SUMMATIVE ASSESSMENT- I 2015-16
Class – XMATHEMATICS

Time allowed: 3 hours | Maximum Marks: 90

General Instructions:

1. All questions are compulsory.
2. The question paper consists of 31 questions divided in to four sections A,B,C and D. Section-A comprises of 4 questions of 1 mark each; section-B comprise of 6 questions of 2 marks each; sections-C comprise of 10 questions of 3 marks each and Section –D comprises of 11 questions of 4 marks each.
3.There is no overall choice in this question paper.
4. Use of calculator is not permitted.

Section-A

Question number 1 to 4 carry one mark each

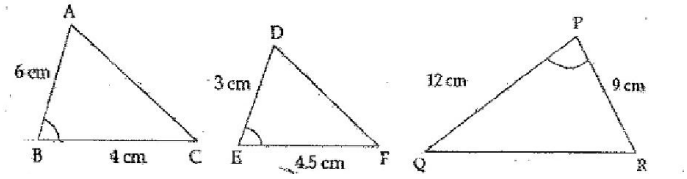
1. *In* $\triangle PQR$ *,S and T are points in the sides PQ and PR respectively such that* $ST \| QR$. If PS =4 cm, PQ=9 cm and PR = 4.5 cm, then find PT.
2. *Find the valor of* $\cos\theta + \sec\theta$ *,when it is given that* $\cos\theta = \frac{1}{2}$
3. *If* $\sqrt{3}\ \sin\ \theta$ *,find the valor of* $\frac{\sin\theta.\tan\theta.(1+\cot\theta}{\sin\theta+\cos\theta}$.
4. *Find the sum of upper limit and lower limit of the class interval in which the* 20^{th} *observation of the following data lies:*

Class interval	*0-100*	*100-200*	*200-300*	*300-400*	*400-500*	*500-600*	*600-700*
Frequency	*5*	*7*	*6*	*3*	*20*	*4*	*8*

SECTION-B

Question number 5 to 10 carry two marks each.

5. *Find the prime factorization of the denominator of the rational number equivalent to 8.39.* 2
6. *Show that* $5\sqrt{6}$ *is an irrational number* 2
7. *Find the quadratic polynomial whose zeroes are* $\sqrt{2}$ *+3 and* $\sqrt{2}$ *-3.* 2
8. *State which of the two triangles given in the figure are similar. Alsip state the similarity criterion used.*



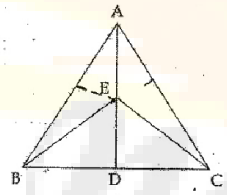
9. *Prove that :* $\frac{1}{\tan+\cot\theta}\ \frac{1}{1+\sin A}+\frac{1}{1-\sin A}=2\sec^2 A$

10. *Determine missing frequency x, from the following data, when Mode is 67.*

Class	*40-50*	*50-60*	*60-70*	*70-80*	*80-90*
Frequency	*5*	*X*	*15*	*12*	*7*

Questions number 11 to 20 carry three marks each.

11. *Use Euclid division lemma to show that square of any positive integer cannot be of the from 5m+2 or 5m +3 for some integer m.*
12. *A man has certain note of denomination 20 and 5 which amount to 380 . If the number of notes of each kind are interchanged ,they amount to 60 less than before . Find the number of notes of each denomination.*
13. *Divide the polynomial* $3x^4-5x^3+4x^2$ *+10x-2 by the polynomial* x^3 *-2x and verify the division algorithm.*
14. *Show graphically the following pair of linear equations if inconsistent:* 3
    2x-2y-2=0
    3x-3y+5=0
15. $\triangle ABC$ *and* $\triangle EBC$ *are in the same base BC.If AE priduced intersects BC at D then ,prove that* $\frac{ar(\triangle ABC)}{ar(\triangle EBC)}=\frac{AD}{ED}$



