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1 SEM BCA (CBCS) DD 1-3

2024

(December)

COMPUTER APPLICATION

Paper : 1-3

(Digital Design)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×5=5
- (a) Define logic gate.
 - (b) Write the characteristics equation of JK Flip-Flop.
 - (c) What is binary number ?
 - (d) Define Hamming distance.
 - (e) Convert $(237)_8$ to decimal.

Contd.

2. (a) Construct a full subtractor circuit and simplify the equation using K-map. 7

Or

Construct an 8-to-1 multiplexer. Explain briefly.

- (b) Explain about weighted codes with examples. 5

- (c) Convert the following : $1 \times 3 = 3$

(i) $(167)_{10}$ to binary

(ii) $(1723)_8$ to binary

(iii) $(649)_{16}$ to binary

3. Answer **any four** questions from the following : $5 \times 4 = 20$

(a) Explain about error detection method.

(b) Explain 1-to-4 demultiplexer with logic diagram and truth table.

(c) Explain 3-to-8 line decoder with logic diagram and truth table.

- (d) Explain about Octal to Binary Encoder with logic diagram and truth table.
- (e) Write the steps for designing a combinational circuit.
4. (a) Define Flip-Flop. Draw and explain about JK Flip-Flop. 1+5=6

Or

Define latch. Explain about S-R latch with logic diagram and truth table.

1+5=6

- (b) Explain about asynchronous down counter. 6
- (c) Simplify the expression —
$$Y = \sum m(8,10,11,12,13,14,15)$$
 using K-map. 4
- (d) Explain about Shift Register. 4

Or

Explain about DeMorgan's theorem.

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1 SEM BCA (NCBCS) 1.3 (C)

2024

COMPUTER APPLICATION

Paper : 1.3

(Communicative English)

Full Marks : 75

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Give phonemic transcription as per the British Received Pronunciation (British RP) of the following words : $1 \times 10 = 10$

ball, allow, baby, idea, jew, corner, false,
nose, pupil, monk

Contd.

2. Give phonemic transcription to distinguish between the words below : **(any three)**

2×3=6

Sea — See

Tail — Tale

Byte — Bite

Send — Sand

Sit — Seat

Feet — Fit

3. Fill in the blanks in the sentences below using appropriate tense forms of the verbs in brackets :

1×7=7

- (a) I shall telephone you when he _____
(come) back from office.
- (b) Mother says my brother and I _____
(be) to go to the market.
- (c) We _____ (live) here for 10 years by
the end of this year.
- (d) The patient had died before the doctor
_____ (arrive).
- (e) I am not at home and I wish I _____
(be).

(f) The train _____ (leave) before we reached the station.

(g) Did you think you _____ (see) me somewhere before?

4. Fill in the blanks with appropriate prepositions : 1×7=7

(a) The lion was killed by the hunter _____ a gun.

(b) She arrived late _____ office.

(c) The cat hid itself _____ the bed.

(d) He is married _____ a celebrity chef.

(e) The dog jumped _____ the wall to the other side.

(f) We found a man selling fruits _____ the streets.

(g) You can travel _____ bus to reach Jorhat.

5. Correct the following sentences : 1×7=7

(a) The class is filled with NRI students.

(b) I come to Dibrugarh two years back.

- (c) The boys have put up nice posters in our class.
- (d) The climate of Kashmir is colder than of Chennai.
- (e) Everyone should mind their own business.
- (f) Some people believe in everything they hear.
- (g) The village folk was present.
6. Write a conversation in direct speech in not less than **150** words on : 10
- (a) Three friends discussing on a plan to go on a picnic.

Or

- (b) Three friends discussing about a class lecture on Computer Programming.
7. Considering yourself as Monti Dutta, Purchase officer, Nalbari Food and Beverages, generate an enquiry at Talukdar Traders, Guwahati, seeking the availability of some raw materials for your production requirements. 10

Or

Write an order letter as Ritesh Deka, General Manager, ABC Associations, Guwahati, to D. B. Catering Services, for arranging a lunch for 100 people at your place.

8. Examine the different roles one can play during a Group Discussion. 9

Or

Enumerate few of the tips and tricks in the preparation of a job interview.

9. "English is a National Foreign Language in India" — Discuss the statement with the relevance of English in present day scenerio. 9

Or

State the need and requirement of Non-verbal modes of communication in oral communication practices.

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1 SEM BCA (CBCS) PwC 1.5

2024

(December)

COMPUTER APPLICATION

Paper : TH (1.5)

(Programming with C)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Give a very brief answer to each question :
2×5=10
 - (a) Write the syntax for the do-while loop.
 - (b) What is the difference between actual and passive parameters in a function call ?
 - (c) State *one* use of the 2D array.

Contd.

