

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPG–1107

M.Sc. (Previous) Examination, 2021

COMPUTER SCIENCE

MCS-106

(Mathematics for Computer Science)

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.

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.

Section–C

(Marks : 5 × 3 = 15)

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

Section–A

2 each

1. (i) Define Magnitude of vector.
- (ii) Define like and unlike vector.
- (iii) Write formula between two points.

BI–814

(1)

BPG–1107 P.T.O.

- (iv) Define Multigraph.
- (v) Define Infimum.
- (vi) Define Combination.
- (vii) Write decision formula for a straight line.
- (viii) Calculate :

$$\frac{|n|}{|n-1|}$$

- (ix) Given example of weighted graph.
- (x) Define isomorphic graph.

Section-B

3 each

2. If $\vec{a} = 2\hat{i} - 3\hat{j} + 5\hat{k}$ and $\vec{b} = 3\hat{i} + 6\hat{j} + 8\hat{k}$ find value :

$$\left| 2\vec{a} + \left(\vec{b} - \vec{a} \right) \right|$$

Or

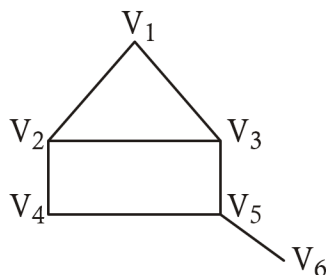
$\vec{a} = \hat{i} + 3\hat{j} + \hat{k}$ and $\vec{b} = 3\hat{i} + 2\hat{j} + 0\hat{k}$ find $2\vec{a} \cdot \vec{b}$.

3. Find equation of line when slope of line is $\tan\theta = \sqrt{3}$ and passing through (6, 4).

Or

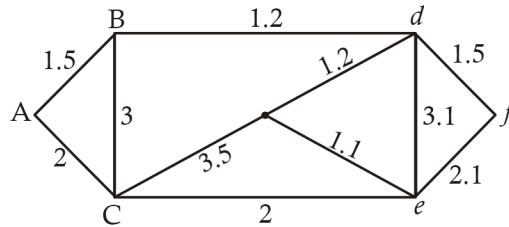
Find equation of line when it passing through (2, 7) and (8, 7).

4. Find minimum color in given graph :



Or

Find shortest path in below graph :



5. Draw Hasse diagram $(D_{12}, 1)$.

Or

Define Consistent Enumeration with example.

6. Find value of n :

$$\frac{|n-1|}{|n-2|} = \frac{|7 \times 2|}{|6|}$$

Or

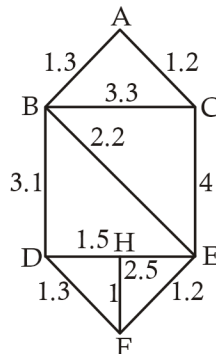
Expand the following with binomial theorem :

$$(2x^2 + \sqrt{x})^4$$

Section-C

5 each

7. Find equation of line which is parallel to $2x + 3y + 6$ and passing through $(7, 2)$.
8. Find equation of circle if radius of circle is $\sqrt{7}$ and coordinate of centre is $(5, 2)$.
9. Find shortest path with prism algo from A to F :



10. Explain Pigeonhole principle with example.
11. Define ordered and unordered partition.