SA-II 2/2015

SUBJECT : MATHEMATICS

CLASS : VII

Time : 3 hrs. **M.M. : 80**

General Instructions :

(i) All questions are compulsory.

(ii) Read all questions very carefully.

(iii) Questions 1 to 10 carry 1 mark each.

(iv) Questions 11 to 18 carry 2 marks each.

(v) Questions 19 to 28 carry 3 marks each.

(vi) Questions 29 to 34 carry 4 marks each.

Q1. Write an algebraic expression for the given statement:

Thrice a variable x added to 15.

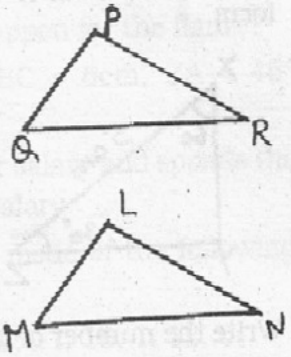
Q2. Write the standard form of 15360000.

Q3. State the number of lines of symmetry for an isosceles triangle.

Q4. To show that $\Delta PQR \cong \Delta LMN$, if it is given that $\angle Q = \angle M$ and you have to use ASA congruence criterion, you need to have

(a) PQ = _____

(b) $\angle P$ = _____



Q5. Find 25% of 1 hour.

Q6. Check whether the value given in the bracket is a solution to the given equation or not:

$$2q - 4 = 10 \ (q = 7)$$

Q7. In a bag, there are 10 tickets numbering 1 to 10. A ticket is drawn randomly. What is the probability of getting ticket with number 6?

Q8. What cross-section do you get when you give a horizontal cut to a cylindrical bottle?

Q9. Give first the step that you will use to separate the variable and then solve the equation:

$$m + 7 = 12$$

Q10. Evaluate:

$$(3^\circ - 2^\circ) \times 5^\circ$$

Q11. Following are the heights of 10 trees (measured in metres):

70, 63, 56, 42, 72, 49, 58, 68, 62, 74

(a) Find the height of the tallest and the shortest tree.

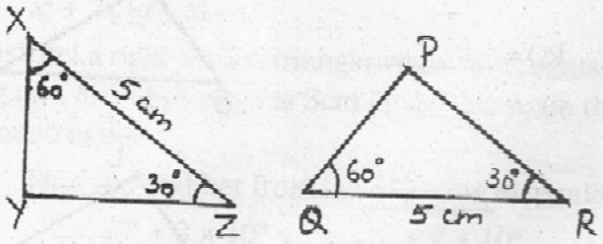
(b) Find the range.

Q12. Show the terms and factors by tree diagram:

$$5m^2 - 13m^2n$$

Q13. A school has a total strength of 2,450 students and 980 of these are boys. Find the ratio of number of girls to the number of boys.

Q14. In the given figure, measurements of some parts of two triangles are indicated. Examine whether the triangles are congruent or not. If congruent, write the result in symbolic form.



Q15. Write the number of faces and edges in the following solid shapes:

(a) Cube (b) Cylinder

Q16. Which is greater: $2^4 \times 3^2$ or 5^3

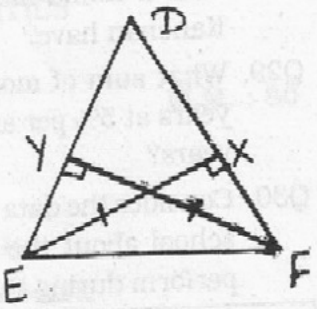
Q17. Solve the following equation by trial and error method:

$$4m + 7 = 15$$

Q18. Construct an equilateral triangle of side 6cm.

Q19. From the sum of $4a+b+c$ and $9a-c$, subtract $18a-b-c$.

Q20. In the given figure, EX and FY are altitudes of ΔDEF such that EX = FY.



(a) State the three pairs of equal parts in ΔEXF and ΔFYE.

(b) Is $\Delta EXF \equiv \Delta FYE$? Why or why not?

(c) Is FX = EY? Give reasons.

Q21. (a) Find the cost of 14 pens, if the cost of 25 pens is ₹400.

(b) Convert decimal number 0.18 to per cent.

Q22. (a) Write the order and angle of rotation of a regular hexagon.

(b) In the word 'MOTHER', write the letters which have reflectional symmetry about both horizontal and vertical lines.

(c) After rotating by 180° about the centre, a figure looks exactly the same as its original position. At what other angles will this happen for the figure?

Q23. Construct ΔABC in which BC = 6cm, $\angle A = 45°$ and $\angle C = 100°$.

Q24. Mrs. Sharma saves 15% of her salary and spends the rest. If she saves ₹2652, find her salary.

Q25. Find the mean, median and mode of the following data with 15 observations:

0, 8, 2, 5, 3, 2, 0, 18, 5, 7, 11, 15, 1, 13, 0

Q26. Simplify and express the result in the exponential form:

$$\frac{3^4 \times 2^7 \, a^6 \, b^2}{9 \times 2^3 \, (a^3)^2}$$

Q27. Rajesh bought a table lamp for ₹250. At what price should he sell it to get 16% profit?

Q28. Bimla has 9 marbles less than twice the marbles Kanchan has. If Bimla has 23 marbles. How many marbles does Kanchan have?

Q29. What sum of money will yield an interest of ₹715 for 2 years at 5% per annum? What will be the amount after 2 years?

Q30. Consider the data given below collected from a survey of a school about the activities girls and boys would like to perform during their free time.

Activity preferred	Playing with friends	Watching T.V.	Listening Music	Reading Story books	Playing on Computer
Number of boys	45	20	10	10	15
Number of girls	20	30	30	15	5

(a) Draw a double bar graph choosing an appropriate scale.

(b) What is the importance of reading story books?

Q31. (a) What should be the value of a, if the value of $13a - 4z^2 + 5z$ equals 14, when $z = 1$.

(b) Simplify the expression and find its value when $x = 3$ and $y = 2$

$x^2 + 2x(y + x) - y^2$

Q32. Construct a right-angled triangle whose hypotenuse is 5cm long and one of the legs is 3cm long. Also write the steps of construction.

Q33. (a) Find the number from the following expanded form:

$7 \times 10^5 + 2 \times 10^3 + 3 \times 10^2 + 7 \times 10^0$

(b) Using algebraic expression $3n - 2$, where n is the number of term, find the 10th and 15th terms.

Q34. Solve the following equations:

(a) $2(x - 3) = 18$.

(b) $\frac{x}{3} - 2 = 7$.