QP CODE: 21100176

21100176

Reg No : .....

Name : .....

# UNDERGRADUATE (CBCS) EXAMINATION, FEBRUARY 2021

## Fifth Semester

(Offered by the Board of Studies in Mathematics)

## Open Course - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

6C089AA1

Time: 3 Hours

Max. Marks : 80

### Part A

*Answer any **ten** questions.*

*Each question carries 2 marks.*

1. Is 225 a perfect square? If so find the number whose square is 225.
2. What percent of 750 metres is 125 metres.
3. Find the gain or loss percent if CP = Rs 500 and SP = Rs 565.
4. Find the number of ways in which a committee of 3 members can be constituted from 10 persons.
5. Show that $\sec A \sin A = \tan A$.
6. Find the value of $\sin 30° \cos 30° + \cos 60° \sin 60°$.
7. 5 men can complete a job in 8 days . How many days will it take if 12 men do the job?
8. A gun is fired at a distance of 3.32 km away from Rohit. He hears the sound 10 seconds later. Find the speed of the sound.
9. Write the series expression for log 2
10. What is the derivative of a constant function?
11. Differentiate using product rule: $x^3 sinx$
12. State function of a function rule for the derivative of functions.

(10×2=20)

### Part B

*Answer any **six** questions.*

*Each question carries 5 marks.*

13. Find the GCM of the fraction $\frac{108}{375}$ , $\frac{54}{55}$, $1\frac{17}{25}$.
14. Divide Rs. 1250 between Aman and Amil in the ratio 2 : 3.

15. Find the number of words of four letters with no letter is repeated that can be formed from the letters of the word TRIANGLE . How many of them begin with T and end in E?

16. When the altitude of the Sun is 45° the length of the shadow of a tree is 120 feet .What will be the length of the shadow when the altitude of the Sun is 60°?

17. Ram bought a refrgerator for Rs. 4000 on credit. The rate of interest for the first year is 5% and of the second year is 15%. How much will it cost him if he pays after 2 years.

18. Two men undertake to do a piece of work for Rs.600. One alone could do it in 6 days, the other in 8 days. With the assistance of a boy they finish it in 3 days. How should the money be divided?

19. Define a biquadratic polynomial and find the degree of the following: (i) $2x^2 + 3xy + 4y^3$ (ii) $2x^2 + 5x^2y^3 + 7xy^4$ (iii) $7x + 6x^2y^2 + 7xy^3z^2$

20. Factorise $15(x-y)^2 - 5x(x-y) - x + y$.

21. Differentiate $\frac{e^x}{x}$.

(6×5=30)

**Part C**

*Answer any two questions.*

*Each question carries 15 marks.*

22. A) Find the least number of five digits which is exactly divisible by 654.
B) The LCM of two numbers is 39780 and their ratio is 13: 15. Find the numbers.

23.
1. Solve (i) $3x^2 + 10x - 8 = 0$ (ii) $3x^2 - x - 2 = 0$.
2. The sum of the squares of two positive integers is 97 and one of them is 1 more than twice of the other . Find the numbers.

24. a) Find the principal when Amount is Rs 540 for 4 years at 5 % per annum.
b) A sum of money was lent at simple interest at 11% per annum for 3.5 years and 4.5 years respectively. If the difference in interest for two periods was Rs 412.5, then find the sum.

25. a) The area of a right angled triangle is 600 sq. cm. If the base of the triangle exceeds the altitude by 10cm, find the dimensions of the triangle.
b) Find the area of the rhombus whose each side is of length 5 m and one of the diagonals is of length 8 m.

(2×15=30)