FIRST TERM EXAMINATION, 2011–2012

MENTAL MATHEMATICS

Time Allowed : 15 min.  CLASS–VII  M.M. : 10

1. If $\triangle ABC \cong \triangle PQR$, the part of $\triangle PQR$ which corresponds to $\overline{AC}$ is:
   (a) $\overline{PQ}$  
   (b) $\overline{QR}$  
   (c) $\overline{PR}$  
   (d) $\angle P$

2. Express 8 cm in kilometre:
   (a) 0.00008 km  
   (b) 0.008 km  
   (c) 0.008 km  
   (d) 0.08 km

3. A pair of integers whose difference is 2 is:
   (a) (-4) and (2)  
   (b) (2) and (-4)  
   (c) (-9) and (-7)  
   (d) (-7) and (-9)

4. By applying SAS congruence rule, you want to establish that $\triangle PQR$ is congruent to $\triangle FED$. It is given that $PQ = FE$ and $RP = DF$. What additional information is needed to establish the congruence?
   (a) $QR = ED$  
   (b) $\angle P = \angle F$  
   (c) $\angle Q = \angle E$  
   (d) $\angle R = \angle D$

5. The complement of the angle 72° is:
   (a) 108°  
   (b) 8°  
   (c) 72°  
   (d) 18°

6. The standard form of $\frac{16}{-56}$ is:
   (a) $\frac{-8}{28}$  
   (b) $\frac{2}{-7}$  
   (c) $\frac{-4}{14}$  
   (d) $\frac{-2}{7}$

7. Express $-\frac{64}{125}$ using exponential notation:
   (a) $\left(-\frac{4}{5}\right)^3$  
   (b) $\left(-\frac{3}{5}\right)^3$  
   (c) $\left(-\frac{4}{5}\right)$  
   (d) $\left(-\frac{3}{5}\right)$
8. In the given figure, value of $x$ is:

(a) 30°  (b) 60°  (c) 15°  (d) 40°

9. If two adjacent angles are supplementary they form:
   (a) vertically opposite angles  (b) equal angles
   (c) a linear pair  (d) complementary angles

10. In the given figure triangles $AOC$ and $BOD$ are congruent by which rule:

   (a) SAS rule  (b) SAS rule  (c) ASA rule  (d) RHS rule
First Term Examination, 2011-2012

Mathematics

Time Allowed: 2 hrs. 45 min.  Class VII  M.M.: 70

General Instructions:
1. All questions are compulsory.
2. Q. nos. 1-10 carry 2 marks each.
3. Q. nos. 11-20 carry 3 marks each.
4. Q. nos. 21-24 carry 5 marks each.

Section A

1. Find the value of the following, using suitable property:
   \[123 \times (-7) + (-123) \times 3\]

2. If one of the angles of the right-angled triangle is 58°. Find the other angle of the triangle.

3. Divide:
   \[\frac{13}{28} + \frac{19}{49}\]

4. Using the given figure, find \(x\).

5. Compare the following rational numbers:
   \[-\frac{4}{3} \quad \text{and} \quad \frac{5}{-6}\]

6. Find the product of the following:
   \[\frac{16}{-5} \times \frac{3}{8} \times \frac{10}{3}\]

7. Name four pairs of adjacent angles in the following figure:
8. Simplify and write the answer in exponential form:
   \[ (2^3 \times 3^5) \times 5^8 \]

9. Draw rough sketches for the following:
   (i) In \( \triangle ABC \), \( BE \) is a median.
   (ii) In \( \triangle XYZ \), \( YL \) is an altitude in the exterior of the triangle.

10. Find the angle marked \( x \) in the following figure. Also name the property used.

![Diagram with angles 60°, 135°, and 80°, and angle \( x \)]

SECTION-B

11. Verify the property \( a \times (b + c) = (a \times b) + (a \times c) \) for \( a = -3 \), \( b = 7 \) and \( c = -9 \).

12. Seema purchased \( 7\frac{1}{2} \) kg of rice at the rate of Rs. \( 38\frac{3}{4} \) kg. How much money did she pay to the shopkeeper?

13. A car covers a distance of 89.1 km in 2.2 hours. What is the average distance covered by it in 1 hour?

14. Find the values of angles \( x \), \( y \), \( z \).

![Diagram with angles 40°, 25°, and 85°]

15. The three angles of a triangle are in the ratio 1:2:1. Find all the angles of the triangle. Also consider the triangle in two different ways.

16. In the given figure, \( DA \perp AB \), \( CB \perp AB \) and \( AC = BD \). Prove that \( \triangle ABC \cong \triangle BAD \). Also show that \( AD = BC \).

![Diagram with right angles and parallel lines]
17. (i) Represent $\frac{-7}{5}$ on a number line.

(ii) Add $\frac{-1}{12}$, $\frac{3}{8}$ and $\frac{-5}{6}$

18. (i) Evaluate: $5^0 + 3^0 - 8^0$

(ii) Express 3,430,000 in the standard form.

19. In the given figure, $AB = AC$ and $AD$ is the median. Show that $\triangle ADB \cong \triangle ADC$ and $\angle B = \angle C$.

[Diagram of a triangle with medians]

20. Find $x$, if the angles of a triangle have measures $(x + 40^\circ)$, $(2x + 20^\circ)$ and $3x$. Also, state which type of triangle is this.

SECTION–C

21. (i) If $l \parallel m$, determine all the marked angles.

[Diagram with angles marked 32°, 1, 2, 3, and 4.]

(ii) In the given figure, $\angle 1 = 60^\circ$ and $\angle 2 = 120^\circ$. Check if lines $l$ and $m$ are parallel to each other.

[Diagram with angles marked 60°, 1, and 2, 120°.]

22. Simplify:

$\frac{12^4 \times 9^3 \times 4}{6^3 \times 3^2 \times 27}$

23. A 13 m long iron rod is placed against a wall. The distance of the foot of the iron rod from the wall is 5 m. How high up the wall does the iron rod reach?
24. (a) Is it possible to have a triangle whose sides have lengths 2 cm, 3 cm and 4 cm.

(b) In the given figure, $AM$ is a median of a triangle $ABC$. Prove that $AB + BC + CA > 2AM$. 