

Expect for the following questions, all the remaining questions have been asked in [Set I](#).

### SECTION - A

**Q. 1.** Using properties of determinants, show that

**Q. 5.** Evaluate:

**Q. 10.** If  $\dots$  show that

**Q. 13.** Using differentials, find the approximate value of

**Q. 18.** Using integration, find the region in the first quadrant enclosed by the x-axis, the line  $\dots$  and the circle  $\dots$ .

### EXERCISE B

**Q. 19.** If  $\dots$  then verify that

**Q. 22.** A particle just clears wall of height 'b' at a distance 'a' and strikes the ground at a distance 'c' from the point of projection. Prove that the angle of projection is

and the velocity of projection  $u$  is given by

**Q. 24.** Two forces of magnitude  $\dots$  and  $\dots$  make an angle  $\dots$  with one another, and their resultant makes an angle  $\dots$  with the bisector of the angle between them. Show that

### SECTION - C

**Q. 21.** Two cards are drawn successively with replacement from a well- shuffled pack of 52 cards. Find the mean and variance for the number of aces.

Or

There are 5% defective bulbs of bulbs. What is the probability that a sample of 10 bulbs. Will includes not more than 1 defective bulb? (Use  $e^{-0.5} = 0.6065$ )

**Q. 22.** Two bags A and B contain 2 white, 4 red; and 3 white, 3 red balls respectively. One of the bags is selected at random and a ball is drawn from it. If the selected ball is of white colour, find the probability that it is drawn from bag A.

**Q. 25.** A and B are partners sharing profit and losses in the ratio 1 : 2 respectively. They admit C as a new partner, the new profit sharing ratio being 1 : 2 : 2 between A, B and C, respectively. C pays Rs.12,000 as premium for goodwill. How will the premium be shared between A and B?