



MATHS

BOOKS - S CHAND MATHS (ENGLISH)

MODEL TEST PAPER-7



1. The greatest value of sin x cos x is

A. 1

B. 2

 $\mathsf{C}.\,\sqrt{2}$

 $\mathsf{D}.\,\frac{1}{2}$

Answer: D

2. The value of
$$rac{1- an^2 \, 15^\circ}{1+ an^2 \, 15^\circ}$$
 is

A. 1

B.
$$\sqrt{3}$$

D.
$$\frac{\sqrt{3}}{2}$$

Answer: D

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3. If f(x)=px +q, where p and q are integers, f(-1)=-5 and f(3)=3, then p

and q are equal

A. p=-3 q=-1

B. p=2,q=-3

C. p=0,q=2

D. p=2,q=3

Answer: B

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4. In a class of 60 students, 25 students play cricket and 20 students play tennis, and 10 students play both the games, Then, the number of students who play neither

A. 0

B. 25

C. 35

D. 45

Answer: B



D.
$$-\frac{1}{2}$$

Answer: D

6. Find the angle made by the line $x + \sqrt{3}y + 7 = 0$ with negative direction of x-axis

A. $150\,^\circ$

B. 120°

C. 30°

D. $60^{\,\circ}$

Answer: C

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7.
$$\lim_{x \to 0} \left(x \sin \frac{1}{x}\right)$$
 is equal to

A. 1

B. 0

C. -1

D. not defined

Answer: B



8. If x + ky=0 is a diameter of the circle $x^2 + y^2 + 6x + 2y = 0$ then vaue of k is :

 $\mathsf{A.}-3$

Β.Ο

C. 4

D. 1

Answer: A

9. The roots of equation $\lambda x^2 - 2(\lambda+2)x + 3\lambda = 0$ differ by 2, values of $\lambda(\ > 0)$ is

A. 2 B. 3

C. 4

D. 1

Answer: A

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10. A polygon has 44 diagonals. The number of sides polygon has:

A. 10

B. 11

C. 13

D. 12

Answer: B

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12. Find the value of k so that the term independent of x in the expansion of $\left(\sqrt{x} - \frac{k}{x^2}\right)^{10}$ is 405.

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13. Find real values of x and y if(x-iy) (3 + 5i) is the conjugate of-6-24i.

14. Three digit numbers are formed using the digits 0, 2, 4, 6, 8. A number is chosen out of these numbers at random, What is the probability that this number has same digits?

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15. differentiate w.r.t 'x' $f(x) = e^{a\log x} + e^{x\log a} + e^{-a\log a}$

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16. Given A={2,4,6,8} and B={4,6,27,54}, a in $A, b, \in B$, find the set of

ordered pairs such that a is a factor of ab and a < b

17. Find the domain of the real valued function:

$$f(x) = \left[\log_{10} \left(\frac{5x - x^2}{4} \right) \right]^{\frac{1}{2}}$$
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18. Find the number of ways in which a selection of 4 letters can be made of the letters of the word INFINITE.

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19. Let $f(x) = \sqrt{x}$ and g(x) = x be two functions defined over the

set of non-negative real numbers. Find I $(f-g)x(ii)iggl(rac{f}{g}iggr)(x)$

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20. Differentiate by first principle: $f(x) = \sqrt{\cos x}$



24. Find the equation of the bisector of $\angle OAB$ of $\triangle ABC$, given vertices A(4,3), B(2,3).





1. The length of the latus rectum of the parabola having focus (5, 3) and the equation of directrix 3x - 4y + 1 =



D. None of these

Answer: A

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2. The conditional statement of "You will get a sweet dish after the dinner" is

A. If you take the dinner, then you will get a sweet dish,

B. If you take the dinner, you will get a sweet dish

C. You will get a sweet dish if and only if you take the dinner.

D. None of these

Answer: A

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3. Write the negation of the following statement:

"All mathehematticians are man"

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4. Find centricity of hyperbola whose vertices are $(\pm 2,0)$ and foci

are $(\pm 3, 0)$.

5. If the origin is the centroid of the triangle PQR with vertices P(2a, 2,

6), Q1-4,36,-10) and R(8, 14, 2c), then find the values of c.



8. Find the equation the parabola whose vertex is at (4, 1) and focus

(4, -3).

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9. The hyperbola
$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$
 passes through the point of intersection 7x + 13y-87=0 and its latus is of length $\frac{32\sqrt{2}}{5}$ Find the lengths of its axes. Also find its eccentricity.

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10. Find the lengths of the medians of the triangle with vertices A(0,0,6), B(0,4,0) and (6,0,0).



1. Given $\sum p_1 = 141, \, \sum p_2 = 167$ then the index number using

simple aggregative method is:

A. 118.44

B. 181.44

C. 141.88

D. None of these

Answer: A

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2. Semi-interquarlie range is:

A. Less than quartile deviation

B. Greater than quartile deviation

C. Is equal to quartile deviation

D. none of these

Answer: C

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3. During a certain period, the cost of living index goes from 110 to 200 and salary of cworker is also raised from 325 to 500. Find how amount the worker gains of loses in real term?



4. The median of 7 items is 3 and the median of another 5 items is 7,

can you find the median of all 12 items taken together?

5. The mean weekly salary paid to all employees of a company is 8300. The mean monthly salary paid to male and female employees was 8000 and 9000 respectively. Determine the percentage males employed by the company.

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6. An analysis of daily wages of staffs in two firms X and Y given the following results:

** -{	. 诲 .	à e		Firm X	Firm Y
Number of staffs	Jodgan .	1	寄	586	648
Square of mean deviat	ion about a	tual me	anus	52.5	47.5
Standard deviation	S ye THI ME	ppt :	ø.	10	11

7. The following figures relate to the length of the time spent by cars

in a particular car park during one day:

Time parked (in hours)	upto 1	1-2	2-3	3-4	4-5	5-6	6-7
Number of cars	450	730	640	120	70	20	20

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8. A student while calculating correlation coefficient between two variables x and y for 25 pairs of observations obtained the following results:

$$\sum x = 100 \sum y, = 125 \sum xy = 508 \sum x^2 = 460 ext{ and } \sum y^2 = 650$$

. On rechecking it was found that he had miscopied two pairs as (14, 6) and (6, 8) whereas the correct vales are (12, 8) and (8,6). Find the correct correlation coefficient.



9. As an exercise, a company asked its purchase manager and store manager to independent rank its eight suppliers (A, B, C, D, E, F, G and H), taking into account such factors as reliability, quality, price, discount and punctuality. Two managers ranked the suppliers in order of preference as follows:

Purchase Manger	Е	G	B	D	C	A	H	F
Store Supervisor	E	C	G	Н	В	D	A	F

Find Spearman's rank correlation coefficient to determine the amount of agreement between the two.



10. The number of letters in thousands received in Kolkata GPO on

each day of fortnight is given below :

Days of the week	¹ Sun	Mon	Tue	* Wed?	Thu	Fri 40	" Sat
Week 1	35	70	36	59	62	60	71
Week 2 🦃	39	72	38	56	63	71	75

Draw the graph of these figures. Calculate a set of moving averages

using the most number of observations. Give reason for you choice.

Plot these moving averages on the same graph.

