) Explain any three human factors for agile process. [3]

Group - II

Q5) Attempt the following.

- a) Draw context level & 1st level DFD for "Airline Reservation System". [5]
- b) Wriet a short note on Extreme programming values. [5]
- c) State the difference between verification & validation. [4]

Q6) Attempt the following.

- a) Explain system testing with it's types. [4]
- b) Explain Decision Table with example. [4]
- c) Write a short note on Reverse Engineering. [3]
- d) Explain any (three) principle to achieve agility [3]

Q7) Attempt the following.

- a) Explain any four umbrella activities. [4]
- b) Write a short note on feasibility study. [4]
- c) Explain the essence of Software Engineering Practice. [3]
- d) State & Explain any three framework activities in Software Engineering. [3]



Total No. of Questions :7]

SEAT No. :

P1013

[Total No. of Pages : 3

[5319]-3004

S.Y.B.C.A

SCIENCE

**BCA-304: Introduction to Computer Network
(2016 Pattern) (Semester-III)**

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No.1 is compulsory.*
- 2) *Attempt any two questions from group-I and any two questions from group-II*
- 3) *All questions carry equal marks.*
- 4) *Figures to the right indicate full marks.*
- 5) *Use of scientific calculator is allowed.*

Q1) A) Attempt the following

[7]

- a) In a _____ connection more than two devices can share a single link.
 - i) Point -to -Point
 - ii) Primary
 - iii) Multi point
 - iv) Secondary
- b) Which layer of the OSS Reference model corresponds to IP protocol of TCP/SP protocol stack.
 - i) Transport
 - ii) Network
 - iii) Internet
 - iv) Data link
- c) The RG number gives us information about _____
 - i) Optical fibres
 - ii) Twisted pairs
 - iii) Coaxial cables
 - iv) All of above
- d) A telephone Network is an example of _____
 - i) Circuit switched network
 - ii) Packet switched
 - iii) Message switched network
 - iv) None of the above
- e) Which one of the following is multiple access protocol for channel access control.
 - i) CSMA/CD
 - ii) CSMA/CA
 - iii) Both i) & ii)
 - iv) None of these

P.T.O.

- f) The length of IP address is _____ bits.
- i) 46 ii) 32
 - iii) 16 iv) 64
- g) In _____ the available bandwidth is divided into frequency bands.
- i) FDMA ii) TDMA
 - iii) CDMA iv) None of these
- B) Attempt the following. [7]
- a) Define Topology.
 - b) What is interface.
 - c) Define bit rate and bit length.
 - d) Convert following IPV₄ address from decimal notation to binary:
221.34.7.82
 - e) Define channelization.
 - f) Define Netid & hostid.
 - g) List the framing methods in Data link Layer.

GROUP-I

Q2) Attempt the following.

- a) What are hybrid networks give its advantages and disadvantages. [5]
- b) Compare and contrast OSS and TCP/IP reference model. [5]
- c) Write a short note on unguided media. [4]

Q3) Attempt the following.

- a) Explain straight through cable and cross over cabling. [4]
- b) Explain the characteristics on which data communication depends. [4]
- c) Define the terms: [3]
 - i) Bit Interval ii) Bit rate iii) Bit length
- d) Write a short note on star topology. [3]

Q4) Attempt the following.

- a) Give the advantages of Token passing. [4]
- b) Explain filtering in bridges. [4]
- c) Explain IPV₆ address space [3]
- d) Draw graph for NRZ-I coding for following data. [3]
 - i) 00000000 ii) 01010101 iii) 00110011

GROUP-II

Q5) Attempt the following.

- a) Write a short note on cyclic Redundancy check [5]
- b) Explain the line coding characteristics. [5]
- c) Explain supernetting. [4]

Q6) Attempt the following.

- a) What is unipolar line coding scheme. gives its drawbacks. [4]
- b) Given a data ward 1010011110 and divisor 10111
 - i) Show the generation of codeward at sender side (using binary division). [4]
 - ii) Show the checking of the codeward at receiver side (assume no error).
- c) Explain the fields in IPV₄ datagram. [3]
- d) State the advantages and disadvantages of Non persistant CSMA. [3]

Q7) Attempt the following.

