QP CODE: 22103529

22103529

Reg No : .....

Name : .....

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

Fifth Semester

(Offered by the Board of Studies in Mathematics)

OPEN COURSE - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

F11FF218

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. Change $\frac{7}{13}$ into a fraction of which the denominator is 65.
2. Find 20% less than Rs 70.
3. If the profit made on a packet of tea is Rs 4 and the the cost price of the packet is Rs 20, then how much is the profite percentage?
4. Evaluate ${}^{7}P_{3}$.
5. Find the value of $\sin 30^{\circ}\cos 30^{\circ} + \cos 60^{\circ}\sin 60^{\circ}$.
6. The angle of elevation of the top of a tower from a point at a distance of 200 feet from the foot of the tower is 60° .Find the height oif the tower.
7. Find the compount interest on Rs 5000 at the rate of 5% per annum for 2 years compounded annually
8. A car travels at a speed of 72 km/hr. How many metres will it travel in one second
9. Write the series expression for log 2
10. Define monomials and binomials.
11. What is the derivative of the product of two functions?
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. Given that the HCF of two numbers is 16 and their product is 6400. Determine their LCM.
14. Find the smallest square number divisible by each one of the numbers 8, 9 and 10.
15. The sum and product of two positive integers are 20 and 106 respectively. Find the integers.
16. If x is acute and $\cos x = \frac{3}{5}$, then find $\frac{2\tan x}{1-\cot x}$.
17. 15 boys can earn Rs.900 in 5 days, how much will 20 boys earn in 7 days.
18. If 3 men with 4 boys earn Rs.264 in 8 days and 2 men with 3 boys earn Rs.184 in the same period. In what time 6 men with 7 boys earn Rs.315
19. The total cost of flooring a room at Rs. 8.50 per square metre is Rs. 510. If the length of the room is 8 metres, find its breadth.
20. Differentiate $(x-1)^2+2e^x$.
21. Differentiate $\frac{x^4+1}{x^2+1}$.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. A) Ratio of the number of male and female workers in a factory is 5: 3. If there are 115 male workers, determine the number of female workers in the factory .
    B) If $\frac{3x-4y}{2x-3y} = \frac{5x-6y}{4x-5y}$. Find x :y.
23.
    1. Find the values of (i) ${}^{12}C_3 + {}^{10}C_4 + {}^{9}C_3$ and (ii) ${}^{11}C_4 \times {}^{9}C_5$.
    2. Find the number of ways in which a committee constituting 6 members can be formed from 6 lawyers and 8 chartered accountants so that the commiittee include (i) at least 2 lawyers (ii) a majority of chartered accountants.
24. a) Find the principal , when amount is Rs 545 for 2 years at the rate 4.5 % per annum.
    b) Find the simple interest on Rs 306.25 from March 3rd to July 27th at 3.75 % per annum
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)