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SEAT NO.

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QUESTION PAPER CODE NO.

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# HIGH SCHOOL SCHOLARSHIP EXAMINATION

FEBRUARY 2005

MATHEMATICS (English)

(Total Marks — 100)

**Please read the following instructions carefully before solving the question paper.**

- N.B.** — (1) All questions are *compulsory*.  
 (2) Answers are to be written on the separate answer-sheet only, provided for the purpose. Each question is followed by four alternatives, out of which only one is correct. You have to select the correct answer and write the number of that alternative, in English, in the box provided for it. If you wish to change your alternative, cancel it by drawing three lines across the box and write your changed alternative as shown below:—

Q. 5

3

2

Overwriting other than this is not allowed.

- (3) Question paper contains 50 questions of 2 marks each.  
 (4) Do not spend much time on any one question. If you find any one question difficult, go to the next question and come back to the difficult one later, if time permits.  
 (5) Blank space for rough work is provided at the bottom of each page of the question paper. Use it for your rough work.  
 (6) After reading carefully the practice questions, write the alternative in a form as 1, 2, 3 or 4 by selecting the correct answer.

**Sample question** — (1) If cost of one guava is 20 paise, what is the cost of 4 guavas ?

- (1) 24 paise    (2) 60 paise    (3) 80 paise    (4) None of these.

**Explanation** — Four alternative answers are provided under the above question. Out of these 80 paise is the correct answer. This correct answer has serial No. 3. Hence you have to write 3 in the column against this question No. in the answer-sheet.

**Sample question** — (2) One book costs Rs. 8, hence what is the cost of 12 such books ?

- (1) Rs. 120    (2) Rs. 144    (3) Rs. 960    (4) None of these.

**Explanation** — Out of four alternatives given under the above question “None of these” is correct answer. This correct answer has the serial No. 4. Hence you have to write 4 in the column against this question in the answer-sheet.

1. The number  $794\Box84$  is divisible by 12. What will be the greatest appropriate number at the place of  $\Box$ ?

- (1) 1                      (2) 4                      (3) 6                      (4) 7

2.  $(x + 5)$  is an even number. What will be the 12<sup>th</sup> preceding odd number to the given even number?

- (1)  $(x - 28)$               (2)  $(x + 18)$               (3)  $(x + 16)$               (4)  $(x - 18)$

3. What will be the ratio of radius of circumcircle to the radius of incircle of an equilateral triangle?

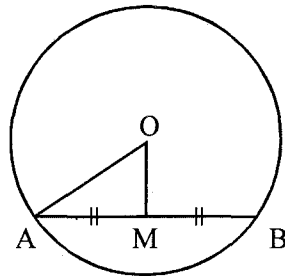
- (1) 2 : 1                      (2) 2 : 3                      (3) 1 : 2                      (4) 3 : 2

4. AB is a chord of a circle with centre O.

M is the midpoint of chord AB.

$$l(OA) = 61, l(OM) = 60.$$

Then find the length of segment AB.



- (1) 11                      (2) 22                      (3) 5.5                      (4) 16.5

5.  $(5 \times 5)^2 - (5 \times 4)^2 = M^2$  then  $M = ?$

- (1)  $(5 \times 1)$               (2)  $(5 \times 2)$               (3)  $(5 \times 3)$               (4)  $(5 \times 6)$

6. Find the number to be subtracted from  $41.0812$  to get  $32.487$ .

- (1)  $8.5942$       (2)  $85.942$       (3)  $7.5942$       (4)  $8.9524$

7.  $576 \div 10 \div 48 = M$  then  $M^2 = ?$

- (1)  $1.2$       (2)  $12$       (3)  $2.4$       (4)  $1.44$

8. How many of the following are Pythagorean triplets?

$[8, 15, 17]$ ,  $[13, 60, 61]$ ,  $[14, 48, 50]$ ,  $[11, 40, 41]$

- (1) 4      (2) 3      (3) 2      (4) 1

9. Find the total surface area of a cube with side  $5$  cm.

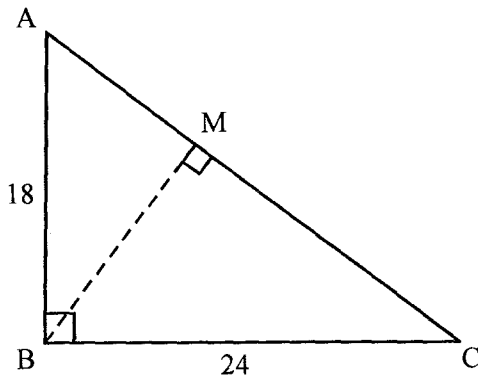
- (1)  $150$  sq.cm.      (2)  $125$  sq.cm.  
(3)  $120$  sq.cm.      (4)  $100$  sq.cm.