- a) Give the advantages of computer Network. [4]
- b) Write a short note on Hub. [4]
- c) Explain the different modes of transmission. [3]
- d) Write a note on Infrared waves. [3]



Total No. of Questions :7]

SEAT No. :

[Total No. of Pages :4

P1014

[5319] - 4001

S.Y.B.C.A. (SCIENCE)

BCA - 401 : C++

(2016 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) Question No.1 (A & B) are compulsory.*
- 2) Attempt any two questions from group - I.*
- 3) Attempt any two questions from group - II.*
- 4) Figure to the right indicate full marks.*

Q1) A) Attempt the following.

[7×1=7]

- a) In operator overloading _____ in the basic meaning of operator is not allowed.
- | | |
|--------------|--------------|
| i) increment | ii) addition |
| iii) change | iv) none |
- b) The read () and write () functions handle data in _____ form
- | | |
|----------------|-------------------|
| i) Text | ii) Binary |
| iii) Character | iv) none of these |
- c) The words which has predefined meaning and cannot be changed by the users are known as _____.
- | | |
|----------------|-----------------|
| i) constants | ii) identifiers |
| iii) key words | iv) none |

P.T.O.

- d) What are mandatory parts in function declarations?
- i) return type, function name
 - ii) return type, fun name, parameter
 - iii) both i & ii
 - iv) none of these
- e) The try block contain the statements that _____.
- i) Throws exception
 - ii) catch exceptions
 - iii) correct exception
 - iv) all of these
- f) A class is inherited known as _____.
- i) Base class
 - ii) Hybrid
 - iii) derived
 - iv) both i & ii
- g) By default members of class are
- i) protected
 - ii) private
 - iii) public
 - iv) all of above

B) Attempt all of the following.

[7×1=7]

- a) List the operations of string
- b) Write the operators which cannot be overloaded.
- c) What is generic programming?
- d) what is compile time polymorphism?
- e) What is dynamic constructor
- f) What is difference between oop & pop?
- g) The 'This' pointer must be declared in program state true or false.

Group - I

Q2) Attempt all of the following.

- a) Write C++ program to accept employee details like empno, empname, city, idate salary, deptname using accept () and display () function for array of object. [5]
- b) Explain function overloading with example. [5]
- c) Explain the manipulators uses in C++. [4]

Q3) Attempt all of the following.

- a) What is friend function? Explain with properties & example. [4]
- b) What is class? Explain access specifies use in it with example. [4]
- c) Write a C++ program to find maximum no of three number using parameterized constructor. [3]
- d) Explain applications of C++. [3]

Q4) Attempt all of the following.

- a) Explain pure virtual function with example. [4]
- b) What is inheritance? Explain single inheritance with example. [4]
- c) Write short note on function template. [3]
- d) Explain hierarchy of file stream classes with proper diagram. [3]

Group - II

Q5) Attempt all of the following.

- a) Explain all the forms of inheritance. [5]
- b) Write C++ program for how the unary minus operator is overloaded. [5]
- c) Explain how run time polymorphism is achieved using virtual function. [4]

Q6) Attempt all of the following.

- a) Explain simple try & catch mechanism with example. [4]
- b) What is STL? Explain its components. [4]
- c) Write a program for opening two files with same stream & storing the content in it. [3]
- d) What is abstract class. [3]

Q7) Attempt all of the following.

- a) Write a short note on this pointer. [4]
- b) Explain scope resolution operator with example. [4]
- c) Write the rules of operator overloading. [3]
- d) Write a corrected code of the following program segment by underlining the corrected error removed code.

```
Void main ()
```

```
{int a, b;
```

```
  Cin <<a;
```

```
  b = a ;
```

```
  Cout << "b =", a;
```

```
};
```

[3]



Total No. of Questions :7]

SEAT No. :

P1015

[5319]-4002

[Total No. of Pages :4

S.Y.B.C.A

SCIENCE

**BCA-402: Introduction to Web Technology
(2016 Pattern) (Semester-IV)**

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No-1 is compulsory.*
- 2) *Attempt any two questions from group-I and any two questions from Group-II*
- 3) *All questions carry equal marks.*
- 4) *Figures to the right indicate full marks.*

Q1) A) Attempt the following.

