SUMMATIVE ASSESSMENT–1 (2013–2014) 9/2013

CLASS–X (SET–I)

SUBJECT : MATHEMATICS

Time : 3 hours **M.M: 90**

General Instructions :

(i) All questions are compulsory.

(ii) The question paper consists of 34 questions divided into four sections A, B, C and D. Section–A comprises of 8 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 and Section–D comprises of 10 questions of 4 marks each.

(iii) Question numbers 1 to 8 in Section–A are multiple choice questions where you are required to select one option out of the given four.

(iv) Use of calculator is not permitted.

SECTION–A

Q1. The LCM of the smallest prime number and the smallest composite number is

(a) 2 (b) 1

(c) 4 (d) 8

Q2. Which of the following numbers has terminating decimal expansion?

(a) (b)

(c) (d)

Q3. If zeroes of $p(x) = 2x^2 - 7x + k$ are reciprocal of each other, then value of 'k' is

(a) 1 (b) 2

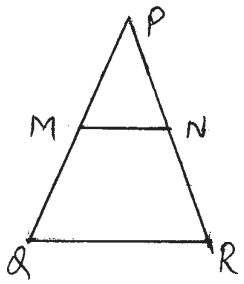
(c) 3 (d) –7

Q4. The pair $3x - 5y = 7$ and $6x - 10y = 7$ of linear equations has

(a) a unique solution (b) two solutions

(c) infinitely many solutions (d) no solution

Q5. In the adjoining figure, MN || QR. If PN = 3.6 cm, NR = 2.4 cm and PQ = 5 cm, then PM is



(a) 4 cm (b) 3.6 cm

(c) 2 cm (d) 3 cm

Q6. If $\theta = 45°$, the value of $2 \sin \theta \cos \theta$ is

(a) (b) 1

(c) $\frac{1}{2}$ (d) 0

Q7. The value of is

(a) $-\cot \theta$ (b) $-\sin^2 \theta$

(c) $-\cos^2 \theta$ (d) $-\text{cosec}^2 \theta$

Q8. An ogive curve is used to determine

(a) range (b) mean

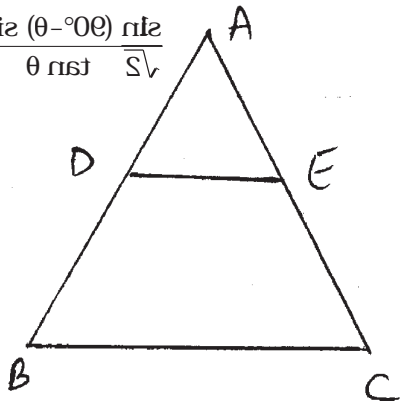
(c) mode (d) median

SECTION–B

Q9. Find the zeroes of the quadratic polynomial $x^2 + 7x + 10$ and verify the relationship between the zeroes and the coefficients.

Q10. Using Euclid's algorithm, find the HCF of 35 and 215.

Q11. If ar (ΔADE) = $25cm^2$, area of the trapezium DBCE = $24cm^2$ and BC = 14cm, find the length of DE.



Q12. Show that $\tan 48° \tan 23° \tan 42° \tan 67° = 1$

Q13. Find the value of K, so that the pair of linear equations

$8x - 12y - 7 = 0$

$Kx + 3y - 6 = 0$

has no solution.

Q14. Convert the following distribution into more than type

C.I.	0–20	20–40	40–60	60–80	80–100	100–120
Frequency	5	8	10	12	7	8

SECTION–C

Q15. Find the HCF and LCM of 336 and 54. Verify that

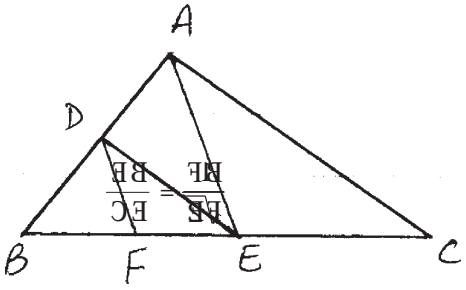
HCF × LCM = Product of two numbers.

Q16. Check whether $x^2 + 3x + 1$ is a factor of $3x^4 + 5x^3 - 7x^2 + 2x + 2$ or not.

Q17. Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer then Yash would have scored 50 marks. How many questions were there in the test?

Q18. E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that $\Delta ABE \sim \Delta CFB$.

Q19. In the given figure, DE || AC and DF || AE. Prove that .



Q20. Show that cos 45° = geometrically.

Q21. If sin (A + B) = 1 = cos (A – B); $0° < A + B \leq 90°$, find A and B.

Q22. The literacy rate (in percentage) of 35 cities were recorded. Find the mode of the data.

