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FOR KARNATAKA CLASS 11 PREPARATION

Karnataka 1st PUC Model Question Paper 2027 for Mathematics (Paper 1)

EXAM	YEAR	TYPE	SUBJECT
Karnataka Class 11	2027	Sample Paper	Maths

GOVERNMENTOF KARNATAKA
DEPARTMENT OF SCHOOL EDUCATION (PRE UNIVERSITY)
I P.U.C ANNUAL EXAMINATION 2027
SAMPLE MODEL QUESTION PAPER I

Subject Code: 35
MATHEMATICS

[Time: 3 Hours] **[TOTAL No. of questions: 47]** **[Max. Marks: 80]**

Instructions:

1. The question paper has five Parts namely A, B, C, D and E. Answer **all** the parts.
2. PART-A has **15** Multiple choice questions and **5** Fill in the blank questions.
3. For PART-A questions, only the first written answers will be considered for evaluation.

PART - A

I. Answer ALL the multiple choicequestions ***(15 ×1 = 15)***

1. **The interval form of {x: x ∈ R, - 5 < x ≤ 7} is**

A) (-5, 7) B) [-5, 7] C) {-5, 7} D) (-5, 7]

2. **The domain of the real functions f(x) =** $|x-1|$

A)$(-\infty, 0)$ B)$(-\infty, \infty)$ C) $(0, \infty)$ D) $[-\infty, \infty]$.

3. **Match List I with List II**

List I	List II
a) *sinx* is positive	i) 1st and 4thquadrant
b) *tanx* is negative	ii) 1st and 2nd quadrant
c) *secx* is positive	iii) 2nd and 4thquadrant

Choose the correct answer from the options given below:

A) a-ii, b-i, c-iii B) a-i, b-iii, c-ii

C) a-ii, b-iii, c-i D) a-i, b-ii, c-iii

4. **The additive inverseof -2+3i**

A) 2-3i B)-2-3i C) 2+3i D) -2+3i

5. **The solution of the inequality -1 ≥xand x ≥ 1 for real x.**

A) [-1, 1] B) $(-\infty, -1] \cup [1, \infty)$ C)$(-1,1)$ D) $(-\infty, -1) \cup (1, \infty)$

6. **If** $\frac{1}{8!}+\frac{1}{9!}=\frac{x}{10!}$ **then x =**

A) 64 B)81 C)100 D) 72.

7. **Given 4 flags of different colors, then the number of different signals can be generated. If a signal requires the use of 2 flags one below the other**

A) 6 B)12 C)24 D) 4.

8. **The number of non-zero terms in the expansion of** $(a+b)^6$ **is**

A)5 B) 6 C) 7 D) 8

9. **The 4th term of the sequence defined by** $a_1 = 1, a_n = a_{n-1} + 2,\ n \geq 2$ **is**

A) 3 B) 5 C) 7 D) 9

10. **The equations for x and y axes are**

A) $x = 1\ , y = 1$ B) $y = 1$ C) $x = 0\ and\ y = 0$ D) $x = 1\ ann\ y = 0.$

11. **The eccentricity of the hyperbolas:** $16y^2 - x^2 = 16$

A) $\frac{\sqrt{17}}{4}$ B) $\sqrt{17}$ C) $\frac{\sqrt{15}}{4}$ D) $\sqrt{15}$.

12. **The perpendicular *distance from the point P(x, y, z) to* xy-plane is**

A) x B) y C) z D) $\sqrt{x^2+y^2}$

13. **Assertion (A):** The derivative of $f(x) = x$ is 0.
Reason(R): The derivative of x^{-n} w. r. t x is $-nx^{-n-1}$
A) Both Assertion (A) and Reason (R) are true.
B) Both Assertion (A) and Reason (R) are false.
C) Assertion (A) is true and Reason (R) is false.
D) Assertion (A) is false and Reason (R) is true.

14. **If the sum of squares of the deviations of 10 observations taken from their mean is4.9, then their Standard Deviation is**

A) 4.9 B) 0.7 C) 0.5 D) 5.3.

