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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**Supplementary Examination – June– 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. | Find the greatest number of six digits which, on being divided by 6, 7, 8, 9 and 10 leaves 4, 5, 6, 7 and 8 as remainded respectively. | CO1 | 8 |
| b. | A basket contains 10 apples & 20 oranges out of which 3 apples and 5 oranges are defective. If we choose 2 fruits at random, what is the probability that either both are oranges or both are non-defective? | CO2 | 8 |
| c. | In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women? | CO1 | 4 |
| (OR) | | | | |
| 2. | a. | The ratio of the father’s age to his son’s age is 7:3. The product of ages is 756. Find the ratio of their ages after 6 years? | CO1 | 8 |
| b. | The average weight of 9 mangoes increases by 20 gm if one of the them weighing 120 gm is replaced by another. Find the weight of the new mango. | CO1 | 8 |
| c. | Find the value of | CO2 | 4 |
| 3. | a. | Kumar buys a bike for Rs.4700 and spends Rs. 800 on its repairs. If he sells the bike for Rs. 5800, find his gain percentage. | CO2 | 8 |
|  | b. | Three pipes A, B and C can fill the tank in 6 hours. After working together for 2 hours, C is closed and A & B fills the remaining part in 7 hours. Find the number of hours taken by C alone to fill the tank. | CO1 | 8 |
|  | c. | Find the value of 160.16  \* 20.36. | CO1 | 4 |
| (OR) | | | | |
| 4. | a. | A can do a piece of work in 80 days. He works at it for 10 days and then B alone finishes the remaining work in 42 days. In how many day together could complete the work? | CO1 | 8 |
|  | b. | A man lent Rs.500 at a certain rate of interest and Rs. 700 at a rate 1% higher than the first. From the both sums he received Rs.165 as interest in 3 years. Find the rate of interest. | CO1 | 8 |
|  | c. | Find the square root of 133225 | CO2 | 4 |
| 5. | a. | A train 125 m long passes a man, running at 5 km/hr in the same direction in which the train is going, in 10 seconds. Find the speed of the train. | CO2 | 8 |
|  | b. | The weight of three boys are in the ratio 4 : 5 : 6. If the sum of the weights of the heaviest and the lightest boy is 45 kg more than the weight of the third boy, what is the lightest boy? | CO1 | 8 |
|  | c. | 36 men can complete a piece of work in 8 days. In how many days will 27 men complete the same work? | CO4 | 4 |
| (OR) | | | | |
| 6. | a. | A motor boat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in total of 4 hr 30 min. Find the speed of the stream. | CO1 | 8 |
|  | b. | In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, then find number of valid votes that the other candidate got. | CO1 | 8 |
|  | c. | Subtracting 40% of a number from the number, we get the result as 30. Find the number. | CO2 | 4 |
| 7. | a. | If from a point 100 m above the ground, the angles of depression of 2 objects due south on the ground are 600 and 450, then find distance between the object. | CO1 | 8 |
|  | b. | What was the day of the week on 15th Aug 1999? | CO4 | 8 |
|  | c. | What is the unit digit in the number represented by 365×771? | CO2 | 4 |
| (OR) | | | | |
| 8. | a. | A man complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km. | CO1 | 8 |
|  | b. | Find the percentage increase in the area of a rectangle, if each of its sides is increased by 20%. | CO2 | 4 |
|  | c. | A certain number of 2 digit is twice the sum of its two digits and if 63 be added to it, the digits are reversed. Find the number. | CO4 | 8 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Classification of 100 students based on the marks obtained by them in physics and chemistry in an examination.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Subject | Marks out of 50 | | | | | | 40 and above | 30 and above | 20 and above | 10 and above | 0 and above | | Physics | 9 | 32 | 80 | 92 | 100 | | Chemistry | 4 | 21 | 66 | 81 | 100 | | Average  (Aggregate) | 7 | 27 | 73 | 87 | 100 |  1. What is the difference between the number of students passed with 30 as cut-off marks in chemistry and those passed with 30 as cut-off marks in aggregate? 2. If atleast 60% marks in physics are required for pursuing higher studies in physics, how many students will be eligible to pursue higher studies in physics? 3. What is approximate percentage of number of students getting atleast 60% marks in chemistry over those getting atleast 40% marks in aggregate. 4. How many students scoring less than 40% marks in aggregate? 5. If it is known that atleast 23 students were eligible for a symposium on chemistry, then find the minimum qualifying range in chemistry for eligibility. | CO3 | 10 |
|  | b. | If one-third of one-fourth of a number is 15, then find three-tenth of that number. | CO2 | 5 |
|  | c. | Find the least among the following:  0.2, 1/0.2,  and (0.2)2 | CO1 | 5 |

ALL THE BEST