Literacy rate (in %)	45–55	55–65	65–75	75–85	85–95
Number of cities	3	10	11	8	3

Q23. The arithmetic mean of the following frequency distribution is 27. Find the value of p.

C.I.	0–10	10–20	20–30	30–40	40–50
Frequency	8	p	12	13	10

Q24. Solve :

$$\frac{1}{2x} + \frac{1}{3y} = 2 \; ; \quad \frac{1}{3x} + \frac{1}{2y} = \frac{13}{6} \; ; \; x, y \neq 0$$

SECTION–D

Q25. Solve graphically and find the values of x and y.

$2x - y = -2$

$2x + y = 6$

Q26. Prove that $\sqrt{5}$ is irrational. Hence, prove that $3 + \sqrt{5}$ is irrational.

Q27. State and prove Basic Proportionality theorem.

Q28. Prove that $\frac{\sin A + \cos A}{\sin A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2\sec^2 A}{\tan^2 A - 1}$

Q29. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$

Q30. In an equilateral triangle, prove that three times the square of one side is equal to four times the square of one of its altitudes.

Q31. Evaluate :

$2\tan^2 45° + 2\sqrt{2} \cos 45° \cos 60° + 2\sqrt{3} \sin 30° \tan 60° + \cos 0° - 3\tan^2 30°$

Q32. If A is an acute angle in a right angled triangle then express sin A, tan A and sec A in terms of cot A.

Q33. (i) Calculate the mean and median for the given data

Monthly consumption of electricity (in units)	100–120	120–140	140–160	160–180	180–200
Number of consumers	12	14	8	6	10

(ii) Write one way to save electricity.

Q34. Draw a less than type ogive for the given data :

C.I.	10–20	20–30	30–40	40–50	50–60	60–70	70–80
Frequency	4	8	10	12	10	4	2

SUMMATIVE ASSESSMENT–1 (2013–2014) 9/2013

CLASS–X (SET–II)

SUBJECT : MATHEMATICS

Time : 3 hours **M.M: 90**

General Instructions :

(i) All questions are compulsory.

(ii) The question paper consists of 34 questions divided into four sections A, B, C and D. Section–A comprises of 8 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 and Section–D comprises of 10 questions of 4 marks each.

(iii) Question numbers 1 to 8 in Section–A are multiple choice questions where you are required to select one option out of the given four.

(iv) Use of calculator is not permitted.

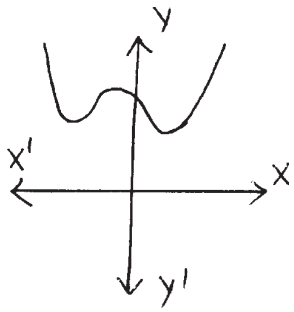
SECTION–A

Q1. Which of the following numbers has non–terminating repeating decimal expansion?

(a) $\frac{1}{80}$ (b)

(c) (d)

Q2. The graph of $y = p(x)$ is given. The number of zeroes of $p(x)$ are :



(a) 0 (b) 1

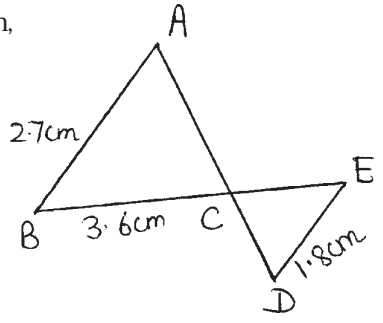
(c) 2 (d) 3

Q3. If a pair of linear equations in two variables is consistent, then the lines represented by these equations are :

(a) always parallel (b) coincident

(c) intersecting (d) either intersecting or coincident

Q4. In the adjoining figure, $\Delta ABC \sim \Delta DEC$. If AB = 2.7 cm, BC = 3.6 cm, ED = 1.8 cm, then CE is



(a) 3 cm

(b) 2.4 cm

(c) 4.2 cm

(d) 4.8 cm

Q5. $(\cos\theta + \sin\theta)^2 + (\cos\theta - \sin\theta)^2$ is equal to

(a) –2 (b) 0

(c) 1 (d) 2

Q6. If mean = 5 and median = 4, then the value of mode is

(a) 4 (b) 3

(c) 2 (d) 1

Q7. If tan A = , then cosA is

(a) $\frac{x}{\sqrt{x^2 + y^2}}$ (b) $\frac{y}{\sqrt{x^2 + y^2}}$

(c) $\frac{x^2 - y^2}{\sqrt{x^2 + y^2}}$ (d) $\frac{x^2 - y^2}{x^2 + y^2}$

Q8. 5.120120012000..... represents

(a) whole number (b) natural number

(c) irrational number (d) rational number

SECTION–B

Q9. Show that any positive odd integer is of the form $4q + 1$ or $4q + 3$ where q is some integer.