15. **If sample space** $S = \{1,2,3,4,5,6\}$ **and events** $A = \{2,4,6\}\ and\ B = \{1,3,5\}, then$ **events A and B are**

A)Mutually exhaustive but not exclusive events
B) Mutually exhaustive but not exclusive events
C)Mutually exclusive and exhaustive events
D) Not Mutually exhaustive and not exclusive events

II. Fill in the blanks by choosing the appropriate answer from those given in the bracket. (0,1, 2, 3, 4, 5) ***(5 ×1 = 5)***

16. The number of sub set of a set A =φ is_____

17. The number of solutions of the inequality 24x < 100,
when x is a natural number is_____

18. The slope of the line through the points (3, -2) and (7, -2) is_____

19. The radius of a circle with centre (2,2) and passes through the point (5,6)is_____

20. If $f(x)=\begin{cases}x+2, x<0\\ x-2, x>0\end{cases}$, then $\lim_{x\to 0^-} f(x)$ is_____

PART-B

III. Answer Any Six of the following questions ***(6× 2 = 12)***

21. List all the subsets of the set {–1,0,1}.

22. A wheel makes 360 revolutions in one minute. Through how many radians does it turn in one second?

23. Prove that $2sin^2\frac{3\pi}{4}+2cos^2\frac{\pi}{4}+2sec^2\frac{\pi}{3}=10$

24. If x + iy = $\frac{a+ib}{a-ib}$, prove that $x^2 + y^2 = 1$.

25. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together?

26. Using Binomial Theorem evaluate $(\mathbf{101})^{\mathbf{4}}$**.**

27. In the G.P. 2, $2\sqrt{2}$, 4... if a_n = 128, find the value of n.

28. Find the coordinates of the focus and latus rectum of the parabola $y^2 - 8 = 0x$.

29. A coin is tossed twice, what is the probability that atleast one tail occurs?

PART –C

IV. Answer Any Six of the following questions ***(6× 3 = 18)***

30. Let U ={1,2,3,4,5,6,7,8,9}, A = {2,4,6,8} and B = {2,3,5,7}. Show that $(A \cup B)' = A' \cap B'$

31. Define a relation R on the set A={1,2,3,4,5,6}by R={(x,y):y =x + 1,$x,y\in$ A}. Depict this relationship using roster form.Write down the domain and the range.

32. Prove that $(\sin 3x + sinx)sinx + (cos3x - cosx)cosx = 0$.

33. Find the conjugate of $\frac{(3-2i)(2+3i)}{(1+2i)(2-i)}$

34. Find all pairs of consecutive odd positive integers both of which are smaller than 10 such thattheir sum is more than 11.

35. Evaluate$(\sqrt{\mathbf{2}}+\mathbf{1})^{\mathbf{6}}+(\sqrt{\mathbf{2}}-\mathbf{1})^{\mathbf{6}}$**.**

36. Find equation of the line passing through the point (2, 2) and cutting off intercepts on the axes whose sum is 9.

37. Show that the points (0,7,-10),(1,6,-6) and (4,9,-6) are the vertices of an isosceles triangle.

38. Find the derivative of $\sin x$ w. r. t x from first principle.

PART – D

V. Answer Any Four of the following questions ***(4× 5 = 20)***

39. Define Signum function. Draw the graph of it. Also write its domain and range.

40. Prove that $\frac{sin3x+sin5x+sin7x+sin9x}{cos3x+cos5x+cos7x+cos9x}=tan6x$

41. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if the team has

(i) no girl? (ii) at least one boy and one girl?

(iii) at least 3 girls?

42. Derive an expression for the perpendicular distance between a point(x_1, y_1) and a line $Ax + By + C = 0$.

43. Prove that $\lim_{x\to 0}\left[\frac{\sin x}{x}\right]=1$, where x in radian.

44. Find the mean deviation about the mean for the following data

x_i	5	10	15	20	25
f_i	7	4	6	3	5

45. A and B are two events such that P(A) = 0.54, P(B) = 0.69 and P(A and B) = 0.35.

Find (i) P(A or B) (ii) P(not A and not B) (iii) P(A but not B)

PART-E

VI. Answer the following question.

46. Prove geometrically that $cos(x + y) = cosx\ cosy - sinx\ siny$, and hence evaluate cos 75^0

OR

Define ellipse and derive the equation of the ellipse in standard form as $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$. **6**

47. Find the derivative of $f(x)=\frac{x+cos\,x}{tan\,x}$

OR

If A.M. and G.M. of two positive numbers 'a' and 'b' are 10 and 8, respectively, find the numbers.

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