QP CODE: 24036013

24036013

Reg No : .....

Name : .....

UNDER GRADUATE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, OCTOBER 2024

Fifth Semester

(Offered by the Board of Studies in Mathematics)

OPEN COURSE - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

91C998E2

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. The product of two numbers is 48. Their sum is 19. What are the numbers?
2. Find the square root of 774 by prime factorization.
3. Find 10% more than Rs 90.
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. 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. Kami , Karya and Kirti can together weave a carpet in 4 days. Kami by herself can weave the same sized carpet in 12 days and Kirti can do it in 10 days. How long will Karya take to do the work by herself?
8. A man walks 22.5 km in 5 hours. How much he will walk in 4 hours?
9. Write the expansion of e^x.
10. Factorise $35a^2 - 21a^2b - 14a^2b^2$.
11. What is the derivative of $sinx$?
12. Find the derivative of $\sin(x^2)$.

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. Find the LCM of the fractions $\frac{36}{125}, \frac{42}{25}, \frac{54}{55}$.

14. The first,third and fourth term of a proportion are 12, 8 and 14 respectively. Find the second term.

15. The sum and product of two positive integers are 18 and 72 respectively. Find the integers.

16. 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 .

17. Geetha borrowed Rs 7500 on 26 March 1996 from a bank at the rate of 8% per annum simple interest. If she cleared the account on june 7, 1996 then what amount did she pay?

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. Differentiate (x^2+x) cosec x.

21. Find the derivative of $\frac{x}{1+tanx}$.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. A) A bicycle is sold at a profit of 16%. Had it been sold for Rs 10 more, then profite would have been 20%. Find its CP.

    B) By reducing the selling price of an article by Rs 50, a gain of 5% turns into a loss of 5%. Find the orginal selling price of the article.

23.
    1. Evaluate the following :- (i) $(\text{cosec}45°)^2(\sec 45°)^2 + (\sin 60°)^2(\cos 45°)^2$
       (ii) $\cos 60°\cos 45° + \sin 45°\sin 30°$.
    2. Verify that (i) $\cos 60° = \frac{1-(\tan 30°)^2}{1+(\tan 30°)^2}$ and (ii) $2\sin 30°\cos 30° = \frac{2\tan 30°}{1+(\tan 30°)^2}$.

24. a) Rema deposited Rs.7500 for 6 months at the rate of 8 % interest compounded quarterly. Find the amount he received after 6 months.

b) In what rate percent per annum , compound interest will Rs. 10000 amount to Rs.13310 in 3 years?

25. a) The area of a trapezium is 352 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 cm^2.

(2×15=30)