

**Name: Roll. no:   
Subject: Mathematics - I   
Level: 1st Semester**

**SET :A**

Mitrapark, Chabahil, Kathmandu

Tel: +977 1 4479017

**Department of Humanities &social Science**

**PRE BOARD - EXAMINATION-2075**

**Group “A”**

**Attempt all the questions. [10×1=10]**

# Circle ( ) the correct answer in the following questions.

1. If A is a square matrix then A+AT is

a. symmetric matrix b. scalar matrix

c. skew symmetric matrix d. Diagonal matrix

1. If A= then AAT=

a.0 b. 1

c. A d. AT

1. If nthof A.P. 4n+1 then the common difference is

a. 2 b.3

c.4 d.-5

4. 0.454545454545………………..=

a. .5/9 b. 5/8

c. 5/7 d. 5/6

1. If the sum to n terms of an AP is n2 then common difference is

a.1 b.2

c.3 d.4

1. log381=

a.1 b.2

c.3 d.4

1. The centre of the circle x2 +y2+4x-6y+4=0 is

a.(2,3) b. (-2,3)

c. (-2,-3) d. (2,-3)

1. In an examination, a candidate has to pass each of 5 subjects . In how many ways can the candidate fail?

a. 31 b.30

c.1 d.32

1. In how many ways 3 letters be posted in 7 letter boxes?

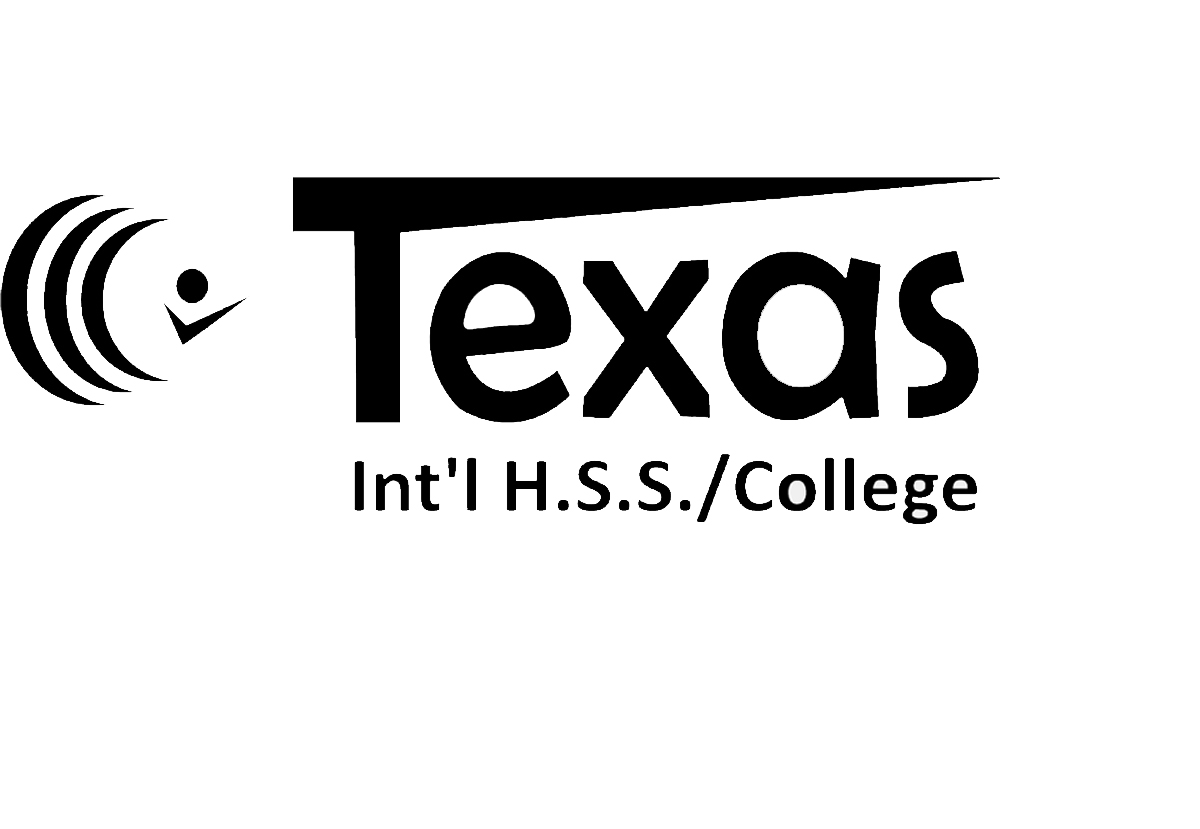
a. 21 b. 37

c.73 d.42

1. The number of ways of 6 BCA students be seated in a round table is

a. 720 b. 320

c.120 d.6



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**PRE BOARD - EXAMINATION-2075**

**Group “A”**

**Attempt all the questions. [10×1=10]**

# Circle ( ) the correct answer in the following questions.

1. If x and y are two real number, then

a. | x+y| <|x|+|y| b. |x+y| |x|+|y|

c. |x+y| |x|+|y| d. |x+y| >|x|+|y|

1. is

a. an integer b. a natural number

c. a rational number d. an irrational number

1. If and then

a.  b. 

c.  d. 

