Total No. of Questions : 7]

SEAT No. : ____

P3402

[Total No. of Pages : 3

[5099] - 101
F.Y. B.C.A. (Science)
FUNDAMENTALS OF COMPUTER

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 appropriate option. **[7]**

i) COBOL is an example of _____ level language.

a) low level b) middle level

c) high level d) both a & b

ii) Full form of CCD is _____.

a) Charge coupled Device b) Change coupled Device

c) Charge coupled Driver d) None of above

iii) Dot matrix is a type of _____ printer

a) impact printer

b) non-impact printer

c) line printer

d) page printer

iv) ASCII stands for _____.

a) American standard code for intermation interchange.

b) Any standard code for information interchange.

c) Americal sight code for information interchange.

d) both a & c.

P.T.O.

v) _____ is a input device.

a) moniter b) printer

c) keyboard d) pen drive

vi) A _____ is a program which converts a high level language program/code into binary instructions that our computer can interpret.

a) assembler b) compiler

c) interpreter d) drives

vii) Slide, slide show, PPT are the basic terminologies of.

a) Microsoft Word b) Microsoft Excel

c) Microsoft Power Point d) Microsoft Access

B) Define following terms : **[7]**

i) Antivirus ii) EPROM

iii) File iv) CPU

v) Spread sheet vi) Assembler

vii) Transistor

Group I

Q2) Answer the following :

a) What is output devices? Explain at least two output devices in detail. **[5]**

b) What is computer? What are the dis-advantages of computer? **[5]**

c) Write Notes on : **[4]**

i) RAM

ii) Binary number system

Q3) Attempt the following :

a) Explain the functioning of CPU in detail. **[4]**

b) Write notes on : **[4]**

i) Desktop publishing

ii) Trouble shooting

c) Convert following decimal number into binary number. **[3]**

i) $(87)_{10}$

ii) $(156)_{10}$

d) Write a note on MS-Power point. **[3]**

Q4) Answer the following :

a) Explain the characteristics of computer. **[4]**

b) Explain various presentation tools. **[4]**

c) Explain secondary storage devices **[3]**

d) Explain spreadsheet software **[3]**

Group II

Q5) Answer the following :

a) What is DOS? What are it's limitations. **[5]**

b) What do you mean by low level language? What are the features of low level language? **[5]**

c) Write notes on : **[4]**

i) Hardware

ii) NIC

Q6) Answer the following :

a) Explain types of Hardware in detail. **[4]**

b) What is word processor? What are it's features. **[4]**

c) Convert following binary number into decimal number **[3]**

i) $(1100110)_2$

ii) $(1010)_2$

d) Explain any 3 internal DOS commands with example. **[3]**

Q7) Answer the following :

a) What is software? What are the types of software. **[4]**

b) Write notes on : **[4]**

i) Notepad

ii) Paint Brush

c) Convert the following : **[3]**

i) $(114267)_{10} = (?)_{16}$

ii) $(1163)_8 = (?)_2$

d) What are the types of programming languages. **[3]**

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SEAT No. : ____

P3403

[Total No. of Pages : 4

[5099] - 102
F.Y. B.C.A. (Science) (Semester - I)
BASIC PROGRAMMING IN 'C'

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) ***Figure to the right indicate full marks.***

Q1) A) Choose correct option. **[7]**

i) In C language, statement are terminated with.

a) period b) semicolon

c) new-line character d) none of these

ii) Comma operator is an

a) Unary operator b) Binary operator

c) Ternary operator d) None of these

iii) C is an

a) Assembly level language

b) High level language

c) Machine level language

d) None of these

iv) Which of the following is not a basic data type?

a) char

b) float

c) long

d) double

P.T.O.

v) Which of the following is not a valid escape sequency?

a) \ r b) \ v

c) \ a d) \ m

vi) By default the return type of a function is

a) char b) int

c) float d) void

vii) In C language, elements of two dimensional arrays are stored in

a) Random order b) Column major order

c) Row major order d) None of these

B) Answer the following : **[7]**

i) Define algorithm

ii) Write 'C' expression for the following

$$\frac{8x^2 + 15x + 4}{2x + 3}$$

iii) State the out put

```
main ( )
{
    int a = 5, b = 10;
    printf ("%d", a++ + b++);
}
```

iv) A constant is an entity whose value _____.

v) Name the header file required for get (C) function.

vi) "Every function must return a value". Comment.

vii) What is the ? : operator? Give example.