[7×1=7]

- a) HTTP stands for
 - i) Hyper Text Transport protocol
 - ii) Hyper Text Transmission protocol
 - iii) Hyper Text Transfer protocol
 - iv) Hyper Text Timer protocol
- b) Find the odd man out
 - i) .Wav
 - ii) .Mov
 - iii) .Mpeg
 - iv) .Webm
- c) Choose the correct HTML element for the largest heading.
 - i) < head >
 - ii) < heading >
 - iii) < h₁ >
 - iv) < h₆ >
- d) Java script is a _____ side scripting language.
 - i) Client
 - ii) Server
 - iii) Web
 - iv) Customer
- e) Subscript range of indexed array in PHP always starts with _____
 - i) 0 (zero)
 - ii) 1
 - iii) -1
 - iv) none

P.T.O.

f) Which function sorts the array by keys in descending order.

- i) Ksort
- ii) Krsort
- iii) Uksort
- iv) Uasort

g) What is the output of the following

```
< ? php
    $a="1E3 points of light" +1,
    echo "$a",
?>
```

- i) 1000
- ii) 1001
- iii) 1E3
- iv) Error

B) Answer the following. [7×1=7]

- a) What is portal Web site.
- b) What are the HPCS of HTML tags.
- c) Explain < font > tag with two attributes.
- d) List any two math functions in Javascript.
- e) List border properties in CSS.
- f) Which function identifies a subset of an array based on its values.
- g) How anonymous function is created in PHP.

GROUP-I

Q2) Attempt the following.

- a) What are the advantages of static website. [5]
- b) Explain any two types of lists used in HTML. [5]
- c) Write a Javascript code for accepting name and mobile number from user.(user validation). [4]

Q3) Attempt the following.

- a) Define the terms : i) Webpage ii) Website
iii) WWW iv) Internet [4]
- b) What is selector. Explain any three types of selector. [4]

- c) Explain the events associated with mouse in Java script. Give Example. [3]
- d) Write a PHP program to find the elements from the array that matches the given value using appropriate search function. [3]

Q4) Attempt the following;

- a) Define Anonymous function. Write anonymous function for addition of two integers. [4]
- b) Write a PHP program to sort the array by values in ascending and Descending order. Also sort the array by values without changing the keys. [4]
- c) Explain Window object defined in detail used in Javascript. [3]
- d) How to create CSS? Explain with example. [3]

GROUP-II

Q5) Attempt the following.

- a) Explain any two selection statements in Javascript with example. [5]
- b) Explain the features of PHP. [5]
- c) Design a HTML form to accept a number from the user and write a PHP Script to find factorial of a number using user defined function. [4]

Q6) Attempt the following.

- a) Explain DOM object in detail. [4]
- b) Write a HTML code which generate the following output. [4]
- i) Fruits
- mango
 - Apple
 - Orange
- ii) Vegetables
- Tomata
 - Potato
 - Onion

- c) Differentiate between client-side scripting and server-side scripting. [3]
- d) Write a menu driven program to perform the following operations on Associative arrays.
 - i) Find the union of two arrays.
 - ii) Find the intersection of two arrays. [3]

Q7) Attempt the following.

- a) Describe Multidimensional array with example. [4]
- b) Write the purpose of implode and explode function. [4]
- c) State and explain types of CSS. [3]
- d) Write a Javascript program to display current Day, Date, Month, Year and Time on the Webpage and greet the user accordingly. [3]



Total No. of Questions :7]

SEAT No. :

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P1016

[5319]-4003

S.Y.B.C.A

SCIENCE

**BCA-403; Advanced Networking And Network Security
(Semester-IV)**

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No-1 (A and B) are compulsory.*
- 2) *Attempt any two questions from group-I.*
- 3) *Attempt any two questions from group-II.*
- 4) *Figures to the right indicate full marks.*

Q1) A) Choose the appropriate options.

[7]

- a) SCTP is a _____ transport layer protocol.
 - i) Reliable
 - ii) Connectionless
 - iii) Connection oriented
 - iv) None of these
- b) In a _____ the key is called the secret key.
 - i) Symmetric key
 - ii) Asymmetric key
 - iii) Either (i) or (ii)
 - iv) Key
- c) How many keys does the triple DES algorithm use?
 - i) 2
 - ii) 3
 - iii) 4
 - iv) 2 or 3
- d) Asymmetric key is also called _____.
 - i) Public key
 - ii) Secret key
 - iii) Private key
 - iv) Plain key
- e) Following are the internet security threats.
 - i) TCP
 - ii) Malware and spam
 - iii) (i) & (ii)
 - iv) Datamal

P.T.O.

