FORM-1

Subject: I PUC Basic Mathematics Sub Code: 75 Class: I PUC

SL. NO.	TERM	ALLOTTED TOPICS (CHAPTERS)	MAX NO. OF HOURS REQUIRED
01	**I Term** 16-08-2021 TO 15-09-2021	1) Number Theory 2) Theory of Indices 3) Averages 4) Coordinate system in a plane	08 04 04 05
02	FIRST TEST 13-09-2021 TO 15-09-2021	Portions: Topics covered in I Term Question paper should be in Final Exam Pattern	
03	ASSIGNMENT-1	Problems on topics covered in I term, which induces logical thinking in students.	
04	**II Term** 16-09-2021 TO 30-11-2021	1) Sets, Relations and Functions 2) Logarithms 3) Simple Interest and Compound Interest 4) Percentages, Profit and Loss 5) Angles & Trigonometric Ratios	16 06 08 08 06
05	ASSIGNMENT-2	Problems on topics covered in II term, which induces logical thinking in students.	
06	MID-TERM 20-11-2021 TO 30-11-2021	PORTIONS: TOPICS COVERED DURING I AND II TERM	
07	**III Term** 01-12-2021 TO 30-01-2022	1) Linear Inequalities 2) Straight lines 3) Theory of Equations 4) Standard Angles and Allied Angles 5) Linear Functions	06 10 12 06 04

SL. NO.	TERM	ALLOTTED TOPICS (CHAPTERS)	MAX NO. OF HOURS REQUIRED
08	II TEST 28-01-2022 TO 31-01-2022	PORTIONS: TOPICS COVERED IN III TERM	
09	IV Term 01-02-2022 TO 30-03-2022	1) Progressions 2) Annuities 3) Locus and its equations	12 06 03
10	ANNUAL EXAM 24-03-2022 TO 30-03-2022	PORTIONS: FULL SYLLABUS	

ASSIGNMENT-I

I PUC Basic Mathematics

1) Find the number of divisors and sum of all positive divisors of 768, 672, 1026.

2) Find the greatest integer which divides 42,52,86 leaving remainders 6, 4 and 2 respectively.

3) Find the LCM of $\frac{6}{7}, \frac{5}{14}, \frac{8}{21}$.

4) If $p^x = q^y = r^z = S^w$ and $pq = rs$. Prove that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}+\frac{1}{w}$.

5) If $a^x = bc$, $b^y = ca$ and $c^z = ab$. Show that $xyz = x + y + z + 2$.

6) If $x = 2^{1/3} + 2^{-1/3}$, prove that $2x^3 - 6x - 4 = 0$.

7) A batsman find that by getting out for a duck (0 runs) in the 11th inning of his test matches. His average of the previous 10 inning decreased by 5 runs. What is his average after the 11th innings?

8) A bookseller bought 228 noteboooks at an average price of Rs. 8.50 in which 80 books he bought at Rs. 7.50 each and 84 books at Rs. 10.50 each. Find the price of the remaining books per unit.

9) An aeroplane flies once round a square whose side is 100 km long taking the first at 100 kmph, second at 200 kmph, third at 300 kmph and the fourth at 400 kmph. Find the average speed of the plane in its flight along the square.

10) Show that points (1, 1),(4, 1),(4, 4) & (1, 4) are the vertices of square & hence find areas.

11) Find the centre of the circle passing through the points (0, 0), (–3, 3) and (5, 4).

12) Find the coordinates of the point of trisection of the medians of the triangle whose vertices are (–2, –3), (–1, 7) and (5, 2).

13) If the midpoints of the sides of the triangle are (2, 6), (4, 6) and (3, 5) then find the vertices of the triangle.

14) In what ratio is the time segment joining the prints (4, 5) and (1, 2) divided by the y-axis? Find also the co-ordinates of the point of division.

15) Find the area of the quadrilateral whose vertices are (1, 2), (6, 2), (5, 3), (3, 4).