10. In  $\triangle ABC$   $m\angle ABC = 90^\circ$ ,

$BM \perp AC$ ,  $l(AB) = 18$ ,

$l(BC) = 24$  then  $l(BM) = ?$

- (1)  $14.0$       (2)  $14.2$   
(3)  $14.3$       (4)  $14.4$



11.  $(3^9 \times 3^{-5})^x = 27$  then  $x = ?$

(1)  $\frac{4}{3}$

(2)  $\frac{3}{4}$

(3) 4

(4) -4

12.  $x$  varies directly with  $y$  when  $x = \frac{3}{4}$ ,  $y = \frac{1}{2}$ . When  $y = 4$  then  $x = ?$

(1) 12

(2) 5

(3) 6

(4)  $\frac{1}{6}$

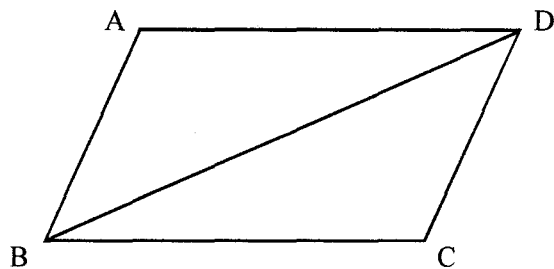
13. In the adjoining figure,

$\square ABCD$  is a parallelogram.

Find one to one correspondence

for which  $\triangle BAD$  and  $\triangle BCD$

are congruent.



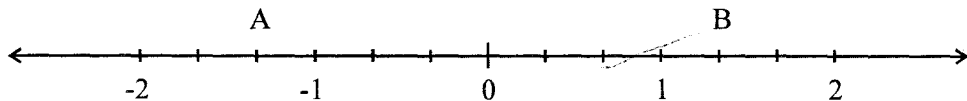
(1)  $A \leftrightarrow C, D \leftrightarrow D, B \leftrightarrow B$

(2)  $B \leftrightarrow C, A \leftrightarrow D, D \leftrightarrow B$

(3)  $A \leftrightarrow C, B \leftrightarrow D, D \leftrightarrow B$

(4)  $D \leftrightarrow C, A \leftrightarrow D, B \leftrightarrow B$

14.



Observe the number line and find the distance between points A and B.

(1)  $2\cdot6$

(2)  $2\cdot66$

(3)  $0$

(4)  $2\cdot\dot{6}$

15. Average weight of the bags of wheat and rice is 60 kg. Average weight of the bags of rice and jowar is 80 kg. The total weight of the bags of wheat and jowar is 140 kg. Then find the average weight of wheat, jowar and rice.

(1) 60 kg

(2) 70 kg

(3) 80 kg

(4) 90 kg

16. The ratio of the measurement of the supplementary angle to the complementary angle of an angle is  $8 : 3$ . What will be the ratio of the angle to its supplementary angle?

(1)  $4 : 1$

(2)  $1 : 3$

(3)  $1 : 4$

(4)  $1 : 2$

17. From the following which information is enough to construct a triangle?

(1) Length of three sides.

(2) Measurement of three angles.

(3) One median and any two angles.

(4) Any two sides and one non-including angle.

18. 7% of which number is 49?

(1) 7

(2) 70

(3) 700

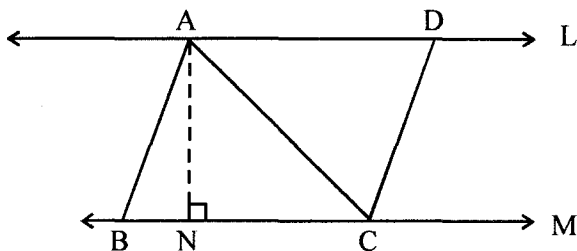
(4) 7000

19. In the adjoining figure

line  $L \parallel$  line  $M$ .

