QP CODE: 22100176

22100176

Reg No : .....

Name : .....

UNDER GRADUATE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, JANUARY 2022

Fifth Semester

(Offered by the Board of Studies in Mathematics)

OPEN COURSE - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

149EC9B7

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What least number must be subtracted from 2716321 to make it exactly divisible by 3456?
2. Reduce $\frac{945}{1260}$ to its lowest term.
3. Find 20% less than Rs 70.
4. Solve $x^2 - 6x + 8 = 0$.
5. Find the number ways in which 4 members can be selected from a group of 6 persons.
6. Evaluate $\cot 60^\circ - \cot 30^\circ$.
7. Find the time on Rs 1000 at 8% per annum if the simple interest is Rs 200
8. Seema weaves 25 baskets in 35 days. In how many days will she weave 110 baskets?
9. Write the expansion of e^{-x}
10. What is the degree of the polynomial $3x^4 - 2x^3y^2 + 7xy^3 - 9x + 5y + 4$.
11. What is the derivative of $cosx$?
12. Find the derivative of $\sin(x^2)$.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. If 3, x, 12 are in continued proportion. Find the value of x.

14. A book seller sold 300 copies of a book at a profit of 15%. If a book costs him Rs 12. Find the selling price of the books.

15. If x is acute and $\cos x = \frac{3}{5}$, then find $\frac{2\tan x}{1-\cot x}$.

16. The angle of elevation of the top of a tower from a point at a distance of 50 metre from the foot of the tower is 60°. Find the distance to be travelled in a straight way so that the angle of elevation becomes 45°.

17. Find the principal, if the compound interest compounded annually at the rate of 10 % per annum for 3 years is Rs. 331.

18. a) A car travels at a speed of 54 km\hr. How many meters will it travel in one second ?
b) A man walks 15 km in 4 hours . How much he will walk in 3 hours?

19. If the diagonal of a rectangle is 17 cm long and the perimeter of the rectangle is 46 cm. Find the area of the rectangle.

20. Differentiate x sinx logx.

21. Find the derivative of $\frac{x}{tanx}$.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. a) Find the smallest number by which 180 must be multiplied so that the product is a perfect square.
b) 5929 students are sitting in an auditorium in such a manner that there are as many students in a row as there are rows in the auditorium. How many rows are there in the auditorium.

23. a) Using the letters of the word NUMBER how many words such that no letter is repeated can be formed with (i) exactly 3 letters (ii)at least 3 letters (iii) less than four letters.
b) How many four digit numbers with no digit is repeated can be formed using the digits 2,3,5,6 7 and 9?.How many of them (i) are even? (ii) divisible by 5 ?

24. a) A can do a piece of work in 10 days, B in 15 days . They work together for 5 days. The rest of the work is finished by C in 2 days. If they get Rs. 150 for the whole work . How should the money be distributed and what are their daily wages.
b) Two men undertake to do a piece of work for Rs.600. One alone could 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.

25. Factorise the following: (i) $(x+1)^3 + (x-1)^3$ (ii) $x^3 + 3x^2 + 3x - 7$
(iii) $8x^3 + 27y^3 + z^3 - 18xyz$.

(2×15=30)