MATHS

BOOKS - OSWAAL PUBLICATION

SOLVED PAPER 2020-2

Exercise

1. Write the power set of the set A={a,b}

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2. The range of the function $f(x) = \sqrt{9 - x^2}$

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3. Convert 300° into radian measure.

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4. Find the modulus of complex number $2 - 5i$

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5. If ${}^{n}C_{8} = {}^{n}C_{2}$ find the value of 'n'.

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6. If $n^{t}h$ term of sequence is $a_{n} = \frac{n^{2}}{2^{n}}$,then find $7^{t}h$ term

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7. Find the slope of the line passing through the points (3,-2) and (7,-2).

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8. Write the negotion of the statement " $\sqrt{2}$is a rational number".

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9. Define "Event" of a random experiment.

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10. Let U={1,2,3,4,5,6,7,8,9}, A={1,2,3,4} and B={3,4,5,6},Find $(A \cup B)$

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11. Given A $=\{2, 3\}, B = \{x : x$is solution of $x^2 + 5x + 6 = 0\}$ find $A \cup B$?

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12. Let $f = R \to R$ and $g : R \to R$ defined by $f(x) = x + 1, g(x) = 2x - 3$.Find

$(f+g)(x)$ and $(f-g)(x)$.

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13. Find the radius of the circle in which a central angle of 60° intercepts an arc of length 37.4 cm (use $\pi = \frac{22}{7}$)

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14. Find the value of $\cos 75^\circ$

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15. Find the multiplicative inverse of $\sqrt{5} + 3i$

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16. Solve $7x + 3 < 5x + 9$. Show the graph of the solution on number line.

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17. Find the equation of a line perpendicular to the line $x - 2y + 3 = 0$ and passing through

the point (1,-2)

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18. Find the distance between the parallel lines $3x - 4y + 7 = 0$ and $3x - 4y + 5 = 0$

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19. Are the points A (3,6,9) ,B(10 ,20, 30 ,) and C(25,- 41, 5) the vertices of a right angled triangle?

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20. Evaluate $\lim_{x \to 2} \left[\frac{x^2 - 4}{x^3 - 4x^2 + 4x} \right]$

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21. Write the contrapositive and converse of the statement. If two lines are parallel, then they do not intersect in the same plane.

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22. Write the mean of the given data : 6,7,10,12,13,4,8,12 ?

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23. Given $P(A) = 0.5, P(B) = 0.35$ and $P(A \cup B) = 0.7$ Find $P(A \cap B)$

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24. In a class of 35 students, 24 like to play cricket and 16 to play football. Also each student

like to play atleast one of the two games. How many students like to play both cricket and football ?

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25. Determine the domain and range of the relation R defined by

$R=\{(x,x+5) : x \text{ in } \{0,1,2,3,4,5\}\}$

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26. $\cos 4x = \cos 2x$

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27. Express $\sqrt{3} + i$ in polar form ?

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28. $\sqrt{2}x^2 + x + \sqrt{2} = 0$

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29. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if.

(i) 4 leters are used at a time,

(ii) all letters are used at a time

(iii) all letters are used but first letter is a vowel ?

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31. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if.

(i) 4 leters are used at a time,

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?

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32. Find the term independent of x in the expansion of`((3x^2)/2-1/(3x))^6.

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33. If the sum of three numbers in A.P is24 and their product is 440,find the numbers?

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34. Which term of the sequence $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \ldots\ldots\ldots is \frac{I}{19683}$?

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35. Find the co-ordinate of the focus ,equation of the directrix and length of the Latus Rectum of the Parabola $\left(y^2 = 8x\right)$?

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36. Find the derivative of sin x with respect to x from 1st principal ?

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37. Verify by the method of contradiction that $\sqrt{7}$ is irrational number

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38. Consider the experiment of rolling die. Let A be the event 'getting a prime number'. B be the

event 'getting an odd number'. Write the sets representing the events (i) A or B (ii) A and B (iii) A but not B (iv) 'not A'.

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41. Consider the experiment of rolling die. Let A be the event 'getting a prime number'. B be the event 'getting an odd number'. Write the sets

representing the events (i) A or B (ii) A and B (iii) A but not B (iv) 'not A'.

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42. A committee of two persons is selected from two men and two women.What is the probability that the committee will have (i) no men (ii)two men

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43. A committee of two persons is selected from two men and two women. What is the probability that the committee will have (a) no man? (b) one man? (c) two men?

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44. Define a modulus function.If the function $f: R \to R$ is defined by $f(x) = |x|$,draw the graph of the function .Write the domain and range of f.(R is the set of real numbers).

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45. Prove that

$$: \frac{\sin 5x - 2\sin 3x + \sin x}{\cos 5x - \cos x} = \tan x$$

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46.

$$1^2 + 2^2 + 3^2 + \ldots\ldots\ldots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

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47. Solve the inequalities graphically

$3x + 4y \leq 60, x + 3y \leq 30, x \geq 0, y \geq 0.$

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48. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

(i) four cards are of the same suit,

(ii) four cards belong to four different suits,

(iii) are face cards,

(iv) two are red cards and two are black cards,

(v) cards are of the same colour?

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49. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

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50. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

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51. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

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52. State and prove Bionomial theorem for any positive integer n.

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53. Derive the equation of a straight line having the intercepts 'a' & 'b' on the X ane Y-axes respectively. Hence find the equation of the line intercepts -3 and 2 on the X and Y-axes respectively.

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54. Find the co-ordinates of the point P which divides the line segment joining the points A (1, - 2 ,3) and B (3 , 4 - 5) internally in the ratio 2 : 3

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55. Prove that $\lim_{x \to 0} \frac{\sin x}{x} = 1$,where x is in radian and hence evaluate: $\lim_{x \to 0} \frac{\sin 4x}{\sin 2x}$.

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56. (a)Derive geometrically that $\cos(x+y) = \cos x \cos y - \sin x \sin y$.Hence deduce the valueof $\cos 75^\circ$

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57. Find the sum to n terms of the series , 5+11+19+29+41...

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58. Derive the equation of the ellipse in the form

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$$

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59. Find the derivative of $\frac{x + \cos x}{\tan x}$ with respect to x

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