

MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 7

Exercise

1. Union,of {1, 3,5, 7,..} and {2, 4, 6, 8,..} is

A. a)N

B.b)R

C. c)Q

D. d)Z.

Answer:



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2. Z is a complex number. If I Z I = 4 and
$$arg(Z)=\frac{5\pi}{6}$$
,then the value of Z

A. a)
$$2\sqrt{3}-2i$$

is

B. b)
$$-2\sqrt{3}+2i$$

C. c)
$$2\sqrt{3}-2i$$

D. d)
$$-2\sqrt{3}-2i$$

Answer:



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3. In the expansion of $\left(2P+rac{3}{P}
ight)^{10}$,the middle term will be

A. a)5th term

B. b)10th term

C. c)6th term	
D. d)7th term.	
Answer:	
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4. In an AP,if the rth term is 2r-7, then,the 4th term will be	
A. a)1	
B. b)-1	
C. c)2	
D. d)-2	
Answer:	
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5. Thestraight line $\sqrt{3}y-3x=3$ makes an angle with x axis is

- A. a) 30°
- B. b) 45°
- C. c) 60°
- D. d) 90°

Answer:



- **6.** The equation of diameter to the circle $x^2+y^2-6x+2y=15$,which-passes, through (8,-2) is
 - A. a)17x-y=23
 - B. b)x+5y+2=0
 - C. c)x+5y=2
 - D. d)x+y=2

Answer:



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- **7.** IF $x^2+y^2=4$,then the, value of yy' +x.is
 - A. a)-1
 - B. b)0
 - C. c)1
 - D. d)4

Answer:



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- **8.** The value of $\lim_{x \to 0} \frac{1}{x} \sin^{-1} \left(\frac{2x}{1+x^2} \right)$ is
 - A. a)0

B.b)4/45 C. c)20/27 D. d)4/27 **Answer:**

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B. b)1/2

C. c)1

D. d)2

Answer:

9. A and B are two independent events.if P(A)=3/5, $P(A\cap B)=\frac{4}{9}$ the value orP(B) is

A. a)8/45



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10. The mean of square of 1st n natural number is

A. a)
$$\frac{(n+1)(2n+1)}{6}$$

$$\mathsf{B.\,b)}\frac{n+1}{2}$$

$$\mathsf{C.\,c)}\frac{(n+1)(n+2)}{2}$$

D. d)
$$\frac{2n+1}{2}$$

Answer:



11. show that $(A-B)\cap B=\phi$

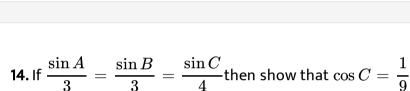


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12. A relation P defined as $:P=\{(x,y): 2x+3y=18, x,y\in N\}$,find the domain and Range of this relation.

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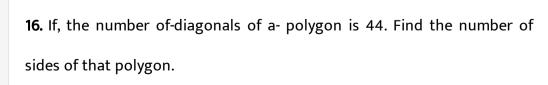
13. Find the value of :
$$\left(8\sin^3 10^\circ - 6\sin 10^\circ
ight)$$



15. Value of $i^n+i^{n+1}+i^{n+2}+i^{n+3}$ (where $i=\sqrt{-1}$)









17. 'Prove that the co-efficient of x^n of the expansion of $(1+x)^n(2n)$ is the double of the coefficient of x^n of the expansion of $(1+x)^n(2n-1)^n$



18. The sum of P terms of an AP is P^2 . Find the common difference.



19. Find the co-ordinate of the point which is equidistance from $(\alpha,0,0)$, $(0,\beta,0),(0,0,\gamma) \text{ and } (0,0,0).$



20. Calcualte the angle between the straight lines $x+\sqrt{3}y+2=0$ and y+5=0

21. If
$$f'(c)$$
 is the -derivative of $f(x)$ at $x=c$, then show that

$$\lim_{x o c}rac{xf(c)-cf(x)}{x-c}=f(c)-cf'(c)$$

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- **22.** Evaluate : $\lim_{x o 3} \ \frac{x^2 9}{\sqrt{x 2} \sqrt{4 x}}$
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- **23.** 4 cards are drawn from a well shuffled deck of 52 cards. What is the probability of obtaining 3 dimonds and one spead?
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24. If the variance of a distribution is 4 coefficient of variation is 5%,then mean of the distribution is ___