ASSIGNMENT-II

I PUC Basic Mathematics

1) Using Logarithm tables, evaluate

a) $\frac{(25.36)^2 \times 6.4569}{847.5}$

b) $\frac{8.25 \times 4.63}{2.18}$

c) $\frac{432 \times 28.63}{1.045}$

d) $\frac{\sqrt{6.43} \times 0.5789}{(13.46)^{3/2}}$

e) $\frac{12.567 \times 15.674}{0.5968 \times 19.78}$

f) $\frac{0.5679 \times 0.0789}{(13.46)^{3/2}}$

2) In a class of 150 students, each student is required to take atleast one of the two subjects namely Biology or Economics. If 75 students have taken Biology and 25 have taken both Biology and Economics, how many have taken

a) Only Economics
b) Economics
c) Only Biology
d) Represent the result using Venn diagram

3) Out of 250 people 160 drink coffee, 90 drink tea, 85 drink milk, 45 drink coffee and tea, 35 drink tea and milk, 20 drink all the three. How many will drink coffee and milk?

4) In a class of 100 students, 35 play football, 45 play basket ball, 35 play cricket. 10 play football and basket ball, 15 play basket ball and cricket, 5 play football, basket ball and cricket. If 15 do not play any games then find how many play football and cricket? Also represent using Venn diagram.

5) Out of 85 students of class 1 PU, A who took up a combined test in English and Hindi. If 63 students passed in both, 12 failed in English and 4 failed only in English, use Venn diagram to find how many (a) failed in Hindi, (b) passed in English, (c) passed in Hindi.

6) A dealer sold 3 TV sets at Rs. 11,500 each. He sold one at a profit of 15% and the other two at a loss of 8%r. Find his gain or loss percentage.

7) A shopkeeper sold a watch at 5% loss. Had he purchased it at 10% less cost and sold it for Rs. 140 more, his gain would have been one fourth of the original cost price. Find the cost price of the watch.

8) Due to increase in the price of sugar by 5%, a man reduces his consumption by 5%. Find the percentage increase or decrease in expenditure. What difference would it make if the price decreased by 5% and the consumption increases by 5%?

9) Venu gives 50% of his salary to his wife and 40% of the remaining he spends on recreation. 20% of the remaining he gives to his daughter as pocket money and still saves Rs. 12,000. What is Venu's income? Also find the amount he gives for his wife and daughter.

10) The total number of students in Arts and Science College is 4,200. If the number of arts students is increased by 40% and the number of science students is decreased by 30% the total strength remains unchanged. Find the number of arts and commerce students.

11) If $\sin\theta = \frac{a-b}{a+b}$ show that $\tan\theta + \sec\theta = \sqrt{\frac{a}{b}}$.

12) If $x = ar\ \text{sinA cosB}$, $y = br\ \text{sinA sinB}$ and $x = cr\ \text{cosA}$ then prove that

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = r^2$$

13) Prove that $\frac{\tan A}{\sec A - 1} + \frac{\tan A}{\sec A + 1} = 2\,\text{cosec}\,A$

14) If $\cot\theta = \frac{5}{2}$ and θ is acute then find the value of $\frac{5\cos\theta + 2\cos\theta}{5\cos\theta - 2\cos\theta}$.

15) Find the value of x

$$\frac{x\sin^2 300°.\sec^2 240°}{\cos^2 225°.\operatorname{cosec}^2 240°} = \cot^2 315°.\tan^2 300°$$

16) Prove that: $\sec^2 \frac{5\pi}{4}.\operatorname{cosec}^2 \frac{5\pi}{4} - \sin^2 \frac{3\pi}{4}\cos^2 \frac{4\pi}{3} = \frac{31}{8}$

17) If $12\cot^2 A - 31\operatorname{cosec} A + 32 = 0$ find the value of sinA.

18) By selling an article for Rs. 825, a man loses equal to $\frac{1}{3}^{rd}$ of its selling price. Find the

(a) Cost price of the article (b) the gain % or the loss %

If the same article is sold for Rs. 1,265.

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