PRACTIC PAPER FOR SUMMATIVE ASSESSMENT – I, 2015

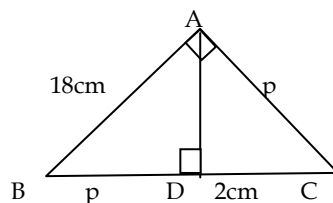**Class – X**   **MATHEMATICS**   **Time Allowed: 3 hours**   **Maximum Marks: 90**

SECTION-A

Question numbers **1** to **4** carry one mark each

Q.1. In the given figure, triangles ADB and ADC similar. Find the value of p.

Q.2. Evaluate : $\sin 60° - \cos 30°$

Q.3. In a right angled ΔABC, if $\angle B = 90°$, AB = 20 cm and BC = 21 cm, find the value of sec A.

Q.4. Find the median of the following distribution :

x_i	1	2	3	4	5	6	7	8
f_i	2	4	6	5	8	0	3	2

SECTION-B

Question numbers **5** to **10** carry two marks each.

Q.5. Determine the values of p and q so that the prime factorization of 2520 is expressible as $2^3 \times 3^P \times q \times 7$

Q.6. Show that $5 - 2\sqrt{3}$ is an irrational number.

Q.7. Solve the following pair of linear equations : $y - 2x = 10, 4y + x = 4$

Q.8. In a rectangle ABCD, E is a point on AB such that $AE = \dfrac{3}{4} AB$. If $AB = 16$ m and $AD = 5$ m, then find the length of DE.

Q.9. If $7 \sin^2\theta + 3 \cos^2\theta = 4$, then find the value of $\tan \theta$.

Q.10. In a hospital, weights of new born babies were recorded, for one month. Data is as shown :

Weight of new born baby (in kg)	1.4 – 1.8	1.8 – 2.2	2.2 – 2.6	2.6 – 3.0
No of babies	3	15	6	1

Find the median weight.

SECTION-C

Question numbers **11** to **20** carry three marks each.

Q.11. Show that $\dfrac{7\sqrt{11}}{3}$ is an irrational number.

Q.12. Find a quadratic polynomial, the sum and product of whose zeroes are 0 and $-\dfrac{4}{3}$ respectively. Hence find the zeroes.

Q.13. $3x - 9y - 12 = 0$ is given. Write another linear equation, so that the lines represented by the pair are :   (i) intersecting   (ii)coincident   (iii)parallel

Q.14. What should be added in the polynomial $x^4 + 5x^3 + 7x^2 + 3x + 4$ so that it is completely divisible by $x^2 + 2x + 1$

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Q.15. In the figure ABCD is a rectangle and E is middle point of BC. DB and AE intersect at F. Prove that DF = 2FB and AF = 2FE
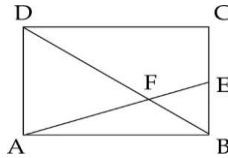
Q.16. ΔABC ~ ΔFEG. If CD and GH are respectively the bisectors of ∠ACB and ∠EGF such that D and H lie on AB and FE respectively. Then prove that
(i)   ΔADC ~ ΔFHG   (ii)   ΔCBD ~ ΔGEH

Q.17. Express cos 63° + cot 59° − sec 47° in terms of trigonometric ratios of angles between 0° and 45°

Q.18. Prove the following identity : (cosec θ − sin θ). (sec θ − cos θ). (tan θ + cot θ) = 1

Q.19. In a health check up, the number of heart beats of 40 women were recorded in the following table

Number of heart beats/minute	65-69	70-74	75-79	80-84
Number of women	2	18	16	4

Find the mean of the data.

Q.20. Weights of class IX students of a school are given in the following frequency distribution :

Weights (in kg)	35-40	40-45	45-50	50-55	55-60	60-65	65-70
Number of students	2	9	15	25	12	6	1

Draw a 'less than type' ogive for the above data.

SECTION-D
Question numbers **21** to **31** carry four marks each.

Q.21. Prove that the product of any three consecutive positive integers is divisible by 6.

Q.22. 2 women and 5 men can together finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone. What is the benefit of doing work in team ?

Q.23. A sum of a two digit number and number obtained on reversing the digits is 99. If number obtained on reversing the digits is 9 more than the original number. Find the number.

Q.24. Obtain all other zeroes of the polynomial $x^4 + x^3 - 6x^2 - 4x + 48$, if two of its zeroes are 2 and -4.

Q.25. If ΔABC ~ ΔPQR and AD, PS are bisectors of corresponding angles A and P, then prove that $\dfrac{ar\,(\Delta ABC)}{ar\,(\Delta PQR)} = \dfrac{AD^2}{PS^2}$

Q.26. In ΔABC, X is any point on AC. If Y, Z, U and V are the middle points of AX, XC, AB and BC respectively, then prove that UY‖VZ and UV‖YZ.
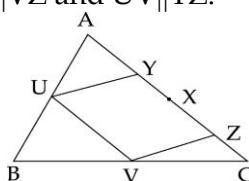
Q.27. In ΔABC (see figure) $\angle C = 90°$, AB $= x$ units and AC $= 3$ units.
Evaluate : $x.\cos B.\tan A + x^2 \sin A.\sec B + \sin C$

Q.28. If $\sin\left(50° - \dfrac{3}{2}\alpha\right) = \cos(3\alpha - 50°)$, then find the value of α and hence evaluate:

$\tan\alpha\ \sec\alpha\ \sin\alpha - \cot\alpha\ \sin\alpha\ \cos\alpha$

Q.29. If $l\ \csc\theta + m\ \cot\theta + n = 0$ and $l'\ \csc\theta + m'\ \cot\theta + n' = 0$, show that-
$(mn' - m'n)^2 - (nl' - n'l)^2 = (lm' - l'm)^2$

Q.30. For the following distribution, draw a 'less than type' ogive and a 'more than type' ogive :

Marks	0-10	10-20	20-30	30-40	40-50
Number of students	15	25	25	38	17

Also, find median from the curves.

Q.31. A school organised a dewali mela. Ages of persons, who visited the mela are given in the following frequency distribution :

Ages (in years)	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Number of persons	50	400	108	530	47	10	5

Find the mean and median age of the above distribution.