Total No. of Printed Pages—16

X/14/CSc

2014

COMPUTER SCIENCE

(CANDIDATES WITH PRACTICAL/INTERNAL ASSESSMENT)

Full Marks : 80
Pass Marks : 24

(CANDIDATES WITHOUT PRACTICAL/INTERNAL ASSESSMENT)

Full Marks : 100
Pass Marks : 30

Time : 3 hours
(For Both Categories of Candidates)

The figures in the margin indicate full marks for the questions

SECTION—A

(COMPUTER FUNDAMENTALS)

(*Maximum Marks* : 20)

(OBJECTIVE-TYPE QUESTIONS)

I. Choose and write the correct answer for the following (any *three*) : 1×3=3

1. The base or radix of the hexadecimal number system is

   (a) 2

   (b) 16

   (c) 8

   (d) 10

2. Which one of the following Boolean expressions represents the OR operation?

   (a) $\overline{A\ B}$

   (b) $\overline{A\quad B}$

   (c) $A\quad B$

   (d) $A\ B$

3. Among the following symbols, the NOT operation is denoted by

   (a) '.'

   (b) '+'

   (c) '–'

   (d) ' '

4. According to binary arithmetic, the result of the addition $(11101)_2$ $(11001)_2$ is

   (a) $(1000001)_2$

   (b) $(110110)_2$

   (c) $(111101)_2$

   (d) $(1010101)_2$

5. The equivalent octal number of the hexadecimal number A5 is

   (a) $(365)_8$

   (b) $(345)_8$

   (c) $(316)_8$

   (d) $(245)_8$

6. The 1's complement of $(10101110)_2$ is

   (a) $(01010001)_2$

   (b) $(11111011)_2$

   (c) $(01110111)_2$

   (d) None of the above

II. State whether the following statements are *True* or *False* (any *two*) : 1×2=2

1. The logic gates have one or more input, and more than one output coming out of it.

2. Roman number is the best example of non-positional number system.

3. Alphanumeric data includes the letters of alphabet (uppercase and lowercase), all the numbers from 0 to 9 and any other special symbol.

4. The summary of AND operation is 'at least one condition should be true for the compound condition to be true'.

III. Fill in the blanks in the following sentences (any *two*) : 1×2=2

1. The algebra of the 19th century which examines a given set of propositions is known as ——.

2. The product of $(1011)_2$ $(101)_2$ is ——.

3. The combination of the OR gate and the NOT gate is known as ——.

4. The full form of the abbreviation EBCDIC is ——.

(SHORT ANSWER-TYPE QUESTIONS)

IV. Answer the following : 1×3=3

1. Define 'word' associated with binary digits.

2. Calculate $(1011011)_2$ $(111)_2$ by using binary arithmetic.

3. Give the truth table for the expression Y $\overline{A\ B}$.

(DESCRIPTIVE-TYPE QUESTIONS)

V. *Either*

(a) *(i)* Explain briefly the NOT operation and give its truth table. 1+1=2

(ii) Differentiate between octal and binary number systems with examples. 1½+1½=3

Or

(b) *(i)* Write the formula of binary arithmetic for subtraction. 1

(ii) Convert the following : 2

$(514)_8$ $(?)_6$

(iii) Subtract $(1111101)_2$ $(1010110)_2$ using 1's complement method. 2

VI. *Either*

(a) *(i)* Differentiate between nibble and byte. 1+1=2

(ii) Draw the logic circuit of the following : 3

$$Y \quad (\overline{A \quad B \quad C}) \quad (\overline{B \quad C}) \quad (\overline{A} \quad C)$$

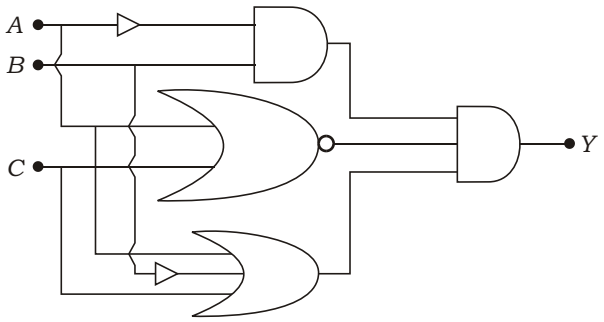
[For the Visually Handicapped (Blind) Students only in lieu of the above Question No. VI. *(a) (ii)*]

