NAVRACHANA UNIVERSITY
School of Business & Law- BBA Program
End-Semester Examination May-2017
FYBBA- Semester-II
Quantitative Techniques-I MA141

Date: 8th May 2017

Marks: 40

Time: 8:00 – 10:00 AM

Instructions:
- → Write each answer on a new page
- → Use of simple calculator is permitted
- → Attempt questions in the sequential order

All the Best!!!

1. Solve the following: (10)
   - (a) $3^2 * 3^3 * 3^4 * 3^5/(3^{10} * 3^2)$ *(2)*
   - (b) 20th term of the Arithmetic progression: 22, 14, 6, … *(2)*
   - (c) $^{200}C_4$ and $^{200}P_4$ *(2)*
   - (d) Sum to infinity of Geometric Progression: 64, 8, 1, 1/8, …. *(2)*
   - (e) Value of x and y, if 2x+5y=20 and x+y=5 *(2)*

2. The product of Shanaya's age and her mother's age is 400. Her month is 30 years elder to her. Find the present age of Shanaya and her mother. (3)

3. The ratio of number of lectures attended by the students in the course of Mathematics, Finance and Marketing is 4 : 3.5 : 4.5. The marks scored (out of 100) are expected to be in the same proportion as the number of lectures attended. If the student is scoring 90 marks in marketing, find the marks scored by the student in mathematics and finance. (3)

4. Ram and Lakhan can together eat 100 mangoes in two hours. Lakhan takes double the time as taken by Ram in eating all 100 mangoes alone. Find how long will it take them individually to eat 100 mangoes? (3)

5. A group of friends drove from Vadodara to Mumbai at 80 km/hr and drove back at the speed of 100 km/hr. Find the average speed of round trip if the estimated distance one way is 400km. (3)

6. Fixed cost of manufacturing LED bulb is 21 lakhs and variable cost per unit is Rs.70. What should be the selling price of each bulb if company wants to achieve break-even at 14000 units? (3)

7. During summer, the temperature increases by 0.5 degree Celsius (^{o}C) every week. If the temperature in the first week of summer is 37°C. Find how long will it take for the temperature to reach 45 ^{o}C? (3)

8. In a survey conducted to understand the preference of 500 college students towards (3) summer fruits, it was found that 200 students like Watermelon, 300 students like Mango and 150 students like Melon. 50 students like all the three fruits. 150 students like Watermelon and Mango but not Melon, 80 students like Mango and Melon and 70 students like Watermelon and Mango. Find, how many students:
   (You may solve using either Venn Diagram or formula or both)
   (a) Do not like any of the three fruits
   (b) Like exactly one fruits
   (c) Like melon and watermelon but not mangoes

9. In how many ways can you arrange seven people on roundtable provided two particular (3) people do not want to sit together?

10. You are planning a trip to Spain and can visit any 7 cities due to time constraint. You (3) have shortlisted 3 cities - Seville, Malaga and Granada in South, 3 cities-Santander, San Sebastian and Pamplona in North and 3 cities-Valencia, Barcelona and Ibiza on the east coast. In how many ways can you shortlist 7 cities if you want to visit atleast two cities each in North, South and East of Spain.

11. Find the value of: $A^2 + 5A$ (3)

$$A = \begin{bmatrix} 3 & 1 & 2 \\ 4 & 2 & 3 \\ -2 & -1 & 3 \end{bmatrix}$$

---------End of Question Paper---------