Q10. Find the zeroes of the quadratic polynomial $4x^2 + 4x + 1$. Verify the relationship between the zeroes and the coefficients.

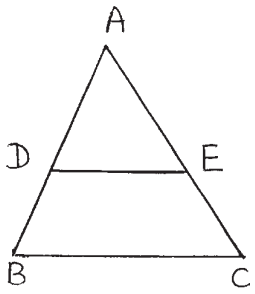
Q11. Find the value of p, so that the pair of linear equations

$2x + y = 7$

$6x - py = 21$

has infinitely many solutions.

Q12. If ar (ΔADE) = 25 cm^2, area of trapezium DBCE = 24 cm^2 and BC = 14 cm, find the length of DE.



Q13. If tanA = cotB, prove that A + B = 90°.

Q14. Convert the following distribution into more than type :

C.I.	0–20	20–40	40–60	60–80	80–100	100–120
Frequency	5	8	10	12	7	8

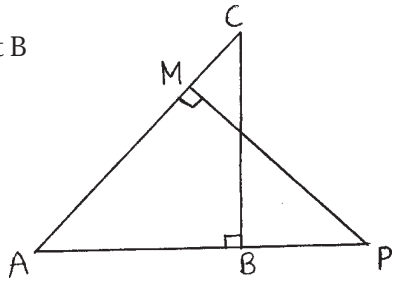
SECTION–C

Q15. Find H.C.F. and L.C.M. of 72 and 120. Also verify that H.C.F. × L.C.M. = Product of numbers.

Q16. Check whether $x^2 + 3x + 1$ is a factor of $3x^4 + 5x^3 - 7x^2 + 2x + 2$ or not.

Q17. A lending library has a fixed charge for first three days and an additional charge for each day thereafter. Sonu paid ₹ 27 for a book kept for seven days, while Rohan paid ₹ 21 for a book kept for 5 days. Find the fixed charge and the charge for each extra day.

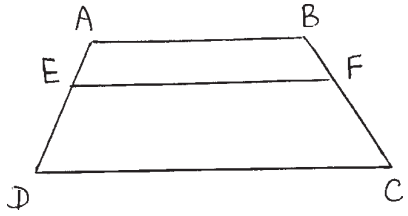
Q18. ABC and AMP are two right triangles, right angled at B and M respectively. Prove that



(i) $\Delta ABC \sim \Delta AMP$

(ii) $\frac{CA}{PA} = \frac{BC}{MP}$

Q19. ABCD is a trapezium with AB || DC. E and F are points on non–parallel sides AD and BC respectively such that EF || AB. Show that



Q20. Show that $\sin 45° =$ geometrically.

Q21. If $\sin (A - B) = \frac{1}{2}$ and $\cos (A + B) =$; $0 < A + B \leq 90°$, $A > B$, find A and B.

Q22. The weights of a group of children were recorded as follows. Find the mode of the data

Weights (in kg)	20–30	30–40	40–50	50–60	60–70	70–80
No. of children	13	12	20	11	15	8

Q23. The arithmetic mean of the following frequency distribution is 53. Find the value of p.

C.I.	0–20	20–40	40–60	60–80	80–100
Frequency	12	15	32	p	13

Q24. Solve :

; $\frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$; $x, y \neq 0$

SECTION–D

Q25. Prove that $\sqrt{3}$ is irrational. Hence, prove that $5 + \sqrt{3}$ is irrational.

Q26. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$

Q27. State and prove Pythagoras theorem.

Q28. D and E are points on the sides CA and CB respectively of a ΔABC right angled at C. Prove that $AE^2 + BD^2 = AB^2 + DE^2$

Q29. Solve graphically and find the values of x and y.

$x - 2y = -8$

$2x - y = -1$

Q30. Prove that $(1 + \cot A + \tan A)(\sin A - \cos A) = \frac{\sec A}{\text{cosec}^2 A} - \frac{\text{cosec} A}{\sec^2 A}$

Q31. If 'A' is an acute angle in a right angled triangle, then express cosA, tanA and cosecA in terms of sinA.

Q32. Evaluate :

$$\frac{4}{3}\tan^2 30° + \sin^2 60° - 3\cos^2 60° + \tan^2 60° - 2\tan^2 45°$$

Q33. (i) Calculate the mean and median marks for the following data :

Marks obtained	0–10	10–20	20–30	30–40	40–50
No. of students	8	10	22	40	20

(ii) Write one habit that you must inculcate to get good marks in examination.

Q34. Draw a less than type ogive for the given data :

C.I.	10–20	20–30	30–40	40–50	50–60	60–70	70–80
Frequency	4	8	10	12	10	4	2