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FOR KARNATAKA CLASS 11 PREPARATION

Karnataka 1st PUC Model Question Paper 2027 for Basic Maths (Paper 2)

EXAM	YEAR	TYPE	SUBJECT
Karnataka Class 11	2027	Sample Paper	Maths

GOVERNMENT OF KARNATAKA
DEPARTMENT OF SCHOOL EDUCATION (PRE-UNIVERSITY)
I PUC ANNUAL EXAMINATION 2026-27
MODEL QUESTION PAPER 2
SUBJECT CODE: 75
BASIC MATHEMATICS

TIME : 3 Hours **Max. Marks: 80**

Instructions:

i) The question paper has 5 Parts A, B, C, D and E. Answer all the Parts.
ii) Part - A carries 20 marks, Part - B carries 12 marks, Part - C carries 18 marks, Part - D carries 20 marks and Part - E carries 10 marks.
iii) Write the question number properly as indicated in the question paper.

PART-A

I. Answer ALL the multiple-choice questions: 10 x 1 = 10

1. The real and imaginary part of the complex number $4 - 7i$ is
   a) $4\ and\ -\ 7$ b) $-4\ and\ -7$ c) $4\ and\ 7$ d) $-4\ and\ 7i$
2. If $A = \{a, b\}$ and $B = \{c\}$ then $B \times A$ is
   a) $\{(c, a)\}$ b)$\{(c, a), (c, b)\}$ c) $\{(c, b)\}$ d) $\{(a, c), (b, c), (b, d)\}$
3. The value of $(5^0)^2 + (5)^{2^0}$ in its simplest form is
   a) 4 b) 5 c) 1 d) 6
4. The value of $\log_{25} 625$ is
   a) 0 b) 1 c) 2 d) 3
5. The 11^{th} term of the A.P. 3, 5, 7, 9,….. is
   a) 21 b) 22 c) 23 d) 24
6. The roots of the quadratic equation $x^2 - 4x + 3 = 0$ are
   a) 3,1 b) 2,3 c) 1,4 d) 2,2
7. The solution of $4x - 2 < 8$ is
   a) (2,4) b) $(-\infty, 4)$ c) $(2, \infty)$ d) $\left(-\infty, \frac{5}{2}\right)$
8. The effective rate of interest at 9% compounded quarterly is
   a) 9.3% b) 8.1% c) 3.9% d) 1.9%
9. The radian measure of $450°$ is
   a) $\frac{\pi}{36}$ b) $\frac{7\pi}{2}$ c) $\frac{5\pi}{2}$ d) $\frac{19\pi}{2}$
10. The slope of the line with inclination $\frac{\pi}{3}$ is

a) 3 b) $\sqrt{3}$ c) $\frac{1}{\sqrt{3}}$ d) 1

II. Match the following **5 x 1 = 5**

	A	B
11. a)	If $n(A) = 4$, then $n[P(A)]$ is	i) $\frac{10}{\sqrt{5}}$
b)	What percent is $\frac{4}{5}$ of 125 ?	ii) 25,000
c)	The average marks of 5 students are $88, 71, 35, 30, 46$	iii) 16
d)	The present value of perpetuity of ₹ 2000 at 8% p.a is ₹	iv) 0.64
e)	Distance between two parallel lines $x + 2y + 3 = 0$ and $x + 2y - 7 = 0$ is	v) 54
		vi) 17,000

***III* Fill in the blanks by choosing appropriate answer from given options: 5 x 1 = 5**

$\left(\mathbf{4},\ \ \frac{\mathbf{8}}{\mathbf{5}},\ \ \mathbf{72},\ \ \mathbf{6},\ \ \mathbf{5},\ \ \mathbf{10}\ \right)$

12. The least integer divisible by 18 and 24 is _____
13. If $f(x) = 2x + 1$, then $f(2)$ is _____
14. If $\frac{3}{5}$, k , $\frac{13}{5}$ are in A.P., then the value of k is _____
15. The sum of 4 times a number and 3 times the number is 70, then the number is _____
16. The distance of the point $(4, 6)$ from x-axis is _____