Group I

Q2) Attempt the following :

a) Write a 'C' program to display the following output upto n^{th} given value **[5]**

e.g : n = 4 o/p :- A B C D
A B C
A B
A

b) What are the different advantages and disadvantages of algorithm. **[5]**

c) Describe the structure of a 'C' program. **[4]**

Q3) Attempt the following :

a) Write an algorithm to find largest of three numbers. **[4]**

b) What are the different symbols used to draw flowchart? Explain. **[4]**

c) Explain logical operators in details. **[3]**

d) Explain the basic data types in 'C'. **[3]**

Q4) Attempt the following :

a) Draw a flow chart to calculate x^y. **[4]**

b) What is the difference between the function getch ( ) and getchar ( ) and getche ( )? **[4]**

c) Trace the output **[3]**

```
main ( )
{
    int i = 5;
do
{
    print f (" %d", i);
    i ++;
} while (i < 0);
}
```

d) Explain advantages of recursion? **[3]**

Group II

Q5) Attempt the following :

a) Write a C program to print addition of two matrices. **[5]**

b) What is escape sequence? Explain any four escape sequence? **[5]**

c) Explain call by value and call by reference with example. **[4]**

Q6) Attempt the following :

a) Write an algorithm to print first 20 odd numbers. **[4]**

b) Explain for loop with syntax & example. **[4]**

c) Explain enumerated data type with syntax. **[3]**

d) Trace the output **[3]**

```
main ( )
{
    int arr[3] = {1, 2, 3};
printf("%d %d %d %d", arr[1], arr[2], arr[3]);
}
```

Q7) Attempt the following :

a) Draw a flow chart to check whether the given character is vowel or consonent. **[4]**

b) Give the syntax & use of following function **[4]**

i) Pow ( )

ii) sqrt ( )

iii) cos ( )

iv) log ( )

c) Differentiate between nested if and switch statement. **[3]**

d) What is array? Explain types of array. **[3]**

Total No. of Questions : 7]

SEAT No. :

P3404

[Total No. of Pages : 4

[5099] - 103

F.Y. B.C.A. (Under Science) (Semester - I)

BCA - 103 : APPLIED MATHEMATICS - I

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Q.1 is compulsory.***
2) ***Attempt any two questions from Group - I and two questions from Group - II.***
3) ***Figures to the right indicate full marks.***

Q1) A) Choose the correct alternative. **[7]**

i) If A and B are two sets then (A-B) is equal to

a) $A \cap B^c$ b) $A^c \cap B$

c) $A^c \cap B^c$ d) None of these

ii) If a,b,c are odd integers then the equation $ax^2 + bx + c = 0$ has solution in,

a) Set Q b) Set R

c) Set Z d) None of these

iii) $\sqrt{50}$ is a

a) Rational number

b) Irrational number

c) Neither rational nor irrational

d) None of these

iv) The ternary representation of 3 is

a) $(11)_3$

b) $(10)_3$

c) $(01)_3$

d) None of these

P.T.O.

v) Consider the following two equations

$x^2 - 10x + 5 = -20$ and $x^2 = 5x$

The set of solutions of equations in Z are

a) Same

b) Disjoint

c) Not same

d) None of these

vi) The permutation f ≡ 3412 of [4] is an

a) Even permutation

b) Odd permutation

c) Identity permutation

d) None of these

vii) If m and n are relatively prime positive integers then (mn–m–n) is

a) Achievable

b) Not achievable

c) May or may not be achievable

d) None of these

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

i) If $f : R^2 \to R$ is a function defined by

$f(x, y) = x^2 + y^2$,

What is the level set of f with the value C = –1?

ii) Express the following statement as a conditional statement.

"Every odd number is prime".

iii) Find the sum : $\sum_{i=1}^{n} x$

iv) What are the solutions to the equation below?

$x^4 + x^3y + x^2y^2 + xy^3 + y^4 = 0$

v) What is the sum of all binomial coefficients in $(x + y)^n$?

vi) Draw the functional digraph of the permutation, f = 4123 of the set [4].

vii) If p is a prime number, which numbers are relatively prime to p?

Group I

Q2) a) Let A and B be any two sets. Draw venn diagram representing (A–B) and (B–A). Also, write the conditions for which A – B = B–A holds. **[5]**

b) If f : [4] $\rightarrow$ [4] is a function defined by, f(n) = 5–n. Is the function f bijective? Justify. Find f(0), f(1). Also, draw the graph of 'f '. **[5]**

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

Q3) a) If r and s are the roots of the equation,

$ax^2 + bx + c = 0$, $a \neq 0$ then find r–s. **[4]**

b) Prove that the following statement is a tautology $(p \rightarrow q) \leftrightarrow (\sim p \vee q)$. **[4]**

c) Prove that, if x and y are distinct real numbers then $(x+1)^2 < (y+1)^2$ if and only if $x + y = -2$. **[3]**

How does the conclusion change if we allow $x = y$?

d) Let $S = \{x \in R / x^2 > x + 6\}$ and $T = \{x \in R / x > 3\}$. **[3]**

Determine whether the following statements are true. Interpret these results in words.

