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| LOGO | **NEW INDIAN MODEL SCHOOL, SHARJAH**ASSIGNMENT FOR SUMMER VACATION 2014 |
| Grade | **MATHEMATICS** | Scheme  |
| **11 CBSE** | **COMMERCE & SCIENCE**  |

1 (a) If A ={1, 2,3, 4, 5, 6, 7, 8}} and B = {2, 5, 7, 8}. Find A–B

 (b) If X and Y are two sets such that n(X) = 15, n(Y) = 20 and

 n(X U Y) = 30, find n(X ∩ Y).

2 (a) Find x and y if (3x + 4, 2x + y) = (5, 4) (b) Find the domain and range of *f*(x) = $\frac{x^{2} +2x + 1}{x^{2} -10x+9} $  (c) Let A = { a,b } and B = { 2,4}. Write A X B.

3. i) Prove that $\frac{sin⁡(x-y)}{sin⁡(x+y)}$ =$ \frac{tanx-tany}{tanx+tany}$

 ii) Prove that If A, B ,C are the angles of a triangle, prove the following identity

tanA + tanB + tanC = tanA tanB tanC

4.Prove that, $\frac{cos4x +cos3x +cos2x }{Sin4x + sin3x + sin2x}$= cot3x

 Prove that tan 190 = $\frac{cos 26^{0} – sin26^{0} }{cos 26^{0}+ sin26^{0}}$

5. Find the derivative of f(x) = Sin4x using first principle.

Find the derivative of f(x) = $\frac{5x-3}{2x+1}$ using first principle.

6. Differentiate the following with respect to x

 i) $\frac{sinx - cosx}{sinx+cosx}$

 ii) If y = a sinx+ bcosx , show that y2 + (dy/dx)2 = a2 + b2.

7. Evaluate the following limits

 i) Find the $\frac{dy}{dx}$ if y = (x4+2)(X3+10)

 ii) $\lim\_{x\to 4 }\frac{x^{4} -256}{x^{2} -16}$

8. Solve graphically the following system of linear inequalities. 3x + 4y ≤ 60 , x + 3y ≤ 30 , x ≥ 0 , y ≥ 0

9 Let A and B be two sets such that n(A) = 25 , n(AUB) = 45 and

 n(A∩B) = 10. Then

1. find n(B)
2. find n(B-A)
3. State Demorgan’s theorems.

10 In a group of 600 persons, 375 can speak Hindi and 275 can speak

 English. Find

* 1. How many can speak Hindi and English.
	2. How many can speak Hindi only
	3. How many can speak English only.
	4. Draw a Venn diagram representing the above problem.

11 Let A ={x/ x€N, 1≤ x≤18 }. Let R be the relation on A defined by, R ={(a,b): a, b € A , b=a2 }

1. Write R in roaster form.
2. Find the domain and range of R.

 iii) Find the domain and range of *f*(x) = $\frac{x^{2} +2x + 1}{x^{2} -8x+12}$

12. State whether each of the following statement are true or false. If the statement is false,rewrite the given statement correctly.

If P = {*m*, *n*} and Q = {*n*, *m*}, then P × Q = {(*m*, *n*), (*n*, *m*)}.

13 Let A = { 2,3 } and B = {5, 4}.

* 1. Write A X B.
	2. Find the domain and the range of the function :

 *f*(x) = $\sqrt{(16 – x^{2})}$

14 Write the following intervals in set-builder form: **(i)** (–2, 0) **(ii)** [7, 15]

15. Find the degree measure of the angle subtended at the centre of a circle of radius 100 cm by an arc of length 22 cm

16 Find the value of the trigonometric function sin 765°

17. Show that cos200.cos300.cos400.cos800. = $\frac{\sqrt{3}}{16}$.

18. Show that $\frac{sinA+–sin3A +sin5A+ sin7A}{cosA+cos3A+cos5A +cos7A} $ = tan4A

 Prove that Tan2θ + cot2 θ = 1

 (1+tan2 θ) (1+cot2 θ)

19. i) Solve the equation 3tanx-cotx + 1 = 0

 ii) Prove that sin(A+B)sin(A-B) = Sin2A – Sin2B

20 ind sin$ \frac{x}{2},\cos(\frac{x}{2}) $and $\tan(\frac{x}{2}), $if $tanx=-\frac{4}{3}$, where x lies in 2nd quadrant.

21. Find the derivative of f(x) = cos4x using first principle.

Find the derivative of f(x) = $\frac{8x+1}{x+2}$ using first principle.

22. Evaluate the following limits

 i) 

23. i) Find the $\frac{dy}{dx}$ if y = x4.+2x3+10

24. A solution is to be kept between 68 0 F and 770 F . What is the range in temperature in degree Celsius (C ) if the Celsius ∕ Fahrenheit ( f ) conversion formula is given by

 F = $\frac{9c }{5} +32$

25 Solve $\frac{(2x – 1 ) }{5}\geq \frac{(3x – 2 )}{4} +\frac{(2 – x )}{6}$