- (d) How is dynamic memory allocated? Give *one* example.
- (e) Write the source code in C to show a file pointer is used to open a file.

2. Answer **any four** : 5×4=20

- (a) What is a structure in C programming? When structure is used? Explain with proper examples. 1+2+2=5
- (b) Draw a flowchart to find the largest among three unequal numbers.
- (c) Write the source code in C to differentiate between pre- and post-increment and decrement operators.
- (d) Compare between call by value and call by reference in functions.
- (e) Explain the different ways conditional statements can be written.

3. Answer **any three** from the following : 10×3=30

- (a) Write the source code in C to check a number is prime *or* not.
- (b) Write the source code in C to find the sum of two given matrices.

- (c) Write the source code in C to print all the odd factors of a given number.
 - (d) Write the source code in C to check whether a string is palindrome.
 - (e) Write the source code in C to enter the name, roll, and cgpa of n user-given students details and print them using structure.
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1 SEM BCA (CBCS) AUD-I (FoM-I)

2024

(December)

COMPUTER APPLICATION

Paper : BCA-Audit-I

(Foundation of Mathematics-I)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

PART-A

1. (a) What is mathematical induction? 2
- (b) Prove by the principle of mathematical induction that

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6} \forall n \in \mathbb{N}$$

4

Contd.

(c) Prove by the principle of mathematical induction that for any natural number n , $n^3 + 2n$ is divisible by 3. 4

2. (a) Expand $(5x + 4y)^5$ by using binomial theorem. 3

(b) Find the middle term of $(x + 2y)^6$ 3

(c) (i) Explain the process of finding Pascal's triangle by using binomial theorem. 4

Or

(ii) Explain the process of finding general term of the binomial expansion $(x + y)^n$.

3. (a) Define limit of a function. 2

(b) Find the derivative of the following:
(any two) 2+2=4

(i) $\frac{1}{x^5}$

(ii) $e^x \sin x$

(iii) $\sqrt{x} \log x$

(c) What is integration? Find $\int \log x dx$.

1+3=4

PART-B

4. (a) (i) Find the A.M., G.M., H.M. of the following data: 3

Data : 4, 5, 6, 8, 4, 2, 12

Or

(ii) Describe the methods of finding mode and median from a set of data.

(b) Find the standard deviation and coefficient of variation from the given data:

Data : 40, 50, 30, 60, 90 3

(c) Explain the process of constructing histogram and pie-chart for statistical data with a suitable example. 4

5. (a) Give *two* examples of each of the positive and negative correlations. 2

Or

Explain the process of finding covariance.

- (b) Find the correlation coefficient r_{xy} from the following data : 5

X : 40 30 50 60 70 50 40

Y : 50 40 60 90 80 40 90

- (c) Explain the process of finding Spearman's Rank Correlation with a suitable example. 3

6. (a) What is time series ? What are its basic applications ? 1+2=3

- (b) Explain the components of time series. 4

- (c) Compare trend with seasonal variations. 3

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1 SEM BCA (CBCS) FC 1.1

2024

(December)

COMPUTER APPLICATION

Paper : 1.1

(Fundamental of Computers)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. (a) Write true **or** false : 3
- (i) IBM 7030 is a first generation computer.
 - (ii) Second generation computers used transistors.
 - (iii) VLSI technology was used by third generation computers.
- (b) Write *three* characteristics of computer. 3

Contd.

- (c) Give *two* examples of mini computers and mainframe computers. 2
- (d) Define supercomputers with suitable examples. 4
- (e) Write *three* applications of computers in health care. 3
2. (a) Fill in the blanks : 3
- (i) Digital cameras and mobile phones have _____ memory.
- (ii) Intermediate results during program execution are stored in _____.
- (iii) Static RAM is made of _____.
- (b) Differentiate between Primary Memory and Secondary Memory. 3
- (c) What is BIOS? What kind of memory is preferred in it? 2+1=3
- (d) What is the purpose of cache memory? 3
- (e) Name *three* input devices and *three* output devices. 3

3. (a) Write **two** examples of the following : 3

(i) Application software

(ii) System software

(iii) Utility software

(b) Briefly explain the functions of the following : (**any three**) $2 \times 3 = 6$

(i) Operating system

(ii) Utility software

(iii) Translator

(iv) Linker loader

(v) Debugger

(c) Define proprietary software and open source software with suitable examples. $3 \times 2 = 6$

4. (a) Define multi-user multi-tasking operating system and real time operating system with examples. $3 \times 2 = 6$

(b) Briefly explain computer virus and antivirus with examples. $3 \times 2 = 6$

(c) Fill in the blanks :

3

- (i) DOS is an example of _____ operating system.
 - (ii) Operating system is added as a layer between _____ and _____.
 - (iii) Microsoft Windows 10 is an example of _____ operating system.
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