(ii) What are the three rules for subtraction using 2's complement method? 1+1+1=3

Or

(b) *(i)* What is an ASCII code? 2

(ii) Give the Boolean expression of the following logic circuit : 3



[For the Visually Handicapped (Blind) Students only in lieu of the above Question No. VI. *(b) (ii)*]

(ii) Explain OR gate with its truth table and a logic symbol. 1+1+1=3

SECTION—B

(ADVANCED DOS)

(*Maximum Marks* : 20)

(OBJECTIVE-TYPE QUESTIONS)

I. Choose and write the correct answer for the following (any *two*) : 1×2=2

1. Which one of the following commands belongs to external DOS command?

   (a) DIR

   (b) COPY

   (c) DEL

   (d) FORMAT

2. Which one of the following commands is used to display one screen of output at a time?

   (a) TYPE

   (b) LIST

   (c) MORE

   (d) CALL

3. Which one of the following commands is used to display the screen on or off during batch file operation?

   (a) REM

   (b) DISPLAY

   (c) ECHO

   (d) VOL

4. The order of execution of command files in DOS is

   (a) .EXE, .BAT, .COM

   (b) .COM, .BAT, .EXE

   (c) .EXE, .COM, .BAT

   (d) .BAT, .COM, .EXE

II. Write *True* or *False* for the following statements (any *two*) : 1×2=2

1. ATTRIB command is used only to hide files.

2. REPLACE command is used to selectively replace files on the target disk with files having the same name on the source disk.

3. MEM command is used to display the important information about the disk.

4. In DOSKEY command, the switch /HISTORY is used to list all the commands presently stored in the buffer.

III. Fill in the blanks in the following sentences (any *two*) : 1×2=2

1. The —— command is used to delete a directory and all of its attached subdirectories and files.

2. The —— command is used to bring back the parts of scattered files together.

3. In a batch file, the —— command is used to display remark lines.

4. The —— command is used to transfer the system files IO.SYS, MSDOS.SYS and COMMAND.COM to a disk to make it bootable.

(SHORT ANSWER-TYPE QUESTIONS)

IV. Write the commands and its switches for the following (any *two*) : 2×2=4

1. Delete all the files with extension .BAK in the current directory with the option to confirm before each one is deleted.

2. Display all the lines containing the string "BOARD" in the file C:\CLASSX\EXAM.TXT.

3. Move all the files from the current directory to C:\MISC.

4. Check the volume label of D: drive.

(DESCRIPTIVE-TYPE QUESTIONS)

V. *Either*

(a) *(i)* What is the purpose of LABEL command? 1

(ii) Differentiate between CHKDSK and SCANDISK commands with their syntaxes. 2+2=4

Or

(b) *(i)* What is the purpose of MSBACKUP command? 1

(ii) Write short notes on the following : 2+2=4

(1) XCOPY command

(2) DEL command

VI. *Either*

(a) Explain, in detail, the DIR command with syntax and its various switches. 1+1+3=5

Or

(b) Create a batch file FIRST.BAT to execute the following : ½+2+2+½=5

(i) Change the attribute of the file C:\SYLLABUS.TXT to read only.

(ii) Format the drive A: and put the volume label MYFLOPPY.

(iii) Clear the screen.

SECTION—C

(QBasic)

(*Maximum Marks* : 40)

(OBJECTIVE-TYPE QUESTIONS)

