MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 10

Exercise

1. For any two sets P and Q, if $P \cap Q = P \cup Q$ then

A. a)$P = \phi$

B. b)$Q = \phi$

C. c)$P \neq Q$

D. d)P=Q.

Answer:

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2. The value of $i^9 + \frac{1}{i^5}$ is

A. a)1

B. b)2i

C. c)-2i

D. d)0

Answer:

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3. In the expansion of $(a+b)^{15}$.the co-efficient of$a^8b^7$is

A. a)8C_7`

B. b)15C_8`

C. c)15C_7`

D. d)15C_9`

Answer:

4. In an A.P., the 1st term, last term and the sum of all term are 3, 39 and 525 respectively. Then the common difference will be

A. a)3/2

B. b)1

C. c)1/2

D. d)2/3

Answer:

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5. The equation $y^2 + 2ax + 2by + c = 0$ represent the conic

A. a)ellipse

B. b)Hyperbola

C. c)Parabola

D. d)None of these.

Answer:

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6. The perpendicular distance from (2, -1) to the equation 12x - 5y= 3 is

A. a)3 unit

B. b)2 unit

C. c)5/3 unit

D. d)12/5 unit

Answer:

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7. The domen of the function f(x) = log | log x I

is

A. a)$(1, \infty)$

B. b)$[1, \infty)$

C. c)$(0, 1) \cup (1, \infty)$

D. d)$(0, \infty)$

Answer:

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8. The value of $\lim_{x \to 0} \frac{1 - \cos x}{x}$ is

A. a)-4

B. b)0

C. c)4

D. d)1/4

Answer:

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9. A coin is tossed several times.If we get ‘tail’ in 1st three times.then the probability of getting ‘head’ in 4 th times, is

A. a)1/2

B. b)1/4

C. c)1/8

D. d)2/3

Answer:

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10. In a room, every body handshake each other. If the number of handshake are 66, then the number of men in the room will be

A. a)33

B. b)22

C. c)12

D. d)11

Answer:

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11. Using set operation, prove that 3 + 4 = 7.

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12. Find the domain of defination of the function $f(x) = \frac{x+3}{\sqrt{3-2x-x^2}}$

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13. Calculate the value of $\sec(-1680^\circ)\sin 330^\circ$.

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14. In $\triangle ABC$, a = 5 cm, b = 7 cm and c = 3 cm.

Find its circumradius.

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15. Find the argument of (-3 - 3i).

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16. In how many way can give 4 prizes qut of 10

students for which no one can get inofe than

one prize.

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17. In the expansion of $\left(x^3 - \frac{1}{x^2}\right)^{15}$,find the constant term.

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18. In an infinite G.P. series $\frac{s_n}{s_\infty} = \frac{1}{3}$,find its common ratio, [simbols are usual meaning]

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19. Find the ratio in- which the straight line 3x + 4y = 21 divides the line join of (-9, 5) and (7, 9).

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20. The cor-ordinate of three consecutive verties of a parallelogram ar (3, -1, 2), (I, 2, -4) and (-1, 1, 2). Find the co-ordinate of 4th vertex.

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21. Differentitate $\left(\frac{1}{t^3} + 2\sqrt{t}\right)$ with respect to t.

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22. Evaluate: $\lim_{x \to 0} \frac{\sqrt{1 + x + x^2} - 1}{x}$

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23. If P(A - B) = 1/3,P(A) =1/2 and P(B) =1/3 ,find the probability that out of the events A and B. Only the event B occurs.

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24. Calculate the variance of 1st h natural numbers.

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25. For any three sets A, B, C. show that

$A \times (B - C) = (A \times B) - (A \times C)$

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26. Show that

$\tan 6^\circ \tan 42^\circ \tan 66^\circ \tan 78^\circ = 1$

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27. Solve :$2 + 2\cos 2x . \cos 5x = \sin^2 2x$

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28. Prove that by mathematical induction, $4^n + 15n - 1$is divisible ny 9 when $n \in N$.

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29. Prove that $\left(\frac{i-\sqrt{3}}{i+\sqrt{3}}\right)^{200} + \left(\frac{i+\sqrt{3}}{-i+\sqrt{3}}\right)^{200} = -1$

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30. If the sum of 1st n tenn of a GP is $S_n = 1$ and $S_{2n} = 4$,show that $S_{3n} : S_n = 13 : 1$

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31. In the expansion of $(x + P)^n$,the 6th ,7th,8th and 9th terms are a,b,c and d resp,show that $\frac{b^2 - ac}{c^2 - bd} = \frac{4a}{3c}$

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32. Show that the straight lines $x/a+y/b=1/c$, $x/b+y/c=1/a$ and $x/c+y/a=1/b$ will be concurrent if $ab+bc+ca=0$

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33. The co-ordinates of the end points of a diagonal of a rectangle are (6, 1) and (12. 9) and other diagonal is parallel to x axis. Find the co-ordinates of the. end point of the other diagonal.

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34. Find the equation of a circle which is passes through the point (4,3) and (-2,.5) and the centre lies on the straight line 2x - 3y = 4.

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35. Show that the points (0. 7, 10), (-1, 6, 6) and (-4, 9, 6) form a right angled isoscles. triangle.

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36. Differentiate (from 1st principle) sinx/xwith respect to x

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37. Prove that the statement , “If all the angles of a triangle are equal, then the triangle is a right angled triangle” is false.

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38. Prove that $\sqrt{2}$ irrational, (use the method of contradiction).

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39. Two unbiased dice are thrown. Find the probability that the upper faces of 1st die occurs in even number or the sum of the numbers of upper faces of .two dice is 8

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40. If

$$x\cos\theta = y\cos\left(\theta + \frac{2\pi}{3}\right) = z\cos\left(\theta + \frac{4\pi}{3}\right)$$

show that xy + yz+ zx = 0

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41. if $\tan\left(\frac{\theta}{2}\right) = \sqrt{\frac{1-e}{1+e}}\tan\left(\frac{\varphi}{2}\right)$,then prove that $\cos\varphi = \frac{\cos\theta - e}{I - e\cos\theta}$

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42. If $x = -1 + i\sqrt{2}$ and the value of $x^4 + 4x^3 + 6x^2 + 4x + 9$.

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43. If p, q. r in G.P and $\frac{1}{p-a}, \frac{1}{r-p}, \frac{1}{q-r}$ are in AP.show that p+4q+r=0

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44. Solve graphically and find the common solution region of the system of inequations :

$x - 2y \geq 0, 2x - y + 2 \leq 0, x \geq 0, y \geq 0$

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45. If the vertices of an equilateral traingle be represented by the complex numbers z_1, z_2, z_3, then prove that $z_1^2 + z_2^2 + z_3^2 = 3z_0^2$ and z_0 be the circumcenter of the triangle.

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46. If the point $P\left(at^2, 2at\right)$ is a end point of a chord of the parabola $y^2 = 4ax$ which is passes through the focus, then the length of the chord is

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47. Prove that the locus of the point of iter section of the lines $\sqrt{3}x - y - 4\sqrt{3}k = 0$ and $\sqrt{3}kx + ky = 4\sqrt{3}$ for different values of'k is hyperbola whose eccentricity is 2

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48. Find the locus of the midpoints of the all chords drawn from the ends points of the minor axis of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

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