## HALF YEARLY EXAMINATION

#### MATHEMATICS

CLASS 10

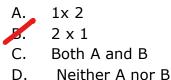
FULL MARKS : 40 TIME : 1Hour and half

# **SECTION A** (16Marks)

- A retailer bought an article from the dealer for Rs 580 and sold it to the customer for Rs 660. The rate of GST charged being 8%. Therefore the GST paid by the retailer to the State Government in rupees is
  - A. 6.40
  - B. 80
  - 2. 3.20
    - D. 32
- 2. The smallest value for x in the given inequation x 3(2 + x) < 2(3x 1); x  $\in$  I is
  - A.  $-\frac{1}{2}$ B. 0 C. -1D. 1
- 3. Which of the following is not a quadratic equation :
  - (i)  $x^2 + 3x 4 = 0$
  - (ii)  $4x^2 64 = 0$
  - (iii)  $3x^2 4x = 0$
  - (iv)  $x^3 2x + 4 = 0$

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(iv)
B. (ii), (iii), (iv)
C. (ii)
D. (iii)
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4. The order of the matrix  $A\begin{bmatrix} 2\\ -1 \end{bmatrix}$  is



5. Using remainder theorem , the remainder on dividing  $2x^3 - 3x^2 + 7x - 8$  by (x - 1) is A. 2

B. -1



- 6. Which of the following statement is true for two similar triangles :
  - (i) They are never congruent
  - (ii) They are always congruent
  - (iii) May or may not be congruent.
  - A. (i)
  - B. (ii)
  - 🔑 (iii)
  - D. (ii) and (iii)
- 7. Which of the following series are **not** in Arithmetic Progression :
- 40, 15, 10, 35 ..... (i) 117, 104, 91, 78, ..... (ii) 4, 8, 12, 16, ..... (iii) Α. (i) Β. (ii) C. (iii) **D**. None of the above 8. If A =  $\begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$  and B =  $\begin{bmatrix} -2 & 5 \\ 3 & 4 \end{bmatrix}$  then 3A – B is equal to  $\bigwedge \begin{bmatrix} 8 & 7 \\ 6 & 2 \end{bmatrix}$ B.  $\begin{bmatrix} -8 & -7 \\ -6 & -2 \end{bmatrix}$ C.  $\begin{bmatrix} 4 & 17 \\ 12 & 10 \end{bmatrix}$  $\begin{bmatrix} 8 & 6 \\ 7 & 2 \end{bmatrix}$ D.
- 9. On solving the quadratic equation  $x^2 8x + 16 = 0$  we get the value of **x** as :
  - A. ± 4
  - **P.** 4
  - C. 4
  - D. None of the above
- 10. If  $\triangle$ ABC is similar to  $\triangle$ PQR, and AB = 6cm, PQ = 12cm, AC = 8cm, thenm the length of PR in centimetres is
  - A. 4 5. 16 C. 12
  - D. None of the above
- 11. If 2a, 3a + 2, 8a 4 are in Arithmetic Progression, then a is equal to

A. 3 B. -2 2. 2 D. 0

12. If 12 is the mean proportion between 6 and **a**, then the value of **a** is

- *K*. 24
- B. 12
- C. 8
- D. None of the above

13. If (x - 2) is a factor of the expression  $x^3 + 2x^2 - px + 10$ , then the value of **p** is A. 31

- B. 13
- C. 13
- D. 2

14. The sum of the first 8 terms of the Arithmetic Progression 10, 14, 18, 22.....

A. 48
B. 384
C. 96
D. 192

15. Mohan deposits Rs 100 per month in a recurring deposit account for one year at the rate of 6% per annum . The interest payable to him at the end of one year in rupees is

- A. 12
- **B**. 39
- C. 42
- D. 36

16. If 9, b, 4 are in continued proportion, then the value of **b** equals to

- A. ±6 B. 36 C. 6
- D. 6

## SECTION B (12 Marks)

17. The solution set for the following inequation  $2x - 5 \le 5x + 4 < 11$ ;  $x \in W$ , is

- K.  $\{-3, -2, -1, 0, 1\}$
- B. { −2, −1, 0, 1}
- C. { 0, 1 }
- D. { 0, 1, 2 }

18. The range of values of **p** for which the quadratic equation  $4x^2 + 12x + (p + 2) = 0$  has real roots is

A. p < 7

- B. p = 7
- C. p > 7
- **Ø**. p ≤ 7

19. Using remainder theorem, if  $ax^3 + 3x^2 - 13x + 5$  is divided by (x - 2), it leaves a remainder 7. Then the value of **a** is

- A. 3
- P 2
- C. -1
- D. None of the above
- 20. The value of **x** from the matrix equation  $\begin{bmatrix} x & 3x \\ 2 & 8 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \end{bmatrix} = \begin{bmatrix} 5 \\ 12 \end{bmatrix}$  is
- A. 0
- В. —1
- C. 2
- **D**. 1

21. If  $\frac{x^2 + y^2}{x^2 - y^2} = \frac{17}{8}$  using properties of proportion, the value of x : y is A. 5:3 B. 25:9

- C. 3:5
- D. None of the above

22. Rohit bought a washing machine at a discount of 10% on the marked price. Given that the marked price of the washing machine is Rs 16,000 and the rate of GST charged being 18%. The total price inclusive of GST paid by Rohit, in rupees, is

A. 16,892

B. 17,992

*.* 16,992

# SECTION C (12 Marks)

23. The second term of an Arithmetic Progression is 14 and the 9<sup>th</sup> term is 42.

(i) The common difference of the progression is

A. 3

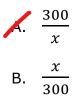
- B. -4
- C. 3

(ii) The first term of the progression is

A. 16 B. – 10 C. 0 J. 10

(iii) The sum of 51 terms of the progression is

- A. 5160 *b*. 5610 *c*. 5620 *d*. 4610
- 24. A train travels a distance of 300km at a constant speed of x km/h.
- (i) the time taken by the train in hours is



- C. 300x
- D. None of the above

(ii) Due to emergency, the train increased the speed by 5 km/h. Hence, the time taken by the train with the increased speed is



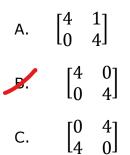
C. 
$$\frac{x+5}{300}$$
  
D.  $\frac{x-5}{300}$ 

iii) For the speed being increased, the train takes 2 hours less to cover the distance of 300 km.On framing an equation in **x** and on solving the equation we get the value of **x** as

- K. 25 B. 30
- C. Both A and B
- D. Neither A nor B

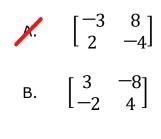
25. Let 
$$P = \begin{bmatrix} 2 & 1 \\ 0 & -2 \end{bmatrix}$$
 and  $Q = \begin{bmatrix} -3 & 2 \\ -1 & 4 \end{bmatrix}$ 

(i) the solution for matrix  $P^2$  is



D. = 
$$\begin{bmatrix} 4 & -1 \\ 0 & 4 \end{bmatrix}$$

(ii) the solution for  $P^2 + PQ$  is



- C.  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
- D. None of the above