1. The number of ways of 6 BCA students be seated in a round table is

a. 720 b.360

c.120 d.61

1. The conic section becomes a parabola if

a. e >1 b. e <1

c. e = 1 d. e=0

1. log1/216=

a. 2 b. 4

c.-2 d.-4

1. If inverse of doesnot exist then x=

a. 0 b. 2

c. 1 d.3

1. The nth term of the series 2+4+6+…….is

a. n b. 2n

c. 3n d. 5n

1. If P(n,r)=336 and C(n,r)=56 then

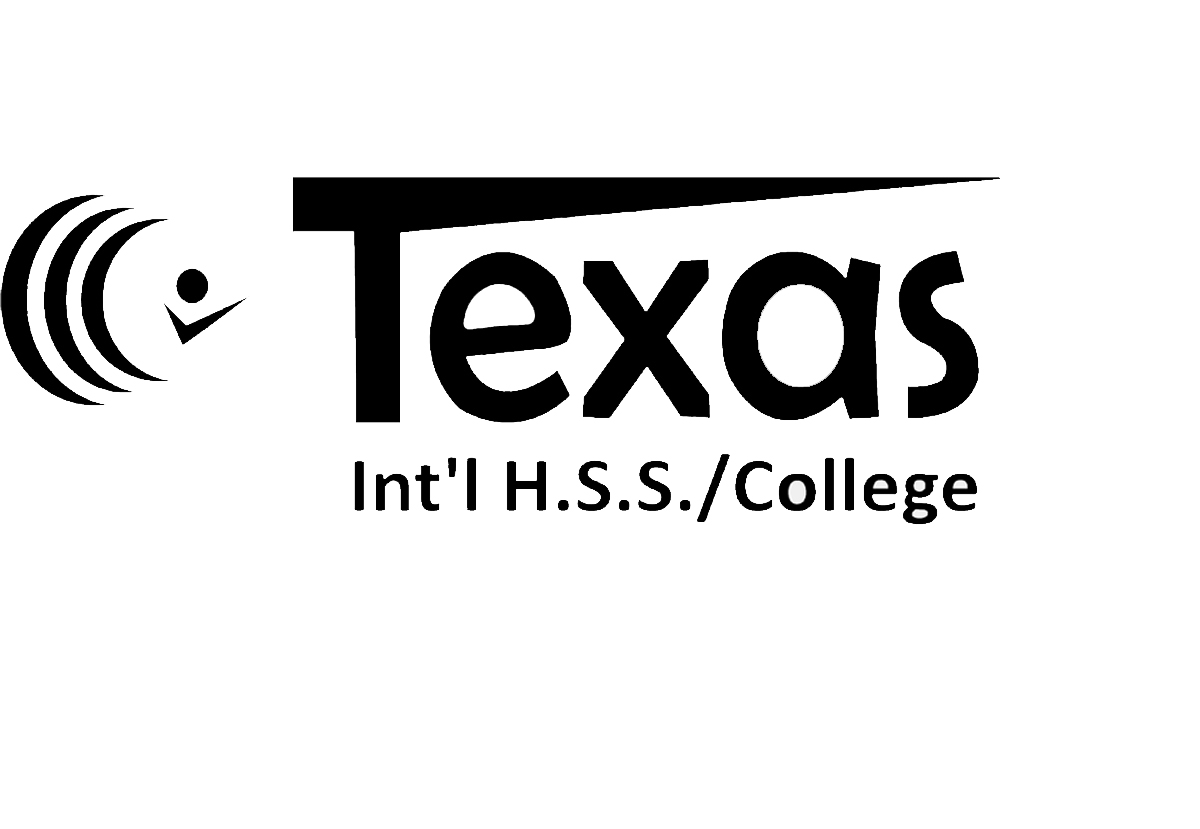
a. 2 b.5

c.3 d.4

1. The polar equation of x= -4 is

a.  b. 

c.  d. 



**Stream: BCA FM : 50  
Subject: Math-I PM : 35  
Level: 1st Semester Time: 2.5 Hrs**

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***Candidates are required to answer the question in their own words as far as practicable***

**Group "B"**

**Attempt any SIX questions: [6×5=30]**

1. Find center, vertices, eccentricity, foci of the ellipse. 
2. Examine whether the function  defined by f(x)=2x is one one ,onto and neither.
3. If f(x)= log (-1<x<1) prove that:

f(a) +f(b)= (, <1)

1. Prove that: Cos(A+B)= CosACosB-SinASinB by using vector method.
2. Find the area of triangle with the vertices A(1,-1,2) B(2,0,-1) and C(0,2,1).
3. Show that 9x2+4y2-18x-16y-11 represents the equation of an ellipse. Find its centre, vertex and focus.
4. Prove that: = a2(a+3)