- f) Tunnel mode IPSec protects the_____ .
- | | |
|-----------------|----------------------|
| i) IP header | ii) Entire IP packet |
| iii) IP payload | iv) One IP layer |
- g) PKC stands for _____.
- | | |
|------------------------|-----------------------------|
| i) Public key case | ii) Public key cryptography |
| iii) Public key cipher | iv) None of these |

B) Answer in one sentence [7]

- a) What is SMTP?
- b) What is process-to-process Delivery.
- c) Define term- steganography.
- d) State the types of DES.
- e) Define trapdoor functions.
- f) What is digital certificate?
- g) What is intrusion?

Group-I

Q2) Answer the following questions.

- | | |
|--|-----|
| a) State difference between stream & block cipher. | [5] |
| b) List possible types of attacks and explain it in details. | [5] |
| c) Explain UDP in details with diagram? | [4] |

Q3) Answer the following questions.

- | | |
|---|-----|
| a) What are the advantages and disadvantages of Diffie-Hellman? | [4] |
| b) Convert following text in to cipher text message using one time pad
NCBTZQARX. Message plain text-”How are you” | [4] |
| c) Discuss different UDP operations? | [3] |
| d) Explain password based Authentication? | [3] |

Q4) Answer the following questions.

- a) Explain structure of digital certificate? [4]
- b) What are various uses of message digest? [4]
- c) Explain four essential control exercised by a firewall? [3]
- d) What are advantages of Asymmetric key cryptography. [3]

Group-II

Q5) Answer the following questions:

- a) Explain RSA Algorithm in detail. [5]
- b) Explain virtual private network (VPN) and its features. [5]
- c) Explain Architecture of TLS in details. [4]

Q6) Answer the following questions:

- a) Generate public and private keys using RSA algorithm, Given: $P=11, q=3$. [4]
- b) Describe Audit records in detail. [4]
- c) What are two main challenges faced by symmetric key algorithms? [3]
- d) Discuss VPN tunneling protocol? & Give any two advantage of VPN? [3]

Q7) Answer the following questions:

- a) Explain CBC mode in details. [4]
- b) What are two basic ways of transforming plaintext to ciphertext? [4]
- c) Describe Multiplening in details. [3]
- d) How can caesar cipher crack? [3]



Total No. of Questions :7]

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SEAT No. :

[Total No. of Pages : 3

[5319]-4004

S.Y.B.C.A

SCIENCE

BCA-404: OOSE

(2016 Pattern) (Semester-IV)

Time :3Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Question No-1 (A and B) are compulsory.*
- 2) *Attempt any two questions from group-I.*
- 3) *Attempt any two questions from group-II.*
- 4) *Figures to the right indicate full marks.*

Q1) A) Choose the appropriate options.

[7×1=7]

- a) An object is an _____ of a class.
 - i) Data type
 - ii) Operation.
 - iii) Instance or occurrence
 - iv) All of above
- b) UML stands for _____.
 - i) Unified modeling language
 - ii) Unique modeling language
 - iii) Universal modeling language
 - iv) None of above
- c) Structural Modeling in the UML captures the _____ features of a system.
 - i) Dynamic
 - ii) Static
 - iii) Architectural
 - iv) i) & ii)
- d) Generalization is another name for inheritance or an _____ relationship.
 - i) is a
 - ii) was a
 - iii) has a
 - iv) have a
- e) A thread is a _____ that can execute concurrently with other threads within same process.
 - i) Light weight flow
 - ii) heavy weight flow
 - iii) both i) & ii)
 - iv) None of above

P.T.O.

- f) Collaboration diagram is represented by _____ in a system.
- i) modeling object
 - ii) modeling class
 - iii) modeling operations
 - iv) modeling use case
- g) A mechanism is an instance of one or more _____
- i) framework
 - ii) nodes
 - iii) patterns
 - iv) i) & iii)

B) Answer in one sentence.

[7×1=7]

- i) Define Swimlanes.
- ii) Define the object “Book” with possible attributes and operations with visibility.
- iii) What is inheritance.
- iv) What is relationship.
- v) Define use case.
- vi) What is object interaction?
- vii) What do you meant by components?

