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PERIODICAL ASSESSMENT-2
2017-2018

CLASS : X
TIME : 2 HRS.

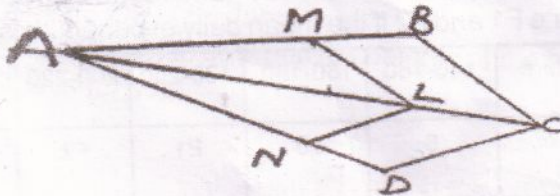
SUB. : MATHEMATICS (SET-A)
M.M. : 50

General Instructions :

1. Questions 1 to 4 carry 1 marks each. (Section A)
2. Questions 5 to 8 carry 2 marks each. (Section B)
3. Questions 9 to 14 carry 3 marks each. (Section C)
4. Questions 15 to 19 carry 4 marks each. (Section D)
5. All Questions are compulsory.

SECTION – A (1 MARKS EACH)

- Q.1 Prove that $3\sqrt{2}$ is irrational.
- Q.2 Solve $2x+3y = 11$ and $2x-4y = -24$ and hence find the value of 'm' for which $y = mx+3$ using substitution method.
- Q.3 In fig. if $LM \parallel CB$ and $LN \parallel CD$, prove that $\frac{AM}{AB} = \frac{AN}{AD}$



- Q.4 If $P(E) = 0.08$, what is the probability of 'not E' ?

SECTION- B (2 MARKS EACH)

- Q.5 Using Euclid's division lemma, show that the cube of any positive integer is of the form $9m$ or $(9m+1)$ or $(9m+8)$ for some integers m .
- Q.6 Find the zeroes of the quadratic polynomial $4x^2 - 4x - 3$ and verify the relationship between the zeroes and the coefficient.

22 $3x^2 + 9x + 2$ $3x^2 + 4x + 4$ $\frac{3x}{108}$

- Q.7 Prove: $\sec A (1 - \sin A) (\sec A + \tan A) = 1$
Q.8 Find the HCF and LCM of 21, 28, 36, 45 using prime factorization.

SECTION- C (3 MARKS EACH)

- Q.9 Solve x and y using elimination method.

$$\left(\frac{x}{2}\right) + \left(\frac{2y}{3}\right) = -1$$

$$[x] - \left(\frac{y}{3}\right) = 3$$

- Q.10 If AD and PM are medians of triangles ABC and PQR , respectively where $\triangle ABC \sim \triangle PQR$ prove that

$$\frac{AB}{PQ} = \frac{AD}{PM}$$

- Q.11 A box contains 80 discs, which are numbered from 1 to 80. If one disc is drawn at random from the box, find the probability that it bears a perfect square number.

- Q.12 The daily expenditure of 100 families are given below. Calculate F_1 and F_2 if the mean daily expenditure is Rs. 188.

Expenditure (in Rs)	140-160	160-180	180-200	200-220	220-240
Number of Families	5	25	F_1	F_2	5

- Q.13 a) If $\tan A = \cot B$, prove that $A + B = 90^\circ$.
b) Show that $\cos 38^\circ \cos 52^\circ - \sin 38^\circ \sin 52^\circ = 0$
- Q.14 From the top of a tower 100 m high, a man observes two cars on the opposite side of tower with angle of depression 30° and 45° respectively. Find the distance between the cars. (take $\sqrt{3} = 1.73$)

SECTION-D (4 MARKS EACH)

Q.15 If the polynomial $(x^4 + 2x^3 + 8x^2 + 12x + 18)$ is divided by another polynomial $(x^2 + 5)$ the remainder comes out to be $(px + q)$. Find the values of p and q .

Q.16 Solve the following pair of linear equations by the substitution and cross multiplication method.

$$8x + 5y = 9$$

$$3x + 2y = 4$$

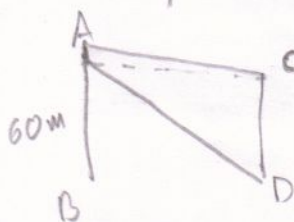
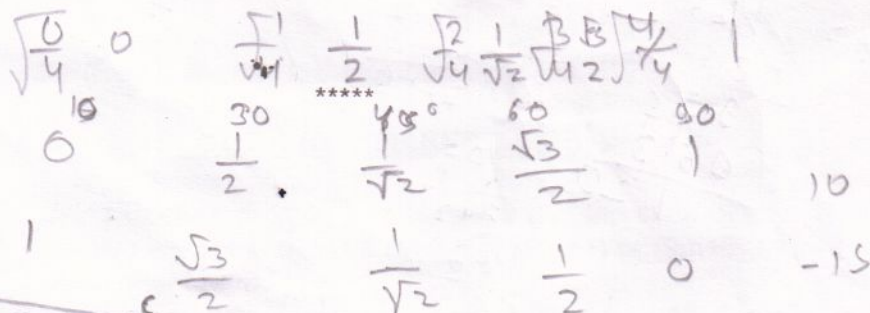
Q.17 Prove that the sum of the squares on the sides of a rhombus is equal to the sum of the squares on its diagonals.

Q.18 Find the mode and median of following data.

Daily Income (in Rs)	100-120	120-140	140-160	160-180	180-200
Number of workers	12	14	8	6	10

Q.19 From the top of a building AB, 60m high the angles of depression of the top and bottom of a vertical lamp post CD are observed to be 30° and 60° respectively. Find:

- The horizontal distance between AB and CD.
- The height of the lamp post.
- The difference between the heights of the building and the lamp post.



$$\tan 30 = \frac{x}{60} \quad X/\text{Maths(A)}/3$$

$$\frac{60}{\sqrt{3}} = \frac{x}{60}$$