16. *In a* $\triangle ABC$*, AD is perperdicular to BC and* AD^2 *=BD xCD,Prove that ABC is a right angled Triangle.*
17. $\frac{\sec\theta so\sec(90^0-\theta-\tan\theta,sot(90^0-\theta)+\sin^2 55^0+\sin^2 35^0}{\tan 10^0.\tan 20^0.\tan 60^0,\tan 70^{0.}\tan 80^0}$
18. *Prove that:*
    $(\sin A+\operatorname{cosec}A)^2+(\cos A+\sec A)^2=7+\tan^2 A+\cot^2 A$

19. *The following data gives the information on the observed life times (in hours) of 150 electrical components:*

Life time (in hours)	*0-20*	*20-40*	*40-60*	*60-80*	*80-100*
Frequency	*15*	*10*	*35*	*50*	*40*

Find the mode of the distribution.

20. *The weekly pocket money of the students of class ix of a school are given in the following table:*

Pocket money (in)	*0-40*	*40-80*	*80-120*	*120-160*	*160-200*	*200-240*
Number of students	*5*	*7*	*15*	*10*	*5*	*8*

Find the median for the above data.

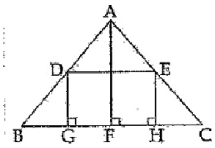
Section-D

Question numbers 21 to 31 carry four marks each.

21. *Can the number* 6^n *,n being a natural number ,end with the digit 5? Give reasons.*
22. *Draw the graph of the following pair of linear equations:*
X+3y=6 and 2x-3y=12
Find the ratio of the areas of the two triangles formed by first line, x=0,y=0 and second line x=0,y=0

23. *Obtain all other zeroes of the polynomial* $x^4 - 3\sqrt{2}x^3 + 3x^2\ 3\sqrt{2}$ *-x if two of its zeroes are* $\sqrt{2}$ *and* $2\sqrt{2}$ *.*
24. *Mr. Sharma and Mr. Arora are family friends and they decided to go for a trip with family . For the trio they reserved their rail tickets . Mr. Arora has not taken a half ticket for his child who is 6 years old where as Mr, Sharma has taken half tickets for his two children who are 65 years and 8 years old . A railway half ticket costs half of the full fare but the reservation charges are the same as in a full ticket . Mr. and Mrs. Arora paid 1700 ,while Mr. and Mrs. Sharma paid 2700. Find the full fare of one ticket and the reservation charges per ticket what difference you find in their behavior and which one you will choose for youself?*

25. *In the given figure ,ABC is a triangle and GHED is a rectangle. BC=12 cm, HE =6cm, FC=BF and altitude AF= 24 cm. Find the area of the rectangle.*



26. *"In a triangle if square of one side is equal to the sum of the squres of the other two jsides, then the angle opposite the first side is a right angle'. Prove it.*
27. *If* $\theta = 30^0$*, verify the following:*
    i) $\cos 3\theta = 4\cos^3\theta - 3\cos\theta$,
    ii) $\sin 3\theta = 3\sin\theta - 4\sin^3\theta$

28. *Prove that:*

$$(\sec\theta - \tan\theta)^2 = \frac{\operatorname{cosec}\theta - 1}{\operatorname{cosec}\theta + 1}$$

29. *(cose* θ *-sin* θ *)((cose* θ *-sin* θ *)=sin* θ *cos* θ *=* $\dfrac{1}{\tan + \cot\theta}$

30. *The daily income of 150 families if given below . Calculate the arithmetic mean.*

Income	*No. of families*
More than75	*150*
More than85	*140*
More than95	*115*
More than105	*95*
More than115	*70*
More than125	*60*
More than135	*40*
More than145	*25*

31. *The following table gives the daily income of 50 workers of a factory .draw both types("less than type' and' greater than type')ogives*

Daily income(in)	*100-120*	*120-140*	*140-160*	*160-180*	*180-200*
Number of workers	*12*	*14*	*8*	*6*	*10s*