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| **PT1/APMAQP/1223/A 08-MAY-2023** | | | | | | |
| **PERIODIC TEST I (2023-24)** | | | | | | |
| **Subject: Applied Mathematics**  **Grade: XII** | | | | **Max. Marks:35**  **Time:I Hr 20 min** | | |
| *General Instructions:*   * *Questions in Section A carry 1 mark each* * *Questions in Section B carry 2 marks each* * *Questions in Section C carry 3 marks each* * *Questions in Section D carry 4 marks each* * *Questions in Section E carry 5 marks each* | | | | | | |
| **Multiple Choice Questions (1 mark each )** | | | | | | |
|  | Solve the inequality: |2-3x|>5 | | | | | |
|  | **a.** | | (−∞,−1];(4,+∞) | | **b.** | (−∞,−1] |
|  | **c.** | | (−∞,−1);(4,+∞) | | **d.** | [4,+∞) |
| **2.** | Find k *If* A=  and A. adj(A)=13 I. | | | | | |
|  | **a.** | | 3 | | **b.** | -3 |
|  | **c.** | | 5 | | **d.** | -2 |
| **3.** | Solve: |3x|>|6-3x| | | | | | |
|  | **a.** | | [1, +∞) | | **b.** | [-1, +∞) |
|  | **c.** | | (1, +∞) | | **d.** | (-∞,1) |
| **4.** | Find the last two digits of the product 2452x 6785 | | | | | |
|  | **a.** | | 25 | | **b.** | 15 |
|  | **c.** | | 52 | | **d.** | 20 |
| **Section B(2marks)** | | | | | | |
| 5 | | Find the matrix A for which  A=. | | | | |
| 6 | | **Find the set of values of x satisfying x = 32 (mod 7).** | | | | |
| 7 | | Using Cramer’s rule solv ethe system of equations  2x-y=17  3x+5y=6 | | | | |
| **Section C ( 3 marks )** | | | | | | |
| 8 | | If A= find the value of k so that A=kA-2I and hence find A. | | | | |
| 9 | | **In what ratio must a grocer mix two varieties of tea worth Rs.180 per kg and Rs.200per kg respectively so that selling the mixture at Rs.216.20, he may gain 15%.** | | | | |
| 10 | | A boat goes 20 km upstream and 22 km downstream in 6 hours. Also, it goes 25 km upstream and 33 km downstream in 8 hours. Find the speed of the boat in still water and that of the stream. | | | | |
| 11 | | **A and B participate in the 900 m race. A run at the speed of 4.5 m/sec. A gives B a start of 150 m and still beats him by 50 seconds. Find the speed of B.** | | | | |
| **Section D ( 4 Marks )** | | | | | | |
| 12 | | **Three pipes A, B, and C are connected to a tank. A and B can can fill a tank together in 6 hours and 8 hours respectively. C can empty the tank in 12 hours.**     1. **If both pies A and B opened together the tank can be filled in**   a)4 2/3 hours b) 3 3/7 hours c) 3 ¾ hours d) 2 4/5 hours   1. **If both pies A and C opened together the tank can be filled in**   a)12 hours b) 16 hours c) 20 hours d) 24 hours   1. **If both pies B and C opened together the tank can be filled in**   a)12 hours b) 16 hours c) 20 hours d) 24 hours   1. **If all pipes opened together then the tank can be filled in**   a)4.2 hours b) 4.6 hours c) 4.8 hours d) 5 hours | | | | |
| 13 | | Find the product AB of the matrices where A =  Use the product to solve the equations:  x + y + 2z = 1  3x + 2y + z = 7  2x+ y + 3z = 2 | | | | |
| **SectionE( 5 marks )** | | | | | | |
| 14 | If A   find A and hence solve the equation  ; ; x - 3y + 3z = -14 | | | | | |

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