Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **15MA3017** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MATHEMATICS FOR COMPETITIVE EXAMINATIONS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Find the greatest number of four digits which when divided by 12, 18 and 35 leaves 5 as remainder. | CO2 | 8 |
| b. | Four persons are chosen at random from a group containing 4 men, 3 women and 2 children. Find the chance that the selected group contains atleast one child. | CO4 | 8 |
| c. | How many words can be formed by using all the letters of the word “DIRECTOR” so that the vowels always come together? | CO4 | 4 |
| (OR) | | | | |
| 2. | a. | Divide Rs.1980 among 7 men, 11 women and 5 boys such that each woman may have three times as much as a boy, and a man as much as a woman and a boy together. Find how much each person receives. | CO4 | 8 |
| b. | A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Rs. 6500 for 6 months, B, Rs. 8400 for 5 months and C, Rs. 10,000 for 3 months. A wants to be the working member for which he has to receive 5 % of the profits. The profit earned was Rs. 7400. Calculate the share of B in the profit. | CO2 | 8 |
| c. | Find the square root of 7 upto three places of decimal. | CO2 | 4 |
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| 3. | a. | In a town there are 100 females for every 120 males. Population in the next census increased by 5 % but that of females increased by 10%. Find the increase percent in the male population. | CO2 | 8 |
| b. | The average monthly income of P and Q is Rs. 5050. The average monthly income of Q and R is Rs. 6250 and the average monthly income of P and R is Rs. 5200. What is the monthly income of P? | CO2 | 8 |
| c. | 10 years ago, father was 12 times as old as his son and 10 years hence, he will be twice as old as his son will be. Find their present age. | CO4 | 4 |
| (OR) | | | | |
| 4. | a. | A dealer sold an article at a loss of % . Had he sold it for  Rs. 100, he would have gained % . What should be the selling price to gain % ? | CO4 | 8 |
| b. | Simplify | CO1 | 8 |
| c. | Evaluate | CO1 | 4 |
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| 5. | a. | On a sum of money, the simple interest for 2 years is Rs. 660, while the compound interest is Rs. 696.30, the rate of interest being the same in both the cases. What is the rate of interest? | CO4 | 8 |
| b. | A, B and C are employed to do a piece of work for Rs. 1058. A and B together are supposed to do of the work and B and C together of the work. What should A be paid? | CO2 | 8 |
| c. | A certain number of men can do a work in 60 days. If there were 8 men more it could be finished in 10 days less. How many men were there initially? | CO2 | 4 |
| (OR) | | | | |
| 6. | a. | Two pipes A and B can separately fill a cistern in 60 minutes and 75 minutes respectively. There is a third pipe in the bottom of the cistern to empty it. If all the three pipes are simultaneously opened, then the cistern is full in 50 minutes. In how much time the third pipe alone can empty the cistern? | CO4 | 8 |
| b. | At what time between 4 and 5 are the hands of the clock 7 minutes apart? | CO2 | 8 |
| c. | In 1 kg mixture of sand and iron, 20 % is iron. How much sand should be added so that the proportion of iron become 10 %? | CO1 | 4 |
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| 7. | a. | A train travelling at 48 kmph completely crosses another train having half its length and travelling in opposite direction at 42 kmph, 12 seconds. It also passes a railway platform in 45 seconds. What is the length of the platform? | CO1 | 8 |
| b. | Abhi can row a certain distance downstream in 6 hrs and returns the same distance in 9 hrs. If the stream flows at the rate 3 kmph, find the speed of Abhi in still water. | CO1 | 8 |
| c. | A man covers a certain distance upto to the post office with a speed of 4 kmph and returns with a speed of 3 kmph. If he covered the total distance in hr, find the total distance he covered. | CO1 | 4 |
| (OR) | | | | |
| 8. | a. | Two ships are sailing in the sea on the two sides of a lighthouse. The angles of elevation of the top of the lighthouse as observed from the two ships are 300 and 450 respectively. If the lighthouse is 100 m high, find the distance between the two ships. | CO4 | 8 |
| b. | Find the day of the week on 18th July 1776. | CO2 | 8 |
| c. | If . What is the value of | CO1 | 4 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Distribution of Students according to Professional Courses in 1997:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | S. No. | Course | Faculty | | | | | Arts | | Science | | | Girls | Boys | Girls | Boys | | 1 | MBA | 25 | 45 | 25 | 65 | | 2 | Type -Writing | 23 | 186 | 20 | 32 | | 3 | Costing | 25 | 120 | 12 | 58 | | 4 | Tpye-Writing & Costing | 12 | 100 | 3 | 5 |  1. What is the percentage of students of Arts Faculty doing Costing only? 2. If 60 % of boys and 70 % of girls are successful in the courses taken by them, what is the combined pass percentage? 3. Taking all the course together, by what percent the boys exceed girls? 4. The percentage of girls among total number of students doing which course is higher than the percentage of girls in any other course? 5. By what percent, the number of students doing business management is less than the number of students doing Type-Writing only? | CO3 | 10 |
| b. | Find the units digit in the product (367 x 639 x 753) | CO2 | 5 |
| c. | The difference of two numbers is 1365. On dividing the larger number by the smaller, we get 6 as quotient and 15 as reminder. What is the smaller number? | CO2 | 5 |