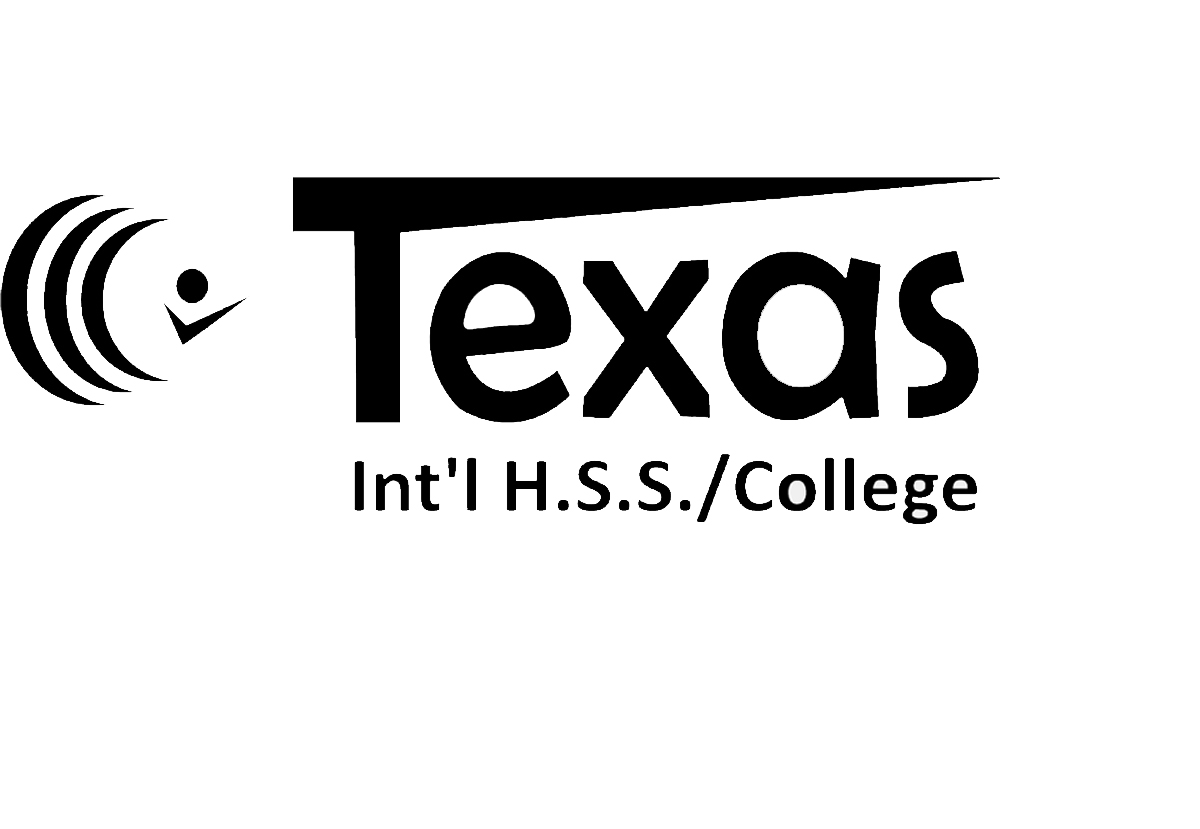
**Group "C"**

**Attempt any TWO questions: [2×10=20]**

1. Define permutation and combination. Try to establish relationship between with help of formulae. In how many ways the letters of word MONDAY be arranged? How many of these arrangements do not begin with M? How many begin with M and don’t end with Y?
2. a. Find the nth term and sum of n terms of the series 4+6+9+13+18+…….

b. the sum of an infinite geometric series is 15 and the sum of square of these terms is 45.Find the first term and common ratio.

1. Define scalar and vector product in three dimensional space with their geometrical interpretation and prove the formula sin(A+B)=sinAcosB+cosAsinB



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**Group "B"**

**Attempt any SIX questions: [6×5=30]**

1. If the three consecutive term of a geometric series be increased by their middle term, then prove that the resulting terms will be in harmonic progression.
2. If a transformation T is defined by T(X)=AX where A=show that T is orthogonal transformation.
3. In market survey of 1000 consumers of tea, it was found that 500 purchase soktim tea, 400 purchase tokla tea and 150 purchase both brands. Howmany purchased (a) soktim only (b)tokla only (c) exactly one of these brand and (d)neither of them.
4. Prove that 
5. For the given matrices A= B= show that (A+B)T=(AT+BT)
6. Find the equation of parabola with focus (-1,2) and directrix x=-5.
7. There are 7 men and 3 ladies. Find the number of ways in which a committee of 6 persons can be formed if the committee is to have at least one lady

**Group "C"**

**Attempt any two questions. [2×10=20]**

1. Prove that the A.M. ,G.M. and H.M. between any two unequal positive numbers satisfy the condition (a) ( G.M)2= A.M.H.M. (b) A.M.> G.M. >H.M.
2. Define logarithmic function.

(a) If

(b) Prove 

1. Define scalar and vector product in three dimensional space with their geometrical interpretation and prove the formula sin(A-B)=sinAcosB-cosAsinB