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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May – 2017**

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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. | A, B & C enter into a partnership. They invest Rs.40,000, Rs. 80,000 and Rs. 1,20,000 respectively. At the end of first year B withdraws Rs. 40,000 while at the end of second year C withdraws Rs. 80,000. In what ratio will the profit be shared at the end of the 3 years? | CO1 | 8 |
| b. | John & Dani go for an interview for 2 vacancies. The probability for the selection of John is 1/3 whereas the probability for the selection of Dani is 1/5. What is the probability that only one of them is selected? | CO1 | 8 |
| c. | In how many different ways can the letters of the word ‘LEADING’ be arranged in such a way that the vowels always come together? | CO4 | 4 |
| (OR) | | | | |
| 2. | a. | The person’s present age is 2/5th of the age of his mother. After 8 years, he will be half of the age of his mother. How old is the mother at present? | CO4 | 8 |
| b. | The average weight of 9 mangoes increases by 20gm if one of them, weighing 120gm, is replaced by another. Find the weight of the new mango. | CO1 | 8 |
| c. | If 75% of the number is added to 75, the result is the number itself. Find the number. | CO1 | 4 |
| 3. | a. | In an examination, 1100 boys & 900 girls appeared, 50% of the boys & 40% of the girls passed the examination. Find the percentage of candidates failed. | CO2 | 8 |
|  | b. | Find the least number which when divided by 20, 25, 35 & 40 leaves the remainder 14, 19, 29 & 34 respectively. | CO2 | 8 |
|  | c. | If 18 binders bind 900 books in 10 days, how many binders will be required to bind 660 books in 12 days? | CO4 | 4 |
| (OR) | | | | |
| 4. | a. | The ratio of income of A to that of B is 5:4 and expenditure of A to that of B is 3:2. At the end of the year, if each saves Rs.800 then find the income of A and B. | CO4 | 8 |
|  | b. | Two pipes A and B together can fill a cistern in 4 hours. Had they been opened separately, then B would have taken 6 hours more than A to fill the cistern. How much time will be taken by A to fill the cistern separately? | CO1 | 8 |
|  | c. | Find the value of | CO2 | 4 |
| 5. | a. | If cost price of 15 articles is equal to the selling price of 10 articles then find the profit percentage | CO2 | 8 |
|  | b. | A boy was asked to multiply a number by 25, he instead multiplied the number by 52 and got the answer 324 more than the correct answer. Find the number. | CO2 | 8 |
|  | c. | Find the smallest number, which when added to 680621, make a perfect square. | CO2 | 4 |
| (OR) | | | | |
| 6. | a. | A and B can separately do a piece of work in 20 & 15 days respectively. They worked together for 6 days, after which B was replaced by C. If the work was finished in next 4 days, then find the number of days in which C alone could do the work | CO1 | 8 |
|  | b. | On lending an amount on compound interest one gets Rs. 8820 in 2 years and Rs. 9261 in 3 years. Find the rate of interest. | CO1 | 8 |
|  | c. | If , find . | CO1 | 4 |
| 7. | a. | Two trains of same length but with different speeds pass the static pole in 3 seconds and 4 seconds respectively. In what time will they cross each other when they are moving in (i) the same direction (ii) the opposite direction? | CO2 | 8 |
|  | b. | Find the day of the week on 11th October, 1986. | CO2 | 8 |
|  | c. | If the length and the breadth of the rectangle is increased by 5% and 4% respectively, then find what percent does the area of the rectangle increase. | CO2 | 4 |
| (OR) | | | | |
| 8. | a. | A boat covers 24 km upstream and 36 km downstream in 6 hours, while it covers 36 km upstream and 24 km downstream in  hours. Find the speed of the stream. | CO2 | 8 |
|  | b. | From the top of the hill 200 meters high, the angle of depression of the top and a bottom of the tower are observed to be 30º and 60º. Find the height of the tower. | CO1 | 8 |
|  | c. | At what time between 3 and 4 O’ clock are the hands of the clock together? | CO4 | 4 |
|  | | **Compulsory**: |  |  |
| 9. | a. | The bar graph given below shows the foreign exchange reserves of a country (in million US $) from 1991 - 1992 to 1998 - 1999.  **Foreign Exchange Reserves Of a Country. (in million US $)**  http://www.indiabix.com/_files/images/data-interpretation/bar-charts/15-1-2-1.png  a)The ratio of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is?  b)The foreign exchange reserves in 1997-98 was how many times that in 1994-95?  c)For which year, the percent increase of foreign exchange reserves over the previous year, is the highest?  d)The foreign exchange reserves in 1996-97 were approximately what percent of the average foreign exchange reserves over the period under review?  e)What was the percentage increase in the foreign exchange reserves in 1997-98 over 1993-94? | CO3 | 10 |
|  | b. | What is the unit digit in the number represented by 365×259×771 | CO2 | 5 |
|  | c. | If  then find the value of . | CO4 | 5 |