i) $T \subseteq S$

ii) $S \subseteq T$

Q4) a) Prove that for $n \in N$, $1 + 2 + 3 + \ldots\ldots\ldots + n = \dfrac{n(n+1)}{2}$. **[4]**

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

c) Let f : R$\rightarrow$R be a function such that $f(x+y) = f(x) + f(y)$ for $x, y \in R$ then, prove that, **[3]**

i) f(0) = 0

ii) f(n) = nf(1), $\forall n \in N$

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

Group II

Q5) a) Show that the function $f : R \to R$ defined by $f(x) = 5x - 2|x|$ is a bijection. Find f^{-1}. **[5]**

b) Show that, N×N is countable. **[5]**

c) Which integer is bigger $(111)_3$ or $(1111)_2$? Justify. **[4]**

Q6) a) Prove that, $\binom{n}{k} = \frac{n!}{(n-k)!k!}$, where n, k ∈ Z such that $0 \le k \le n$ **[4]**

b) How many non-negative solutions are there for the equation $x_1+x_2+x_3 = 3$. Find atleast three solutions. **[4]**

c) If f = 132 and g = 213 are permutations of [3], then find functional digraph of fog and gof. **[3]**

d) Consider the permutation f of [9] with 2-line form as **[3]**

$$f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 6 & 1 & 4 & 2 & 5 & 8 & 9 & 7 \end{pmatrix}$$

Express f by its cycle description.

Also write the word form of the permutation *f*.

Q7) a) If p is a prime number and plab then prove that either p divides a or p divides b. **[4]**

b) Is 61 an integer combination of 6 and 15? **[4]**

Is 61 an integer combination of 9 and 16? Justify.

c) Solve the following Dart Board problems **[3]**

i) $2x + 3y = 1$

ii) $2x + 3y = 5$

d) If gcd(a, b) = 1 and a|n and b|n then prove that ab|n. **[3]**

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Total No. of Questions : 7]

SEAT No. :

P3405

[Total No. of Pages : 3

[5099] - 104
F.Y. B.C.A. (Under Science) (Semester - I)
104 : COMMUNICATION SKILLS

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.***
5) ***Draw neat diagram whenever necessary.***

Q1) A) Choose correct answer from the options. **[7]**

i) _____ is one of the example of non-verbal communication.

a) speech b) gestares

c) tone d) time

ii) Electricity power failure is

a) Psychological barrier b) Semantic barrier

c) Cultural barrier d) technical barrier

iii) Channel is _____.

a) mode of communication

b) sender

c) receiver

d) feedback

iv) Function of memo is _____.

a) to give information

b) to give price

c) to suggest orders

d) to issue suggestion

P.T.O.

v) The quality of presentation is affected by
   a) language and words
   b) touch
   c) artifacts
   d) signs

vi) Interpersonal skill depends on
   a) time
   b) trust and respect
   c) formalities
   d) ego and prejudices

vii) Agenda of meeting is
   a) minutes of meeting
   b) outsider's views
   c) review
   d) purpose and objectives

B) Answer the following : **[7]**

i) Two examples of cultural barrier.

ii) Enlist two examples of problem solving.

iii) Two etiquettes of telephonic conversation.

iv) Two ways of request making.

v) Etiquettes of group discussion.

vi) Oral communication two examples.

vii) Non-verbal communication two examples.

Attempt any <u>Two</u> from Group I and <u>Any Two</u> from Group II

<u>Group I</u>

Q2) a) What are the merits and de-merits of oral communication. **[5]**

b) How do psychological barriers spoil the communication? **[5]**

c) Write a note on types of listening. **[4]**

Q3) a) Define communication and state the objectives of communication. **[4]**

b) State 5 principles of effective communication. **[4]**

c) What is the importance of tone, mode and attitude in listening? **[3]**

d) Enlist any four telephonic manners. **[3]**

Q4) a) Enlist the strengths and weaknesses of written communication. **[4]**

b) What are the barriers that disturb telephonic conversation? **[4]**

c) What are the principles of effective listening? **[3]**

d) What is the scope of Business Communication? **[3]**

Group II

Q5) a) Write a business letter to the manager of a bank asking for education loan. **[5]**

b) Write a report of the Annual Function in your college. **[5]**

c) Prepare an Agenda for the Meeting to discuss Industrial visit. **[4]**

Q6) a) Write an application letter for the post of a computer programmer. **[4]**

b) Write a Resume related to the above letter. **[4]**

c) What is group discussion? Explain its types. **[3]**

d) What are the contents/Items for writing minutes of a meeting. **[3]**

Q7) a) What is meant by Empathy? Elaborate its significance in communication. **[4]**

b) Write a note on reflective thinking. **[4]**

c) Why are intrapersonal skills important in communication. **[3]**

d) How can a conflict be resolved through negotiation skills. **[3]**