B.SC. DEGREE END SEMESTER EXAMINATION OCTOBER 2016
SEMESTER – 5: MATHEMATICS (OPEN COURSE)
COURSE: **U5OCMAT1 –: APPLICABLE MATHEMATICS**

Time: Three Hours   Max. Marks: 75

PART A
Each question carries 1 Mark. Answer **all** questions

1. Write the quadratic equation with 1 and 2 as roots.
2. Write the value of $\log_{10}100$.
3. Find a value of $(125)^{1/3} \times 4^{1/2}$.
4. Differentiate $(x^2 + 7)^5$ with respect to x.
5. Find $\int (2x+5)dx$.
6. What is the square root of 0.16?
7. How much percent of Rs. 5 is 90 paise?
8. Divide 108 into two parts in the ratio 4:5.
9. A car moves at the speed of 80km/hr. What is its speed in metres per second?
10.   If the diagonal of a square is 20 metres, find its area.

$(1 \times 10 = 10)$

PART B
Each question carries 2 marks. Answer **any Eight**

11.   State the formula for ^nCr.
12.   Draw the graph for 3x+y=6.
13.   A pair of dice is thrown. What is the probability of getting the sum as 2.
14.   Differentiate $(x^8+1)e^{5x}$ w .r.t   x.
15.   Find $\int (e^{2x}+5x^9)$ dx.
16.   If $\dfrac{x}{y} = \dfrac{4}{5}$, find $\dfrac{4}{7}+\dfrac{2y-x}{2y+x}$.
17.   If 75% of a number is added to 75, then the result is the number itself. What is the number?
18.   A sum of Rs. 1600 gives a simple interest of Rs.252 in 2 years and 4 months. Find the rate of
       interest p.a.
19.   One side of a rectangular field is 15m long and its diagonal is 17m long. Find the area of the field.
20.   If a+b=5 and 3a+2b=20, find 3a+b.

$(2 \times 8 = 16)$

PART C
Each question carries 5 marks. Answer **any Five**

21.   If the sum of a number and its square is 182, what is the number?

22.   Find the value of $\sin 30°\cos 45° + \cos 30°\sin 45°$.

23.   Find $\dfrac{dy}{dx}$ when

$$y=\left(\dfrac{x-5}{2x+1}\right)^3$$

24.   Two numbers are respectively 25% and 50% more than a third number. What is the ratio of the
      two numbers.

25.   The difference between cost price and selling price of an article is Rs240. If the profit is 20%, find
      the selling price.

26.   Find the difference between simple interest and compound interest at 10% pa on Rs.1000 after 4
      years

27.   The length of a rectangle is halved and breadth is tripled. Find the percentage change in the area.

$$(5 \times 5 = 25)$$

PART D
Each question carries 12 marks. Answer **any Two**

28.   A committee of 4 is to be formed from 5 boys and 6 girls. In how many ways this can be done so
      as to include
      i. exactly one girl
      ii. at least one girl

29.   Evaluate   (i) $\displaystyle\int_{-1}^{2} x\left(1+x^3\right)dx$

               (ii) $\displaystyle\int_{\frac{-\Pi}{4}}^{\frac{\Pi}{4}} \cos x\,dx$

30.   (i) The sides of a triangle are in the ratio $\dfrac{1}{2}:\dfrac{1}{3}:\dfrac{1}{4}$ and its perimeter is 104cm. Find the length
      of the longest side.
      (ii) The CP of an article is 64% of the MRP. Find the gain percent after allowing a discount of 12%.

31.   (a) A and B can do a piece of work in 18 days, B and C can do it in 24 days, A and C can do it in 36
      days. In how many days will, A, B and C finish it together and separately.
      (b) A train covers 10 kms in 12 minutes. If the speed is decreased by 5km/hr, find the time taken by it to cover the same distance.

$$(12 \times 2 = 24)$$

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