$AN \perp BC$  and  $\square ABCD$

is a parallelogram. Find the area of  $\square ABCD$ .



(1) Double the area of  $\triangle ABC$

(2) Half of the area of  $\triangle ABC$

(3) Four times the area of  $\triangle ABC$

(4) One fourth of the area of  $\triangle ABC$ .

20. A person decided to give the commission at the rate of 2.5% to the estate agent. The house was sold for Rs. 2 lakh 40 thousand rupees. Find the commission that estate agent will get.

(1) Rs. 5,000

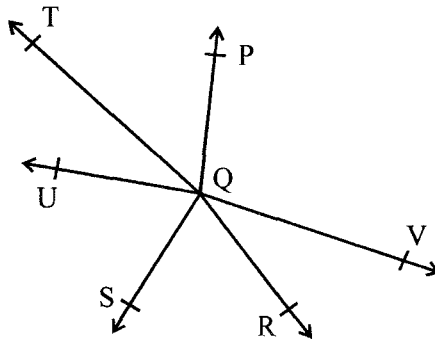
(2) Rs. 6,000

(3) Rs. 6,250

(4) Rs. 6,500

21. Observe the figure and write the name of the pair of opposite rays.

- (1) Ray PQ and Ray SQ
- (2) Ray QV and Ray QU
- (3) Ray RQ and Ray TQ
- (4) Ray QT and Ray QR



22. If the measurement of the adjacent angles of a parallelogram is  $2x^\circ$  and  $3x^\circ$ , then find the measurement of four consecutive angles.

- (1)  $108^\circ, 72^\circ, 72^\circ, 108^\circ$
- (2)  $72^\circ, 72^\circ, 108^\circ, 108^\circ$
- (3)  $72^\circ, 108^\circ, 72^\circ, 108^\circ$
- (4)  $72^\circ, 108^\circ, 108^\circ, 72^\circ$

*Note:— Observe the following table and answer Q. 23 and Q. 24.*

Subject	English	Maths	Science	Language
Marks obtained	70%	85%	90%	75%

Scale 1 cm = 10% Marks

23. To draw the above bar diagram what will be the height of the bar in centimetre for the subject English?

- (1) 8.5
- (2) 9
- (3) 7
- (4) 7.5

24. Find the difference in the height in centimetre of the bar of Maths and Science.

- (1) 1.5
- (2) 2.0
- (3) 1.0
- (4) 0.5

25. If we arrange rational numbers  $\frac{2}{5}$ ,  $\frac{4}{9}$ ,  $\frac{9}{19}$  and  $\frac{6}{13}$  in descending order, what will be the square of second last fraction?

(1)  $\frac{4}{25}$

(2)  $\frac{16}{81}$

(3)  $\frac{81}{361}$

(4)  $\frac{36}{169}$

26. Five years back, ratio of the ages of Yogesh and Mahesh was 4 : 5. Present age of Yogesh is 21 years. Find the age of Mahesh after 3 years.

(1) 25 years

(2) 20 years

(3) 28 years

(4) 24 years

27. 44% of 200 means what percent of 50?

(1) 11

(2) 22

(3) 44

(4) 176

28. While going from the place A to place B, a tourist bus was having uniform speed of 40 km/hr. But while coming from the place B to the place A the vehicle was having uniform speed of 60 km/hr. Find the average speed of the motor bus during the entire travel.

(1) 45 km/hr

(2) 46 km/hr

(3) 48 km/hr

(4) 50 km/hr

29. Some guavas and apples were purchased at the rate of 50 paise for a guava and Rs. 5 for an apple. 25 fruits were purchased for Rs. 26. Find the number of apples purchased.

(1) 3

(2) 4

(3) 5

(4) 6





35. At what percent per annum rate will any principal be doubled in 8 years?

- (1) 12.50                      (2) 12                      (3) 11.11                      (4) 10

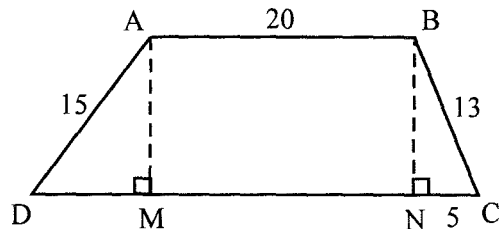
36. In the adjoining trapezium ABCD

side  $AB \parallel$  side  $DC$ .  $AM \perp DC$  and

$BN \perp DC$ . If  $l(AB) = 20$ ,

$l(BC) = 13$ ,  $l(NC) = 5$ ,  $l(AD) = 15$

then  $l(DC) = ?$



- (1) 48                      (2) 40                      (3) 38                      (4) 34

