QP CODE: 23136056

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Reg No : .....

Name : .....

UNDER GRADUATE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, OCTOBER 2023

Fifth Semester

(Offered by the Board of Studies in Mathematics)

OPEN COURSE - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

C6542495

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. Find the value of $\frac{\sqrt{1183}}{\sqrt{2023}}$.
2. What percent of 25 Kg is 3.5 Kg ?
3. Find the gain or loss percent if CP = Rs 500 and SP = Rs 565.
4. Solve $x(x+1) = 110$.
5. If $\sin x = \frac{3}{5}$ and x is acute find the value of $\cos x$.
6. The angle of depression of a car from the top of a tower of height 40 metre is 30° .Find the distance of the car from the foot of the tower?
7. Find the simple interst on Rs 700 for 6 months at the rate 6 % per annum?
8. Amit can do a piece of work in 4 days and Sumit can do it in 6 days . How long will they take , if they work together?
9. Define Exponential series.
10. Give an example of a cubic polynomial.
11. What is the derivative of e^x?
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 largest number that divides 2053 and 967 and leaves a remainder of 5 and 7 respectively.

14. Simplify $2\frac{7}{39}$ of $1\frac{1}{17}$.

15. Find the total number of words having at least 5 letters that can be formed from the letters of the word EQUATION wthout repetition of letters .

16. One of the acute angles of a right angled triangle is of 30° and length of the hypotenuse is 12 cm.Find the lengths of other two sides.

17. In what time Rs.800 amount to Rs.882 at 5% per annum compounded annually.

18. A man travels a distance of 18 km from his house to an exhibition by car at 15 km/ hr and return back on cycle at 10 km /hr. Find his average speed for the whole journey.

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 $x^{5/2}$ (x^2-1) .

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

(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)** 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) $a^2b^2 - a^2 - b^2 + 1$, (ii) $x^2 - y^2 - 9z^2 + 6yz$, (iii) $50x^2 - 32y^2$.

(2×15=30)