

**INTERNATIONAL INDIAN SCHOOL – DAMMAM**  
**FIRST TERM EXAMINATION – JULY 2017**  
**CLASS : X**

**MATHEMATICS**  
**SET – B**

Time: 3hours

Total Marks: 80

**General Instructions:-**

1. **All questions are compulsory.**
2. **The question paper consists of 30 questions divided into 4 sections A,B,C & D**  
**Section A comprises of 6 questions of 1 mark each.**  
**Section B comprises of 6 questions of 2 marks each.**  
**Section C comprises of 10 questions of 3 marks each.**  
**Section D comprises of 8 questions of 4 mark each.**
3. **Use of calculators are not permitted.**

**SECTION – A (1 X 6 = 6 marks)**

1. On comparing the ratios  $\frac{a_1}{a_2}, \frac{b_1}{b_2}, \frac{c_1}{c_2}$  of  $x+2y - 4 =0$  and  $2x + 4y -12 = 0$ , check whether these equations are consistent or not?
2.  $\Delta PQR \sim \Delta XYZ$  . If  $PR : XZ = 12 : 21$ , then find the ratio of areas of these triangles?
3. Use Euclid's division algorithm to find HCF of 51 and 9.
4. Find the value of  $\frac{1 + \sin 30^\circ}{1 - \cos 60^\circ}$
5. Find a quadratic polynomial whose sum and product of zeroes are 5 and  $-4$ .
6. For which value of "k" does the pair of equations  $4x + ky + 8=0$  and  $2x +2y +2=0$  has unique solution?

**SECTION – B (2 X 6 =12 marks)**

7. Find the LCM and HCF of 10, 14 and 28 by prime factorization method.
8. Solve by substitution method:  $x + 2y =8$  and  $2x + 3y = 12$ .

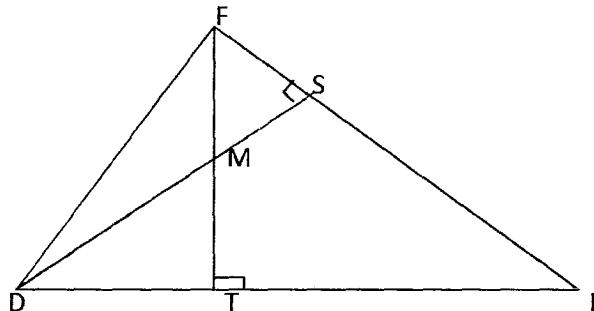


9. If  $\tan(A + B) = \sqrt{3}$ ,  $\tan(A - B) = \frac{1}{\sqrt{3}}$ ,  $0^\circ < (A+B) \leq 90^\circ$ ,  $A > B$ , find A and B?

10. Divide  $p(x) = -x^3 + 3x^2 - 3x + 5$  by  $g(x) = -x^2 + x - 1$  and find  $q(x)$  and  $r(x)$ ?

11. In  $\triangle DEF$ , altitudes  $DS$  and  $FT$  intersect each other at  $M$ . Show that (i)  $\triangle DTM \sim \triangle DSE$

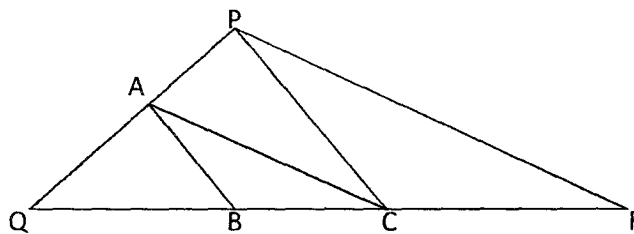
(ii)  $\triangle MSF \sim \triangle ETF$



12. Solve by elimination method:  $10x + 2y = 40$  and  $20x + y = 80$ .

**SECTION - C (3 X 10 = 30 marks)**

13. In fig, if  $AC \parallel PR$  and  $AB \parallel PC$ , prove that  $\frac{QB}{BC} = \frac{QC}{CR}$ .



14. Solve by cross multiplication method:  $3x + 4y + 6 = 0$  and  $3x - y - 9 = 0$ .

15. If  $\tan A = \frac{6}{8}$ , calculate all other trigonometric ratios.

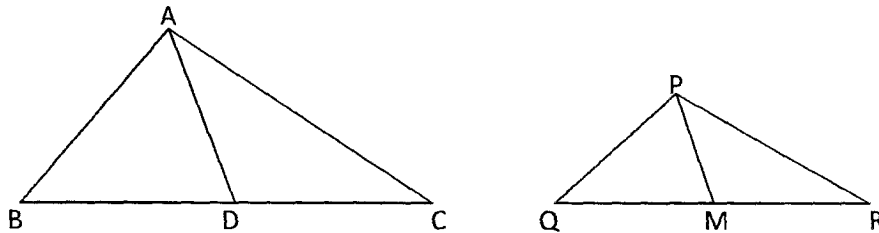
16. Use Euclid's division lemma ,to show that the square of any positive integer is either of the form  $3m$  or  $3m + 1$  , for some integer  $m$ .

17. Solve the equations by reducing it to linear form:

$$\frac{2}{x} + \frac{5}{y} = 4 \quad \text{and} \quad \frac{3}{x} + \frac{6}{y} = 3$$

18. If  $AD$  and  $PM$  are medians of triangles  $ABC$  and  $PQR$  respectively, where  $\triangle ABC \sim \triangle PQR$ ,

then prove that  $\frac{AB}{PQ} = \frac{AD}{PM}$ .



19. If  $\sec 4A = \operatorname{cosec} (A - 20^\circ)$ , where  $4A$  is an acute angle , find the value of  $A$ ?

20. Find the zeroes of  $3x^2 - x - 4$  , and verify the relation between the zeroes and the co- efficient.

21. Prove that, in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

22. Ten years later, the age of Sini will be two times that of Ruhi . Five years ago, Sini's age was three times that of Ruhi . What are their present ages?

**SECTION – D (4 X 8 = 32 marks)**

23. Evaluate :  $\frac{\cos 70^\circ \cdot \operatorname{cosec} 20^\circ}{\tan 5^\circ \cdot \tan 25^\circ \cdot \tan 30^\circ \cdot \tan 65^\circ \cdot \tan 85^\circ}$

24. Prove that  $-5 + 3\sqrt{2}$  is irrational.

25. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

26. The sum of the digits of a two digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number?

27. Find all zeroes of  $3x^4 + 6x^3 - 2x^2 - 10x - 5$ , if two of the zeroes are  $\sqrt{\frac{5}{3}}$  and  $-\sqrt{\frac{5}{3}}$ .

28. Evaluate :  $4 (\sin^4 30^\circ + \cos^4 60^\circ) - 3(\cos^2 45^\circ - \sin^2 90^\circ)$

29. S and T are points on the sides ED and EF respectively of  $\triangle DEF$ , right angled at E. Prove that  $DT^2 + SF^2 = DF^2 + ST^2$ .

30. Draw the graphs of equations  $5x - y - 5 = 0$  and  $3x - y - 3 = 0$ . Write the co-ordinates of the vertices of the triangle formed by these lines and the y - axis, and shade the triangular region.

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