

Roll No :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

SP-728

M.Sc. (Final) Examination, 2021 INFORMATION TECHNOLOGY

Paper - MIT-205

(Discrete Mathematics and Iterative Methods)

Time : 1½ Hours]

[Maximum Marks : 50

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit 50 words). Each question carries 2 marks.

(खण्ड-अ)

(अंक : 2 × 10 = 20)

नोट :- सभी दस प्रश्नों के उत्तर दीजिए (उत्तर-सीमा 50 शब्द)। प्रत्येक प्रश्न 2 अंक का है।

Section-B

(Marks : 3 × 5 = 15)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit 200 words). Each question carries 3 marks.

(खण्ड-ब)

(अंक : 3 × 5 = 15)

नोट :- सभी पाँच प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न में विकल्प का चयन कीजिए (उत्तर-सीमा 200 शब्द)। प्रत्येक प्रश्न 3 अंक का है।

Section-C

(Marks : 5 × 3 = 15)

Note :- Answer any *three* questions out of five (Answer limit 500 words). Each question carries 5 marks.

(खण्ड-स)

(अंक : 5 × 3 = 15)

नोट :- पाँच में से किन्हीं तीन प्रश्नों के उत्तर दीजिए (उत्तर-सीमा 500 शब्द)। प्रत्येक प्रश्न 5 अंक का है।

BI-459

(1)

SP-728 P.T.O.

Section–A

1. Attempt all questions. Answer should not exceed **50** words.
 - (i) What is set and explain associate law of the sets ?
 - (ii) Explain countable & uncountable sets.
 - (iii) What are quantifiers ? Give example.
 - (iv) Explain Cyclic Group.
 - (v) If we toss a fair coin, what is the probability that we will get a head ?
 - (vi) Write the following set in a tabular form :
$$A = \{x : x^2 = 9\}$$
 - (vii) What is power set and determine the power set P(A) of the set $A = \{3, 2, \phi\}$.
 - (viii) Explain distributive law of sets.
 - (ix) What is Karnaugh Map ?
 - (x) What do you mean by permutation and combination ?

Section–B

2. De'Morgan's law of sets.

Or

Explain pigeonhole principle with example.

3. Explain Binomial theorem in detail.

Or

What do you mean by complexity of algorithm ?

4. Explain Newton Raphson method with example.

Or

Explain inverse of matrix by Gauss Jordan method.

5. Write difference between DFS and BFS.

Or

Write difference between Binary tree and Spanning tree.

6. Explain Logical Equivalence and Logical Implication.

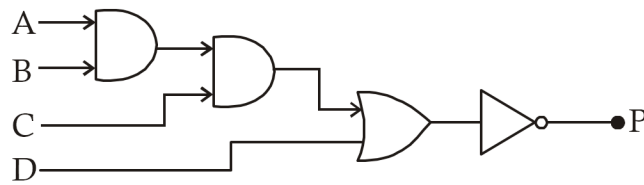
Or

Explain the different types of Relations.

Section-C

7. What are differences between Cartesian product & Relation ?

8. Find the Boolean expression for the following circuit :



9. Use pigeonhole principle to show that if 7 colors are used to paint 50 bicycles, then at least 8 bicycles will have the same color.

10. Explain about various Logical gates with example.

11. Explain the Kruskal's algorithm with example.