I. Choose and write the correct answer for the following (any *three*) : 1×3=3

1. Which of the following is a positive real number?

   (a) 45

   (b) – 23

   (c) + 32

   (d) 6.78

2. The QBasic expression of $ax^2 \quad bx \quad c$ is

   (a) *ax^2 bx c*

   (b) *a.x^2 b.x c*

   (c) $(a * x^2 \quad b * x \quad c)$

   (d) *a * x^2 b * x c*

3. The READ statement should always have which corresponding statement of the following?

   (a) PRINT

   (b) DATA

   (c) RESTORE

   (d) WRITE

4. Which one of the following is the output of STRING$(4, "ABC")?

   (a) AAAA

   (b) BBBB

   (c) CCCC

   (d) ABCABCABCABC

5. Which one of the following statements is used to call the subprograms from the main program?

   (a) GOTO

   (b) ON...GOTO

   (c) CALLSUB

   (d) CALL

6. The mode to add more records to an existing sequential file is

   (a) ADD

   (b) APPEND

   (c) OUTPUT

   (d) INPUT

II. State whether the following statements are *True* or *False* (any *three*) : 1×3=3

1. The three logical operators are also called unary operators.

2. The output of the expression PRINT USING "! &"; "Charles"; "Babbage" is C Babbage.

3. A subprogram always begins with a SUB statement and ends with an END statement.

4. If the dimension of an array is B(9,9), this array can store 20 elements in it.

5. The variables inside a DEF FN function are global.

6. The ABS function is used to find the sign of a number.

III. Fill in the blanks in the following sentences (any *three*) : 1×3=3

1. The expression MID$("Meghalaya",6,4) returns the output ——.

2. In LOCATE statement, the column has to be in the range of 1 to 80 and row in the range ——.

3. The —— operator gives the remainder when the first operand is divided by the second operand.

4. Argument variables are always passed by —— by default.

5. For binary files, —— function returns the position of the last byte read or written.

6. A —— is a code that prevents the user from inputting unnecessary things.

IV. Answer the following questions : 1×3=3

1. Explain the LCASE$ function with syntax.

2. What is the purpose of WIDTH statement?

3. What is the advantage of the SELECT CASE statement over multiple IF...THEN...ELSE statements?

(SHORT ANSWER-TYPE QUESTIONS)

V. Answer the following questions within *2* or *3* sentences or steps : 2×4=8

1. What are the limitations of a sequential file? 2

2. How is an array different from a normal variable? 2

3. What is the difference between a comma and a semicolon as a separator in PRINT statement? 1+1=2

4. What are various arithmetic operators available in QBasic? State their purposes with examples. 1+1=2

(DESCRIPTIVE-TYPE QUESTIONS)

VI. Answer the following questions : 5×4=20

1. *Either*

   (a) Enumerate the rules for naming variables in QBasic. 5

   Or

   (b) Distinguish between MID$ function and MID$ statement. Give examples to illustrate your answer. 2½+2½=5

2. *Either*

(a) Write the output generated by the following program : 5

```
DIM iNO1 AS INTEGER
DIM iNO2 AS INTEGER
DIM iNO3 AS INTEGER
LET iNO2 = 5
FOR  iNO1 = 1  TO  10
        LET   iNO3 = iNO2 * iNO1
        PRINT   iNO2; "*"; iNO1; "="; iNO3
NEXT iNO1
END
```

Or

(b) Develop QBasic codes to generate the following output using FOR...NEXT loop : 5

```
5  5  5  5  5
4  4  4  4
3  3  3
2  2
1
```

3. *Either*

(a) Write a program to add the first fifty even natural numbers by using DO...WHILE loop. 5

Or

(b) Write a program to calculate the largest of three integers by using two block IF structures. 5

4. *Either*

(a) *(i)* What is a dynamic array? 1

(ii) Distinguish between LSET and RSET statements. 2+2=4

Or

(b) Develop QBasic codes to read a random file that has the fields of a person as follows : 5

(i) Name of a person (20 characters)

(ii) Address of a person (30 characters)

(iii) Occupation of a person (20 characters)

(iv) House Number (Integer)

[For Private Candidates only (without Practical)]

(*Maximum Marks* : 20)

VII. Answer the following questions within *2* or *3* sentences (any *five*) : 2×5=10

1. Distinguish between input screens and output screens. 1+1=2

2. Explain LOCATE statement with syntax. 2

3. Distinguish between CINT and CLNG. 1+1=2

4. Distinguish between SEEK function and SEEK statement. 1+1=2

5. What is a subprogram? 2

6. Distinguish between DO...LOOP and WHILE...WEND statements. 1+1=2

VIII. Answer the following questions : 5×2=10

1. *Either*

   (a) Write QBasic codes to store name, age and registration number of 30 students in one-dimensional array. 5

   Or

   (b) Discuss the FOR...NEXT structure and its syntax. 5

2. *Either*

   (a) Discuss the user-defined data type with syntax. 5

   Or

   (b) Enumerate the points to be remembered while writing QBasic expression. 5

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