Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MA-112

B.Pharmacy, II Semester (Non-PCI Scheme)

Examination, June 2017

Choice Based Credit System (CBCS)

Mathematics

Time : Three Hours

Maximum Marks: 60

Note: i) Attempt any five out of eight questions.
ii) All questions carry equal marks.

1. a) If roots of the equation $4x^2 + 15x + m = 0$ are equal, then find the value of m.
   b) Solve the system of equations : $x + y = 3$; $2x + 5y = 12$

2. a) If $A = \begin{bmatrix} 3 & 4 \\ 6 & -9 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & -3 \\ 1 & 3 \end{bmatrix}$, then find 4A – 3B.

   b) Prove that $\log 2 + 2\log 5 - \log 3 - 2\log 7 = \log \frac{50}{147}$

3. a) Evaluate the following limits:

   i) $\lim_{x \to 3} \frac{x^2 - 5x + 6}{x^2 - 9}$

   ii) $\lim_{x \to 0} \frac{e^x - 1}{x}$

   b) Differentiate the following functions with respect to x :
   i) $2 \sin x \log_e x$

   ii) $\frac{e^x + \sin x}{1 + \log_e x}$

4. a) Evaluate the followings:
   i) $\int (2-x)(x+1)\,dx$ ii) $\int x \log_e x\,dx$
   b) Evaluate the followings:
   i) $\int x^2 e^x dx$ ii) $\int \frac{2x}{(x-1)(x+3)} dx$

5. a) Form a differential equation by eliminating arbitrary constant from the relation $y = a \sin x + b \cos x$.
   b) Solve the differential equation $9y \cdot \frac{dy}{dx} + 4x = 0$

6. a) Write a short note on measures of central tendency.
   b) Calculate median from the following table:

Wages (Rs.)	11-15	16-20	21-25	26-30	31-35	36-40
No. of Workers	3	5	6	9	10	7

7. a) What do you mean by dispersion? What are the various measures of dispersion?
   b) Calculate standard deviation from the following data:

x	10	12	14	16	18	20	22
f	3	5	9	16	8	7	2

8. a) A bag contains 8 red balls and 5 white balls. Three balls are drawn at random. Find the probability that:
   i) All the three balls are white
   ii) All the balls are red
   iii) One ball is red and two balls are white
   b) A coin is tossed six times. What is the probability of obtaining:
   i) 4 heads
   ii) 5 heads
   iii) Getting 4 or more heads

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