37. In between 2 p.m. and 3 p.m. at what time, hour hand and minute hand will be in opposite direction?

- (1)  $42\frac{11}{12}$  minutes past 2                      (2)  $43\frac{7}{11}$  minutes past 2  
(3)  $43\frac{9}{11}$  minutes past 2                      (4)  $44\frac{1}{12}$  minutes past 2

38. If  $a = x + 4$ ,  $b = 9 - x$ ,  $c = x$  then find the value of  $2a - b - 3c$ .

- (1) 0                      (2) -1                      (3) 1                      (4) 2

39. Present age of Anita is more than the sum of the ages of her two children by eight years. The difference between the ages of Anita's two children is 3 years. Present age of Anita is 45 years. Find the age of her elder child five years back.

- (1) 17 years                      (2) 16 years                      (3) 15 years                      (4) 12 years

40.  $(a^3 + a^{-2})(a^2 - 3a) = a^5 + pa^4 - \frac{3}{a} + q$  then find the respective values of  $q$  and  $p$ .
- (1)  $-1, 3$             (2)  $-3, -1$             (3)  $1, 3$             (4)  $1, -3$
41. What will be the measurement of the supplementary angle of an angle with complementary angle of  $67^\circ$  ?
- (1)  $23^\circ$             (2)  $113^\circ$             (3)  $157^\circ$             (4)  $136^\circ$
42. The product of two two-digit numbers is 768 and their G.C.D. is 8. Find the product of their uncommon factors.
- (1) 96            (2) 12            (3) 56            (4) 20
43. Bananas purchased at the rate of Rs. 10 per dozen were sold for Rs. 1.25 each. Find the percent profit in this transaction.
- (1) 25%            (2) 30%            (3) 40%            (4) 50%
44. If a radio is sold for Rs. 1440, then there is a loss of 10%. For how much more money one should sell it to get the profit of 10%?
- (1) Rs. 320            (2) Rs. 300            (3) Rs. 280            (4) Rs. 275
45. In a number 908.495, how many times is the place value of 9 on the left to the place value of 9 on the right?
- (1)  $10^{-3}$             (2)  $10^3$             (3)  $10^4$             (4)  $10^{-4}$

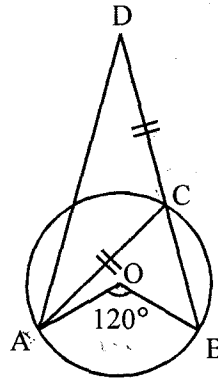
46.  $6.02 \text{ kilogram} - 9.7 \text{ hectogram} + 4.5 \text{ decagram} = ? \text{ decagram}$ .

- (1) 0.82                      (2) 50.95                      (3) 509.5                      (4) 8.2

47. By how much the addition of the prime numbers between 21 and 50 is more than 200?

- (1) 251                      (2) 151                      (3) 50                      (4) 51

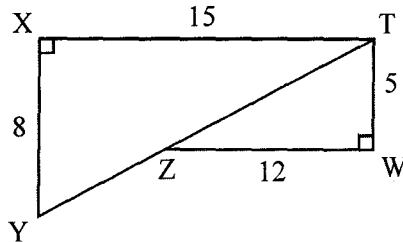
48. In the adjoining figure 'O' is the centre of the circle.  $m\angle AOB = 120^\circ$  and  $\text{seg } AC \cong \text{seg } DC$ . Find  $m\angle DAC$ .



- (1)  $15^\circ$                       (2)  $30^\circ$   
 (3)  $60^\circ$                       (4)  $120^\circ$

49. Using the given information, find the perimeter of the figure.

( $\angle X$  and  $\angle W$  are right angles)



- (1) 57                      (2) 53  
 (3) 44                      (4) 40

50. The length of the parallelopiped tank is 1.5 times the breadth and its height is double the length. Volume of the tank is 4500 cubic metre. Find the height of the tank.

- (1) 10 m                      (2) 15 m                      (3) 30 m                      (4) 20 m