


RAN-2303080302060003
M. Sc. (Sem.- II) Examination September - 2025
Mathematics (Skill Based and Elective Paper)
Mathematics for Competitive Exam - Paper: PGMTH 106
Time: 2 Hours]
[Total Marks: 30
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book
- (2) Attempt any 30 questions out of given 40 questions.
- (3) Each question carries a weightage of 1 mark.
- (4) Follow usual notations and conventions.

Seat No.:

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Student's Signature

- (1) What is the HCF of $\frac{36}{51}$ and $3\frac{9}{17}$?
- (2) The body weight of six boys is recorded as 54 kg, 64kg, 75kg, 67kg, 45kg and 91kg. What is the average body weight of all six boys?
- (3) Alap is thrice as old as his son and sum of their ages is 48 years. Find Alap's age.
- (4) Evaluate: 70% of 320 + 45% of 240.
- (5) Madhvi purchased a car for Rs. 2,50,000 and sold it for Rs. 3,48,000. What is the percent profit she made on the car?
- (6) Find the present worth of ₹ 930 due 3 years hence at 8% per annum. Also find the true discount.
- (7) A fruit seller had some apples. He sells 40% apples and still has 560 apples. Originally, how many he had?
- (8) In examination, 52% of the candidate failed in English, 42% failed in Mathematics, If 17% failed in both subjects, then what percentage candidate passed in both subjects?
- (9) For what value of K, system of equations $2x + 4y + 16 = 0$ and $3x + Ky + 24 = 0$ has an infinite number of solutions?
- (10) After 3 years, how much compound interest will be obtained on Rs. 7800 at the interest rate of 5% per annum ?
- (11) A and B jointly start a business. The investment of A is equal to three times the investment of B. What is the share of A in the annual profit of Rs. 52,000?
- (12) A missile travels at 1350 km/h. How many meters does it travel in one second?
- (13) A student walks from his house at a speed of 3 kmph and reaches the school 10 minutes late. If he walks at a speed of 4 kmph, then he reaches the school 10 minutes earlier. What is the distance between his school and his house?
- (14) How much time will it take for an amount of ₹ 900 to yield ₹ 81 as interest at 4.5% per annum of simple interest?
- (15) If $5x^2 - 13xy + 6y^2 = 0$, then $x : y$ is _____.
- (16) The present age of a father is 3 years more than three times the age of his son. Three years hence, father's age will be 10 years more than twice the age of the son. Find the present age of father.
- (17) A shopkeeper marked the price 10% more than its cost price. If he allows a discount of 20%, then find his loss percent.

- (18) If $a^x = b^y = c^z$ and $abc = 1$, then find the value of $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$.
- (19) Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$ as efficiently as he actually did, the work would have been completed in 3 days. Then, A alone could complete the work in _____ days.
- (20) The true discount on a bill due 9 months hence at 12% per annum is Rs. 540. Find the amount of the bill and its present worth.
- (21) If 6 is subtracted from the present age of A and the remainder is divided by 18, the resultant is the age of B. Also, C's age is 5 years and B is 2 years older than C. What is the present age of A?
- (22) For what value of k , do the equations $2x - 3y + 10 = 0$ and $3x + ky + 15 = 0$ represent coincident lines?
- (23) A man spends 30% on food, 35% on rent, 9% on travel and 17% on education. After all these expenditures, he saved Rs. 7,200. Find the amount spent on travel.
- (24) The least perfect square number divisible by 3, 4, 5, 6 and 8 is _____.
- (25) The income of A and B are in the ratio of 5:7 and their expenditure are in the ratio of 3:5. If each saves Rs. 1500, then find the income of B.
- (26) The smallest number to be added to 1000, so that 45 divides the sum exactly, is _____.
- (27) The product of two positive numbers is 11,520 and their quotient is 9. Find the difference of two numbers.
- (28) Two cubical boxes made of card-board have their edges in the ratio 3:4. The ratio of the amounts of card-board in each of them is _____.
- (29) What rate percent is one minute 12 second to an hour?
- (30) A train 100 m long is running at the speed of 65 km/hr. Time taken by the train to pass through a man walking at the rate of 5 km/hr in the direction of the train is _____ sec.
- (31) What sum of money will produce an interest of Rs. 80 in 5 years at the rate of 5% per annum?
- (32) 97% of students were present in a school and 18 students were absent. The total number of students in the school is _____.
- (33) X, Y and Z invested Rs. 4800, Rs. 7200 and Rs. 9600 in a business. Out of a profit of Rs. 2520, Z's share is Rs. _____.
- (34) What sum lent at C.I. at 5% p.a. will amount to Rs. 441 in 2 years?
- (35) If one of the roots of the equation $x^2 + ax - b = 0$ is 1, then what is the value of $(a - b)$?
- (36) If $\log_{10}^2$, $\log_{10}(2^x - 1)$ and $\log_{10}(2^x + 3)$ are three consecutive terms of an AP, then the value of x is _____.
- (37) The sum of first 10 terms and 20 terms of an AP are 120 and 440, respectively. What is the common difference?
- (38) A, B and C invested in a common business. A invested Rs. 5000 for 2 months, B invested Rs. 6000 for 3 months and C invested Rs. 4000 for 5 months. Out of a profit of Rs. 960, A's share is Rs. _____.
- (39) If $A : B = 5 : 7$ and $B : C = 9 : 11$, then $A : C =$ _____.
- (40) 75% of what area is 15 square metres?
