MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 11

Exercise

1. Which is null set?

A. a){0}

B. b)$\{\phi\}$

C. c) $\{x : x \in I \text{ and } 4 \leq x \leq 5\}$

D. d) $\{x : x \in R \text{ and } x^2 + 9 = 0\}$

Answer:

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2. z is a complex number. The minimum value of |z | + I z - 2| is

A. a) 0

B. b) 1

C. c) 2

D. d)3

Answer:

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3. The value of m, statisfy the equation $|m-2|^2+|m-2|-6=0$is

A. a)1

B. b)2

C. c)3

D. d)4

Answer:

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4. In an AP, if the mth and (m + n) th terms are n.and 0 resp then nth term will be

A. a)m

B. b)-m

C. c)m+n

D. d)m-n

Answer:

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5. x axis divides the line segment containing two endpoints (3, 6) and (2,-5) in the ratio is

A. a)-6:5

B. b)6:5

C. c)5:6

D. d)-5:6

Answer:

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6. The radius of the circle $(p-1)x^2+y^2-x-py=0$is

A. a) $\frac{\sqrt{5}}{2}unit$

B. b) $\frac{\sqrt{3}}{2}unit$

C. c) $\sqrt{3}unit$

D. d)1 unit

Answer:

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7. The vlaue of $\lim_{x\to 16}\frac{x^{1/4}-16^{1/4}}{x-16}$is

A. a)16

B. b)1/16

C. c)32

D. d)1/32

Answer:

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8. If $y = \frac{1+x^2}{1+x}$,then $\frac{dy}{dx}$ at x=0 is

A. a)1/2

B. b)-1/2

C. c)-1/4

D. d)-1

Answer:

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9. A bag contains 5 red caps and 4 blue caps. The probability that two drawn caps are on same colour is

A. a)1/3

B. b)1/9

C. c)2/9

D. d)None of these.

Answer:

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10. The median of 1st 67 natural number is

A. a)34

B. b)2^{67}

C. c)$\frac{67 \times 68}{2}$

D. d)67^2

Answer:

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11. If $A = \{x : -1 \leq x \leq 2\}, B = \{x : 0 \leq x \leq 4\}$

Find A-B.

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12. If $f : fR \to R^+$ defineed as $f(x) = x^2$,show that f

is surjective.

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13. If $\cot \alpha \cot \beta = 3$,show that $\frac{\cos(\alpha - \beta)}{\cos(\alpha + \beta)} = 2$

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14. In $\triangle ABC$ if $\frac{1}{a+c}+\frac{1}{b+c}=\frac{3}{a+b+c}$, show that $\angle C=\frac{\pi}{3}$

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15. Express $\frac{\sqrt{3}-i}{1-\sqrt{3}i}$ in modulus amplitude form

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16. show that ^nC_r+ ˆ $(n-1)C_{r-1}$ + ^(n-1)C_(r-2)= ˆ $(n+1)C_r$

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17. Find the middle term of the expansion of $\left(P^2 - \frac{1}{P}\right)^9$

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18. Show that the sum of 4 + 12 + 20 + 28 + ... up to n the term is a square of even number

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19. If the distance from- origin to- the straight line 3x + 5y + a = 0 is $3\sqrt{17}$ units,then find the value of 'a'

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20. Find the co-ordinate of the image of (3, 2, -4) on xy plane.

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21. If f(x)=$x^5 + x^3 - 2x + 3$,Prove that f'(1)+f'(-1)=4f(0).

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22. Evaluate : $\lim_{x \to \infty} \frac{1+2+3+\ldots+n}{n^2}$

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23. For any three sets A,B and C ,prove that $A-(B \cup C)=(A-B) \cap (A-C)$.

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24. For any two positive acute angles θ and ϕ if $\sin(\theta+\phi)=k\sin(\theta-\phi)$and $33(\cos 2\phi-\cos 2\theta)+\cos 2\theta \cos 2\phi=1$

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25. Solve : $\sqrt{3}\sin x + \cos x = 2$

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26. Prove by mathematical induction.

$1.1! + 2.\ 2! + 3.\ 3! + \ldots + n.\ n! = (n+1)! - 1, where$

n ∈ N`.

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27. If z = x + iy then | z - 8| + Iz + 8| = 20. represents a

ellipse

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28. If $(1+x)^n = c_0 + c_1 x + c_2 x^2 + \ldots. + c_n x^n$,then show that $\frac{c_0}{1} + \frac{c_2}{3} + \frac{c_4}{5} + \ldots = \frac{2^n}{n+1}$

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29. If the ath and bth term of an AP are $\frac{1}{b}$ and $\frac{1}{a}$,then show that (ab)th term is 1 and the sum upto first (ab) term Is $\frac{1}{2}(ab+1)$.

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30. In $\triangle XYZ$the co-ordinate of Y and Z are (-a, 0) and (a, 0), and$\angle XZY - \angle XYZ = 2\theta$ (constant).Prove that the locus of the point X is $x^2 - y^2 + 2xy\cot 2\theta = a^2$

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31. If the three straight lines ax + 2y + 1 = 0, 3y + bx + 1 = 0 and cx+ 4y + 1=0 are concurrent, then show that- a. b, c are in AP.

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32. If the circles $x^2 + y^2 + 2ax + c^2 = 0$and $x^2 + y^2 + 2by + c^2 = 0$touch each other,prove that $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2}$

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33. Find the co-ordinate of a point equidistance from the points' (0, 0. 0), (4, 0, 0), (0, -6. 0) and (0, 0, 8).

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34. Prove that $\lim_{x \to 1} \frac{x^2 - \sqrt{x}}{\sqrt{x} - 1} = 3$

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35. Prove that $\sqrt{5}$ is irrational, (use the method of contradiction).

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36. In xy plane, |x — y | = 1 represents an equation of a circle and one diagonal'dividies a quadrilateral into 4 parts" write the negation ofthe statements and check whether the resulting statements are true or false

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37. Find the mean diaviation with respect to median of the frequency distribution table :

Daily wages (Rs.)	95-105	105-115	115-125	125-135	135-145	145-150
No. of worker	9	13	16	26	30	12

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38. If $\frac{a\cos\theta\sec\phi - x}{a\sin(\theta+\phi)} = \frac{y - b\sin\theta\sec\phi}{b\cos(\theta+\phi)} = \tan\phi$ show that $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

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39. If $\sin\alpha + \sin\beta = \frac{1}{2}$,$\cos\alpha + \cos\beta = \frac{5}{4}$find the value of $\tan\alpha + \tan\beta$

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40. Solve :(x+1)(x+2)(x+3)(x+4)=120

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41. In a polygon, the mesurement of least internal angle is 120°. If theall internal angles fohn an AP with common difference 5°, then find number of sides of the polygon

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42. Out of 15 boys, 7 are skaut. In how mariy different way can 12 boys be selected from them so as. to (a) always 6 boys are skaut (b) at least 6 boys are skaut.

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43. Draw the graph of the following system of inequation and show the common region. $4x + 5y \leq 40, x \geq 2, y \geq 3$

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44. Find the equation of a parabola having the co-ordinate,of vertex is (-1, -1) and the equation of direction is x + y + 4 = 0.

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45. Find the equation of an ellipse having vertices (-1, 2)- and (9, 2) . and the eccentricities is $4/5$.

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46. In each of the find the equations of the hyperbola satisfying the given conditions.

Foci $\left(0,\ \pm\sqrt{10}\right)$, passing through $(2,\ 3)$

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