

QP CODE: 24009475



Reg No : .....

Name : .....

**UNDER GRADUATE (CBCS) SPECIAL REAPPEARANCE EXAMINATIONS, MARCH  
2024**

**Fifth Semester**

(Offered by the Board of Studies in Mathematics )

**OPEN COURSE - MM5OPT02 - APPLICABLE MATHEMATICS**

2021 Admission Only

3CAF899D

Time: 3 Hours

Max. Marks : 80

**Part A**

Answer any **ten** questions.

Each question carries **2** marks.

1. Express  $\frac{13}{44}$  as a decimal fraction.
2. Find the square root of  $\frac{256}{441}$ .
3. Find the ratio of 36 minutes to 2 hours.
4. Solve  $x^2 - 10x + 16 = 0$ .
5. In how many ways 3 books can be chosen from 7 books ?
6. Find the value of  $\sin 30^\circ \cos 30^\circ + \cos 60^\circ \sin 60^\circ$ .
7. Find the rate percent per annum on Rs 300 for 2.5 years , if the simple interest is Rs.15.
8. The speed of a car is 54 km/hr. What is its speed in m/sec?
9. Define logarithmic series.
10. Define monomials and binomials.
11. What is the derivative of  $\log x$ ?
12. Differentiate  $e^{\sin x}$ .

(10×2=20)

**Part B**

Answer any **six** questions.

Each question carries **5** marks.

13. Given that the HCF of two numbers is 16 and their product is 6400. Determine their LCM.



14. A grocer buys eggs at 10 for Rs 3 and sells at 8 for Rs 10. Find his gain or loss percent?
15. How many three digit numbers , with no digit is repeated, can be formed from the digits 2,4, 5 ,7, and 8? How many of them are even?
16. When the altitude of the Sun is  $45^\circ$  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  $60^\circ$ ?
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. If 5 men with 7 boys can earn Rs.3825 in 6 days, and 2 men with 3 boys can earn Rs.1050 in 4 days, In what time will 7 men with 6 boys earn Rs. 22500 ?
19. Factorise  $8(x + y)^3 - 27(x - y)^3$
20. Differentiate  $x^2 e^x \sin x$ .
21. Find the derivative of  $\frac{x}{\tan x}$  ?

(6×5=30)

### Part C

Answer any **two** questions.

Each question carries **15** marks.

22. A) 12% of the employees in a factory are females and the number of male employees is 264. Find the total number of employees. Also find the number of female employees.  
B) A number is increased by 10% and then it is decreased by 10% . Find the net increase or decrease percent.
23. 1. If  $\sin A = \frac{3}{5}$  and  $\cos B = \frac{12}{13}$  then evaluate (ii)  $2\tan A + 3\cot A$  (ii)  $\cot A + \cot B$  and (iii)  $\frac{\tan A - \tan B}{1 + \tan A \tan B}$ .  
2. Show that  $\frac{\operatorname{cosec} A + \operatorname{cosec} B}{\sin A + \sin B} = \operatorname{cosec} A \operatorname{cosec} B$ .
24. a) Suneeta can do a piece of work in 15 days and Amitha can do it in 10 days. They start together, but two days later Amitha gives up the work and goes away. In how many days will Suneeta finish the remaining work.  
b) Together Ravi and Suni do a piece of work in 4 days. Ravi alone can do it in 6 days. In how many days can Suni alone do it?
25. a) The area of a trapezium is  $352 \text{ cm}^2$ . The distance between parallel sides is 16 cm and one of the parallel side is 19 cm, find the other?  
b) Find the perimeter of an isosceles right angled triangle having an area of  $200 \text{ cm}^2$ ?

(2×15=30)