S. S. JAIN SUBODH P.G.(AUTONOMOUS) COLLEGE, JAIPUR

Affiliated to University of Rajasthan, Jaipur

I CIA BCA I Semester Test, Aug. - 2019

Fundamentals of Computer Science

Max. Marks: 30 **Duration:** 1 Hour

Instructions to the Candidates

Note:- **Section A** : Consists of three short answer type questions, each carrying 7.5 marks. The candidates are required to attempt any two (7.5x2=15 marks)

Section B : Consists of one descriptive question of 15 marks with an internal choice.

Section A

1) Write characteristics of computers.
2) Define applications of computers.
3) Give classification of computers and explain in brief.

Section B

4) What is generation of computers? Explain in brief.

OR

What are Input and Output Devices? Explain any two input and two output devices in brief.

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Electrical Circuit and Semiconductor Physics

Max. Marks: 30 **Duration:** 1 Hour

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Section B : Consists of one descriptive question of 15 marks with an internal choice.

Section A

Q.1. Define Electric Charge. Explain quantization and conservation of charge.

Q.2. Define intensity of electric field. Find the intensity of electric field at a distance of 0.5 m from a point charge of $3\mu c$.

Q.3. Define Potential Energy and Potential Difference. If $2.4 \times 10^{-5} J$ work is done in carrying a charge of $3 \times 10^{-6} C$ up to a charged body. What is its potential?

2+4+9

Section B

Q.4. State Gauss's Law if electrostatics. If $q_1, q_2 \ldots q_n$ charges are inside the Gaussian surface then find the total flux.

OR

Explain the capacity of a capacitor. Find the equivalent capacitance for series combination of three capacitors C_1, C_2 and C_3.

$Q = CV$

(A∪B)' (A∩B)'

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Discrete Mathematics

Max. Marks: 30 **Duration:** 1 Hour

Instructions to the Candidates

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Section B : Consists of one descriptive question of 15 marks with an internal choice.

Section A

(1) If $A = \{1,2,4,5\}$ and $B = \{3,4,5,6,7,9\}$ then find.

i) $A \cup B$ ii) $A \cap B$

iii) A – B iv) B – A

v) $A \oplus B$

(2) Show by Mathematical Induction

$$1 + 3 + 5 + \text{---} + (2n - 1) = n^2$$

(3) Out of 20 members in a family , 11 like to take tea and 14 like coffee. Assume that each member likes at least one of the two drinks. How many like :-

i) Both tea and coffee 5

ii) Only tea and not coffee 6

iii) Only coffee and not tea 9

Section B

(4) Prove that the relation R on the set of all integers defined by $(x, y) \in R \Rightarrow x - y$ is divisible by 3 is an equivalence relation of Z.

OR

Prove that for sets A, B and C

$$A - (B \cup C) = (A - B) \cap (A - C)$$

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Programming in C

Max. Marks: 30 **Duration**: 1 Hour

Instructions to the Candidates

Note:- **Section A** : Consists of three short answer type questions, each carrying 7.5 marks. The candidates are required to attempt any two (7.5x2=15 marks)

Section B : Consists of one descriptive question of 15 marks with an internal choice.

Section A

1) Define Identifier and write the rules to naming an identifier.
2) Write an Algorithm/Pseudo code to print area of a rectangle.
3) Write a 'C' program to print average of any given 5 numbers.

Section B

4) (a) What do you understand by 'Comments'? Explain its usage.
   (b) What is a Constant? How it is different with a variable? Give its syntax with example.

OR

(a) What do you understand with Data Types? Explain all.
(b) Draw a flow chart to find maximum among 2 numbers.