PART-B

IV Answer any SIX questions. **6 X 2 =12**

17. Find the number of positive divisors of 768.

18. If $f(x) = x$ and $g(x) = x^3 + 1$, find i) $fog(1)$ ii) $gof(-1)$

19. Find the sum to infinity of the G.P. 3, – 1, $\frac{1}{3}, -\frac{1}{9}$,.....

20. Insert 3 harmonic means between $\frac{1}{4}$ and $\frac{1}{12}$.

21. The cost of an article is ₹ 80.If a profit of ₹ 20 is made by selling the article, find the profit percentage.

22. Solve $7x + 3 < 5x + 9$, $x \in R$ and represent the solution on the number line.
23. Samarth bought a walkman for ₹1800.If it depreciates at the rate of 15% per year, what is its worth after 3 years?
24. Prove that $\frac{1}{\sec A + \tan A} = \sec A - \tan A$
25. Find the intercepts made by the line $3x + 4y - 12 = 0$ on the coordinate axis.

PART-C

V. Answer any SIX questions. $\mathbf{6 \times 3 = 18}$

26. If $U = \{a, b, c, d, e\}$, $A = \{a, b, c\}$ and $B = \{c, d, e\}$, then verify $(A \cap B)' = A' \cup B'$
27. Find the HCF of $\frac{8}{9}, \frac{32}{81}, \frac{16}{27}$
28. Solve $\frac{7^{3-2x}}{7^{7-5x}} = 49^{3x-14}$
29. If α and β are the roots of the equation $3x^2 - 6x + 4 = 0$. Find the values of the following: (i) $\alpha^2 + \beta^2$ (ii) $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$
30. Solve the inequality $3x + 4y \geq 12$, $4x + y \geq 8$, $x \geq 0$, $y \geq 0$.
31. The population of a town was 2,50,000 three years ago.If the population increased by $4\%, 3.5\%$ *and* 6% respectively in the last three years, find its present population.
32. The average age of 10 students is 14 years. Among them the average of 5 students is 12 years. Find the average age of the remaining students.
33. Find the equation of the locus of the point which moves such that it lies on the perpendicular bisector of the line joining the points $(3, -2)$ and $(4, 1)$.
34. The angles of a triangle are in A.P. and the greatest is 5 times the least. Find the angles in degrees and in radians.

PART-D

VI. Answer any FOUR questions. **$4 \times 5 = 20$**

35. In a group of 65 people, 40 like cricket, 10 like hockey and cricket both. How many like only cricket? How many like hockey? Show the result using Venn diagram.
36. Using logarithmic tables, find the value of $\frac{213.781 \times 7.434}{6.321}$
37. Find an integral root between -3 and 3 by inspection and then by using synthetic division solve the equation $x^3 - 3x^2 - 28x + 60 = 0$.
38. The difference between simple interest and compound interest on a sum of money invested for 3 years at 6% p.a. is ₹ 110.16. Find the sum.
39. Find the present value of an annuity of ₹ 2500 paid at the end of every 6 months for 5 years if the rate of interest is 10% semi annually.
40. Venu gives 50% of his salary to his wife, 40% of the remaining he spends on recreation, 20% of the remaining he gives to his daughter and still saves ₹ 12000. What is Venu's income? Also find the amount he gives his wife and daughter.
41. Find the image of the point $(2, 4)$ on the line $x + y - 10 = 0$

PART- E

VII. Answer the following questions.

42. Find the sum to 'n' terms of the series $7 + 77 + 777 + \cdots$ **(6 marks)**

(OR)

Show that the points $(1, 1), (4, 1), (4, 4)$ and $(1, 4)$ are the vertices of a square and hence find the area.

43. A company finds that the production cost directly attributed to each book is ₹ 25 and the fixed cost is ₹ 10000. If each book can be sold for ₹ 35, find **(4 marks)**

(i) Cost function
(ii) Revenue function
(iii) Profit function
(iv) Break even point

(OR)

If $\sin\theta = \frac{-3}{5}$ and $\frac{3\pi}{2} < \theta < 2\pi$, then prove that $\frac{3\tan\theta - 4\cos\theta}{4\tan\theta + 3\cos\theta} = \frac{109}{12}$