

**BA. B.SC. B COM DEGREE END SEMESTER EXAMINATION – OCT. NOV. 2018****SEMESTER –5: MATHEMATICS (OPEN COURSE)****COURSE: 15U5OCMAT1: APPLICABLE MATHEMATICS***(Common for Regular 2016 admission & Supplementary 2015 admission)*

Time: Three Hours

Max. Marks: 75

**PART A***Answer All Questions. Each Question carries 1 Marks.*

1. If  $\log_x 4 = -\frac{1}{4}$  then find  $x$ .
2. Reduce  $\frac{391}{667}$  to lowest terms.
3. Solve  $x^2 - 8x + 16 = 0$
4. What is the probability that at least one head appears in two tosses of a fair coin?
5. Differentiate  $x \cdot e^{2x}$
6. Evaluate  $\int e^{5x} dx$
7. Find the average of 5,7,9,11
8. Find the L.C.M of 2,6,9
9. Find the square root of 1296
10. The speed of a car is 72km/hr. What is the speed in m/sec? (1 x 10 = 10)

**PART B***Answer Any Eight. Each Question carries 2 Mark.*

11. Simplify  $(a^{-3}b)^{1/3}(ab^{-3})^{1/3}$
12. Draw the graph of  $3x + y = 4$
13. Differentiate  $\log x \cos x$
14. Evaluate  $\int_0^1 e^{2x} dx$
15. If a bag contains 4 white,5 red and 6 blue balls. Three balls are drawn at random from the bag.  
What is the probability that all of them are red.
16. Find 80% of 680
17. Find the fourth proportional to 4,9,12
18. At what rate percent per annum will Rs 12,500 amounts to Rs.15,500 in 4 years at the rate of simple interest ?
19. If 36 men can do a piece of work in 25 hours, in how many hours will 15 men do it?
20. The length of a rectangular hall is 5 m more than its breadth. The area of the hall is  $750m^2$ .  
Then, find the length of the hall?

(2 x 8 = 16)

**PART C**

*Answer Any Five. Each Question carries 5 Marks.*

21. Show that  $\cos^2 60^\circ + \sin^2 45^\circ + \sin^2 30^\circ + \cos^2 90^\circ = 1$ .
22. How many words can be formed from the letters of the word 'DIRECTOR' so that the vowels are always together?
23. Two dices are thrown together. What is the probability that sum of the numbers on the two faces is divisible by 4 or 6?
24. If the cost price is 96% times of the selling price then find the gain or loss as percentage.
25. The product of two numbers is 1320 and their H.C.F is 6. Find the L.C.M of the numbers.
26. Find the greatest number that exactly divides 105, 1001 and 2436.
27. The difference between the length and breadth of a rectangle is 23 m. If its perimeter is 206m, then find its area. (5 x 5 = 25)

**PART D**

*Answer any two. Each Question carries 12 Marks.*

28. A committee of 5 is to be formed from 7 men and 6 women. In how many ways can this be done if the committee contains
  - a) at least 3 men
  - b) at least 2 women
29. a) Differentiate  $\sin(e^{\sqrt{x}})$ 
  - c) A bag contains 6 white and 4 black balls. Two balls are drawn. Find the probability that they are of the same colour.
30. a) If Rs.782 be divided into three parts, proportional to 6:8:9, then find the first part, second part and third part.
  - d) In an election a candidate who gets 84% of the votes is elected by a majority of 476 votes. What is the total number of votes polled?
31. a) Five equal cubes, each of side 5 cm, are placed adjacent to each other. Find the volume of the new solid formed.
  - b) At what rate of compound interest per annum will a sum of Rs.1200 become Rs. 1348.32 in two years? (12 x 2 = 24)

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