GROUP-I

Q2) Answer the following questions:

- a) What is Package? Explain with example. [5]
- b) What is class diagram? Explain its purpose. [5]
- c) Write short note on: Interface. [4]

Q3) Attempt the following question:

- a) What is UML diagram? Enlist UML diagrams. [4]
- b) Prepare a class diagram for medical shop management. [4]
- c) What is meant by structural modeling. [3]
- d) Define the following terms: [3]
 - i) Polymorphism
 - ii) Software Engineering
 - iii) System

Q4) Answer the following questions:

- a) Draw and explain sequence diagram with its components. [4]
- b) Draw state chart diagram for Automated Trading House system. [4]
- c) Compare component and Deployment diagram. [3]
- d) A student visit a college office for getting a scholarship amount.
His/ Her claim is verified & if it is valid, a cheque is issued & entries
are updated in an account. Draw activity diagram for above situations. [3]

GROUP-II

Q5) Answer the following questions:

- a) What is Actor and collaboration? Explain with example. [5]
- b) What is use of deployment diagram? Give example. [5]
- c) Explain common use of interaction diagram. [4]

Q6) Answer the following questions:

- a) Explain frameworks and mechanism in detail. [4]
- b) Explain Structural aspects of collaboration. [4]
- c) Draw use case diagram of retail store management system. [3]
- d) Draw sequence diagram of Automated Trading House system. [3]

Q7) Answer the following questions:

- a) Explain Structural diagram? What is Generalization? [4]
- b) Explain Activity diagram with example [4]
- c) Explain visibility with example. [3]
- d) Draw component and deployment diagram of Hotel management system [3]



Total No. of Questions :7]

SEAT No. :

P1018

[Total No. of Pages : 3

[5319]-4005

S.Y.B.C.A.

SCIENCE

**BCA-407: Grid and Cloud Computing
(2016 Pattern) (Semester-IV)**

Time :3Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Question No-1 (A and B) is compulsory.*
- 2) *Solve any two questions from group-I and any two questions from group-II.*
- 3) *Figures to the right indicate full marks.*

Q1) A) Answer the following.

[5]

a) _____ is an example of Internet computing.

- | | |
|------------------|------------------|
| i) Genome @ Home | ii) SETI @ Home |
| iii) ECCP-109 | iv) All of these |

b) The goal to virtualize the resources on the grid and uniformly handle _____ systems will create new opportunities to better manage a larger, more distributed infrastructure.

- | | |
|-----------------|-----------------|
| i) heterogenous | ii) homogeneous |
| iii) hybrid | iv) none |

c) Google App Engine is an example of _____

- | | |
|-----------|-------------------|
| i) SaaS | ii) PasS |
| iii) IaaS | iv) none of these |

d) _____ is Type 1 Hypervisor.

- | | |
|----------------------|---|
| i) Wind River Simics | ii) Vertical server 2005 R ₂ |
| iii) KVM | iv) Lynx Secure |

e) SOAP stands for _____ .

- i) Simple online Access protocol
- ii) State object Access protocol
- iii) Simple object Access protocol
- iv) Static object Access protocol

P.T.O.

- B) Answer in short. [5]
- i) List the application areas of grid computing.
 - ii) What is abstraction.
 - iii) Define hypervisor.
 - iv) List the areas where Internet Computing is used .
 - v) What is data grid.

Group-I

Q2) Attempt the following:

- a) Explain in brief the centralised model of P2P [4]
- b) Explain general structure of cloud (components of cloud). [4]
- c) State the need of grid. [2]

Q3) Attempt the following.

- a) What is hybrid cloud. Explain with example. [4]
- b) State the advantages of high performance computing. [4]
- c) What is emulation. [2]

Q4) Attempt the following.

- a) Write short note on compute grids. [4]
- b) Explain IaaS service model of cloud computing Give examples. [4]
- c) What is software virtualization. [2]

Group-II

Q5) Attempt the following.

- a) Write short note on reliability. [4]
- b) With the help of diagram explain grid computing architecture model in brief. [4]
- c) List essential characteristics of cloud computing [2]

Q6) Attempt the following :

- a) Compare cluster and grid computing. [4]
- b) Explain benefits of cloud computing in brief. [4]
- c) What are the goals of load balancing. [2]

Q7) Attempt the following :

- a) State the advantages and disadvantages of cluster computing. [4]
- b) Explain community cloud. [4]
- c) Explain in short case study sales force-com as SaaS. [2]

