Shree Bhandara Secondary School

Terminal Exam: 2083

Sub:Com.Mathematics Time: 2 hour F.M-50

Class-12 P.M-17.5

Group 'A' [8× 1=8]

Write the correct option in your answer sheet.

1.A person has 5 drawers and 3 keys.In how many ways can they place the keys in the drawers?

a. 15 b. 125 c.243 d.625

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2. In triangle ABC ,then value of a (bcosC – c cosB) is :

a. $a^2 - b^2$ b.a –b c.2abc d. $b^2 - c^2$

3.What is the amplidue of the complex number i ?

a. 270^0 b. 90^0 c.-90^0 d.-1

4.What is the derivative of y=2sinh$\frac{x}{2}$ with respect to x ?

a. cosh$\frac{x}{2}$ b. 2 cosh$\frac{x}{2}$ c.cosh$\frac{x}{4}$ d. 2cosh$\frac{x}{4}$

5.Which one of the following is the Euler's form of 1-I ?

a. $\sqrt{2}e^{\frac{i7\pi}{4}}$ b.$2e^{\frac{i7\pi}{4}}$ c. $\sqrt{2}e^{\frac{-i7\pi}{4}}$ d. $-2e^{\frac{i7\pi}{4}}$

6.What is the sum of first 5 odd natural number ?

a.15 b.25 c.42 d.255

7.If P(A)=0.3 ,P(B)=k,P(A∪ B)=0.8 such that A and B are independent events,then k is

a. $\frac{4}{5}$ b.$\frac{6}{7}$ c.$\frac{5}{7}$ d.$\frac{8}{25}$

8.The total number of combination of n object taken 'r' at time is….

a.$\frac{n!}{(n-r)!}$ b. $\frac{n!}{(n-r)!r!}$ c. $\frac{n!r!}{(n-r)!}$ d. $\frac{n!}{(n-r)r!}$

Group 'B' [8× 5=40]

9.a What is the sum of first n natural number ? [1]

b.Write two property cube root of unity. [2]

c. Write is the magnitude of complex number Z=$e^{-i\theta}$? [1]

d.Define permutation and combination. [1]

10. a.Find the sum to n terms of the series:

2.3+3.4+4.5+…,… [2]

b. Solve the following system of equation by using matrix method

2x+y+3z=19 ,3x-2z=-2,3y+2z=17 [3]

11.a.Prove by vector method that the angle in a semi circle is a right angle. [4]

b.Prove that $(\vec{a}-\vec{b})\times(\vec{a}+\vec{b}) = 2\vec{a}\times\vec{b}$ [1]

12. The height (x) in cm and weight(y) in kg are given for 5 persons in a community.

X	160	162	165	161	163
Y	63	62	64	60	61

Find the correlation coefficient between X and Y and regression coefficient Y on X [3+2]

13. a. If 1 ,ω and ω^2 are cube roots of unity, find the value of (1-ω)(1-ω^2)(1-ω^4)(1-ω^8) [2]

b.Evaluate $(1-\sqrt{3i})^6$ by using De-Moivre's Theorem. [3]

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Group 'C' 8× 2=16

14. a.In How Many ways can the letters of the word 'COMPUTER' be arranged ? How many arrangements can be formed so that all vowels are together ? Also how many arragements can be formed so that all vowels never come together? [3]

b. A committee of 6 to be formed out of 8 gents and 6 ladies .In how many ways this can be done when at must 3 ladies are included ? [3]

c.Solve the triangle ABC,in which a=2 ,b=$\sqrt{6}$ and c=$\sqrt{3}$-1. [2]

15. a.Find the area of parallelogram whose diagonals are represented by the vector $\vec{i}+\vec{j}+\overrightarrow{3k}$ and $3\vec{i}-3\vec{j}+\vec{k}$. [2]

b.Find the derivative of coth$coth^{-l}$(sin2x). [3]

c.Using principle of mathematical induction ,show that:

$1^3+2^3+3^3+$ …,…$+n^3=\frac{[n(n+1)]^2}{4}$ [3]

The End