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OB-1103-175

Roll No.



Second Unit Test, 2014-2015

Maths

Time: 11/2 hrs.]

Class-XI

[M. M.: 40

Note:-All questions are compulsory.

Section (A)

(1 marks each)

Prove for n=1

$$\left(1+\frac{3}{1}\right)\left(1+\frac{5}{4}\right)\left(1+\frac{7}{9}\right)...n.cert3letp$$

$$\left(1+\frac{(2n+1)}{n^2}\right)=(n+1)^2$$

Express in a+ib form

$$i^{35} + \frac{1}{i^{35}}$$

Solve 5x-3 < 3x+1, when x is an integer. 6

Find total no. of ways of answering 6 multiple choices questions having 4 choices.

(P.T.O.)



(2)

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Section (B)

(4 marks each)

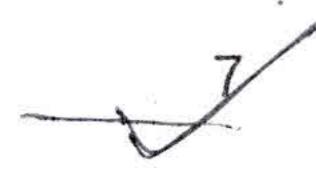
Prove that $5^n - 5$ is divisible by 4 for all $n \in \mathbb{N}$. Hence prove that

$$2.7^n + 3.5^n - 5$$
 is divisible by 24 for all $n \in \mathbb{N}$. Chapter Ex. 6

Prove by mathematical Induction : $(n \in N)$

$$\frac{1}{1.2.3} + \frac{1}{2.3.4} + \frac{1}{3.4.5} + \dots + \frac{1}{n(n+1)(n+2)}$$

$$= \frac{n(n+3)}{4(n+1)(n+2)}$$



Solve the following system of inequalities graphically:

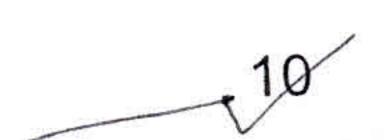
$$3y-2x \le 4$$
, $x+3y > 3$, $x+y \ge 5$, $y < 4$

Find real values of Θ such that $3 \pm 2i\sin\theta$

$$\frac{3 + 2i\sin\theta}{1 - 2i\sin\theta}$$

is a real number.

A solution of 8% boric acid is to be delluted by adding a 2% boric acid solution to it. The resulting mixture is to be more than 4% but less than 6% boric acid. If we have 640 litres of 8% solution, how many litres of 2% solution will have to be added?



Find n if

$$2n+1P_{n-1}:^{2n-1}P_n=3:5$$

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(3)

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Section (C)

(6 marks each)

- Out of 6 boys & 4 girls, a committee of 5 is to be formed. In how many ways can this be done if:
 - (i) atleast 2 girls are included?
 - (ii) atmost 2 girls are included?
- 12(i) Find the number of words which can be mode using all letters of the word AGAIN. If these words are written as in a dictionary.

 What will be the fiftieth word?

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(ii) How many 4-digit numbers can be formed from digits 1, 1, 2, 2, 3, 3, 4, 4, 5, 5?

J. J. Chab 6 1-x.

16 multiple choices questions

(P.T.O.)