25. If
$$f(x) = \cos(\log x)$$
, show that $f(x)f(y) - \frac{1}{2}[f\bigg(\frac{x}{y}\bigg) + f(xy)]$ =0



26. Prove that
$$\frac{\cos\alpha}{\sin3\alpha} + \frac{\cos3\alpha}{\sin9\alpha} + \frac{\cos9\alpha}{\sin27\alpha} = \frac{1}{2}[\cot\alpha - \cot27\alpha]$$



27. Solve : $\sec \theta - 1 = \left(\sqrt{2} - 1\right) \tan \theta$



28. By mathematical induction show that $3^n > n^3$ when $n \geq 4$. N is an integer.



29. Find the co-efficient of $\frac{1}{x}$ of the expansion of $(1+x)^n \left(1+\frac{1}{x}\right)^n$ where n is a positive integer.



30. Find the sum up to n terms :n.1+(n-1).2+(n-2)3+(n-3).4+....



31. If $rac{n_{p_{r-1}}}{a}=rac{n_{p_r}}{b}=rac{n_{p_{r+1}}}{c}$,then show that $b^2=a(b+c)$



32. Show that the four lines 2x+y+1=0,2x+y+7=0,x+2y-1=0 and x+2y+5=0 form a rhombus.



33. Find the equation-of the bisector of the obtused angle between the straight lines x-2y+4=0 and 4x-3y+2=0.



34. The co-ordinate of centre and the diameter of a circle are (3, 7) and 10 unit. Calculate the length -of intercept of the. circle by y axis.



35. Find the ratio in which the YZ. plane divides the line segment joining the' points (-2, 4. 5) and (3, 5, -4).



36. Evaluate :
$$\lim_{x \to 0} \frac{\sqrt{\cos x} - \sqrt[3]{\cos x}}{\sin^2 x}$$



37. Find, form 1st principles, the derivatives of $\tan \sqrt{x}$ with respect to x.



38. Using contrapositive method show that the following statement is true. If x is a real number such that $x^3=-4x$ then x=0.



39. Find the validity of the following biconditional Statement. A triangle is-equilateral if and only if the angles of the triangle are equal

40. For any three events A. B.' C show that
$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(C)$$



resp. on checking it was discovered that the score which should correctly read as 40 had been wrongly taken as 50. Find the correct values of mean and SD

42. if $an\Bigl(rac{eta}{2}\Bigr)=4 an\Bigl(rac{lpha}{2}\Bigr)$,show that $an\Bigl(rac{eta-lpha}{2}\Bigr)=rac{3\sinlpha}{5-3\coslpha}$

41. The mean and SD of the scoreing marks of 100 students are 40 and 5.1





43.

If $x\cos(heta+120^\circ)=y\cos(heta+240^\circ)$,show

that

- $x-y = -(x+y)\sqrt{3}\tan\theta$

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- 44. If one root is the square of another of an equation $ax^2+2ibx+ic=0$,then show that $i=rac{6abc-ac^2}{8b^3-a^2c}$
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- 45. If the sum of 1st M terms of an AP is m. and the sum of 1st N terms is n, show that- the 1st term of this AP is $rac{mN(N-1)-nM(M-1)}{MN(N-M)}$
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46. Exhibit graphically the solution region of the following system of 'inequations : $2x+y\geq 4$, $x+y\leq 3$, $2x-3y\leq 6$,x>0,y>0



47. How many numbers can be formed with the digits 1, 2, 3, 4, 3, 2, 1 so that the odd digits are placed at the odd place of the respective numbers



48. Find the equation of an ellipse having eccentricity 2/3 and the coordinates of centre and vertex are (-2,2)and (-2,4).



49. The axis of a parabola is along x axis and vertex is (0.0). If it passes through (2, 3), then find the equation of the parabola.



50. e_1 and e_2 are respectively the eccentricities of a hyperbola and its conjugate.Prove that $\frac{1}{e_1^2}+\frac{1}{e_2^2}=1$

