QP CODE: 20100176

Reg No   :   ....

Name   :   ....

UNDERGRADUATE (CBCS) EXAMINATION, FEBRUARY 2020

Fifth Semester

(Offered by the Board of Studies in Mathematics)

Open Course - MM5OPT02 - APPLICABLE MATHEMATICS

2017 Admission Onwards

BF8DF340

Time: 3 Hours   Maximum Marks :80

Part A

*Answer any **ten** questions.*

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

1. Find the HCF of 624 and 936.

2. Express $\frac{13}{44}$ as a decimal fraction.

3. Find the ratio of 200 grams to 4 kg.

4. Find the number ways in which 4 members can be selected from a group of 6 persons.

5. Show that $\tan x \operatorname{cosec} x = \sec x$.

6. When the altitude of the Sun is 60° the length of the shadow of a tower is 100 feet . Find the height of the tower.

7. Find the principal if the simple interest is Rs 36 for 3 years at the rate 3% per annum.

8. The speed of a goods train is 4 m/sec. What is its speed in km/hr.

9. Write the expansion of e^x

10. What is the derivative of e^x.

11. What is the derivative of the quotient of two functions?

12. Find the derivative of $\sin(x^2)$.

(10×2=20)

13. Show that 17640 is not a perfect square.

14. Neeru brought 1600 bananas at Rs 3.75 a dozen. She sold 900 of them at 2 for Re 1 and remaining at 5 for Rs 2. Find her gain or loss percent.

15. The product of two adjacent positive integers is 156 .Find the numbers.

16. Evaluate $\frac{\tan 45° - \tan 30°}{1 + \tan 45° \tan 30°}$.

17. Ramesh deposited Rs.7500 in a bank which pays him 12% interest per annum compounded quarterly. What is the amount which he receives after 9 months

18. A and B undertook to do a piece of work for Rs. 37.50 . A alone could do it in 20 days and B in 30 days. With the assistance of C they finished it in 8 days. How should the money be divided.

19. Define a quadratic polynomial and find the degree of the following polynomials: (i) 2x+3 (ii) $2x^2 - 3x + 5$ (iii) $2xy^2 - 3y^3 + 4x^2y^5 + 6$

20. Factorise $a^3 - 8b^3 - 64c^3 - 24abc$

21. Differentiate $x^{5/2}$ (x²-1)

(6×5=30)

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. Using the letters of the word SOCIETY how many 5 letter words such that no letter is repeated can be formed ? How many of them 1)begin with a vowel? 2) begin and end with a vowel?
    2. How many numbers can be formed using digits 1,2,4,5,6,8 and 9 having (i) exactly 4 digits (ii) at least 4 digits (iii) less than 4 digits.No digit can be used twice.

24. a) A and B together can do a piece of work in 12 days, which B and C together can do in 16 days. After A has been working at it for 5 days and B for 7 days, C finishes it in 13 days. In how many days could each do the work by himself.

b) If 12 men and 16 boys can do a piece of work in 5 days and 13 men and 24 boys can do it in 4 days . Compare the daily work done by a man with that done by a boy.

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.

<div align="right">(2×15=30)</div>