

# HIGH SCHOOL SCHOLARSHIP EXAMINATION FEBRUARY 2008

Seat No.

QUESTION PAPER CODE NO.

1	2	5	2	5	5	0	3	5	6
---	---	---	---	---	---	---	---	---	---

0	5	2	2
---	---	---	---

## MATHEMATICS (ENGLISH)

TOTAL MARKS : 100

TIME : 13.00 to 14.00

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

- N.B.** —
- (1) This question paper contains 50 questions carrying 2 marks each.
  - (2) All questions are *compulsory*.
  - (3) A separate answer-sheet is provided. Every question has four alternatives numbered 1, 2, 3, 4. Out of these, only one choice of answer is correct. This correct alternative number should be written in the block provided in the answer-sheet, next to the corresponding question number, e.g. 

4
---

.
  - (4) The correct alternative should be written in English number only. Answers in any other language will not be considered.
  - (5) As far as possible avoid cancellations and overwriting. Answers written in this way will not be considered.
  - (6) Answers should be written in blue and black ink pen or ball point pen. Answers written in pencil or red or any other coloured ink will not be checked.
  - (7) While correcting the answer, cancel the wrong answer number by drawing three lines across it as shown 

3
---

. The corrected answer number should be written next to the cancelled block, to look like 

3
---

 2.
  - (8) The correction can be done only once for each question.
  - (9) In one subject maximum five corrections will be considered. More than five corrections will not be given marks.
  - (10) Time period for the exam is limited hence do not spend much time on any question. If you find any *one* question difficult, go to the next question and unsolved question can be tried again at the end if time permits.
  - (11) Blank space for rough work is provided overleaf and at the bottom of each page of the question paper. Rough work is to be done in this space only.
  - (12) After reading carefully the sample questions, write the alternative in a form as 1, 2, 3 or 4 by selecting the correct answer.

**Sample question—(1)** If Aditya secured 90 marks out of 150 in mathematics, then what are his percent marks ?  
(1) 50%                      (2) 60%                      (3) 75%                      (4) 90%

**Explanation—**Four alternative answers are provided under the above question. Out of these 60% is the correct answer. This correct answer has Serial No. (2). Hence you have to write digit 2 in English in the column against this question number in the answer-sheet in the box provided.

**Sample question—(2)**  $a^0 \times b^0 + (a + b)^0 = \dots\dots\dots$   
(1) 3                              (2) 4                              (3) 6                              (4) 2

**Explanation—** Four alternative answers are provided out of which 2 is the correct answer. This correct answer has the Serial No. 4. Hence you have to write 4 in the answer sheet in the box provided this question number.

Now you are asked to write the answers to the questions on the separate answer-sheet provided.

1. Numbers in which of the following set are in proportion ?

(1) 5, 10, 15, 20

(2) 5, 20, 20, 100

(3) 5, 10, 10, 20

(4) 10, 20, 30, 40

2. A salesman gets commission of 8% upto a sale of Rs. 8,000 and 12½% above Rs. 8,000. If the salesman makes a sale of Rs. 10,000, then what is his commission ?

(1) Rs. 1,250

(2) Rs. 800

(3) Rs. 980

(4) Rs. 890

3.  $(0.071)^2 = \dots\dots\dots$

(1) 0.5041

(2) 0.005041

(3) 0.05041

(4) 0.0005041

4. Which information out of the following determines a plane ?

(1) Three collinear points

(2) Two points

(3) Three non-collinear points

(4) One point





11. What is the multiplicative inverse of  $\left(\frac{-3}{7}\right)^{-9}$  ?

(1)  $\left(\frac{3}{7}\right)^9$

(2)  $\frac{1}{\left(\frac{-3}{7}\right)^9}$

(3)  $\left(\frac{-3}{7}\right)^9$

(4)  $\frac{1}{\left(\frac{3}{7}\right)^{-9}}$

12. Vinu left to Shyam's house on bicycle with a speed of 10 km/hr. As Shyam was not at home, Vinu returned his home immediately with the same speed. If he took 36 minutes to go and come back, then how far is Shyam's house from Vinu's house ?

(1) 3 km

(2) 6 km

(3) 10 km

(4) 12 km

13. Which of the following is the simplified form of  $\frac{1 + x + \frac{x^2}{4}}{1 - \frac{x^2}{4}}$  ?

(1)  $\frac{4 + x^2}{4 - x^2}$

(2)  $\frac{2 + x}{2 - x}$

(3)  $\frac{4 + x^2}{2 - x^2}$

(4)  $\frac{2 - x}{2 + x}$

14.  $\frac{|-25|}{-|-125|} = \dots\dots\dots$

(1)  $\frac{-1}{5}$

(2) 5

(3)  $\frac{1}{5}$

(4) -5

15. If  $3^4 \times 2^x = 36^2$ ; then  $x = \dots\dots\dots$  ?

(1) 4

(2) 6

(3) 8

(4) 3

16. Meera takes half the time that of Radha to complete one work. If both work together, they need 6 days to complete the same work, then find the number of days required for Radha to complete that work.

(1) 6 days

(2) 12 days

(3) 9 days

(4) 18 days

17. What is radius of a circle, which touches all the sides of a square internally, when the perimeter of the square is 60 cm ?

(1) 30 cm

(2) 15 cm

(3) 7.5 cm

(4) 225 cm

**Space for Rough Work**

18.  $\sqrt{\frac{0.005625}{0.25}} = ?$

(1) 0.075

(2) 1.5

(3) 0.75

(4) 0.15

19. Given below are the lengths and breadths of some rectangles in cm. Hence find which rectangle has its diagonal bigger than the length by 1 cm ?

(1) 15, 9

(2) 16, 15

(3) 12, 13

(4) 24, 7

20. If the rational numbers  $\frac{-15}{14}$ ,  $\frac{-9}{8}$ ,  $\frac{13}{12}$ ,  $\frac{-19}{18}$  are arranged in descending order, which rational number will occur in the second-last position ?

(1)  $\frac{-9}{8}$

(2)  $\frac{-15}{14}$

(3)  $\frac{-19}{18}$

(4)  $\frac{13}{12}$

21. What is the area of a rectangle with length  $(4m + 3)$  cm, breadth  $(3m + 1)$  cm and the perimeter 50 cm ?

(1) 100 sq. cm

(2) 2400 sq. cm

(3) 150 sq. cm

(4) 200 sq. cm

22. A water tank with length 8 m, breadth 6 m and height 5 m contains water up to a height of 3.5 m. How much of more water is required to fill the tank completely ?

(1) 240 cu.m

(2) 168 cu. m

(3) 120 cu.m

(4) 72 cu.m

23. 
$$\frac{0.9 \times 0.09 \times 0.009}{0.0009 \times 9} = ?$$

(1) 0.9

(2) 0.09

(3) 0.009

(4) 9

24. How many two digit prime numbers are there between 1 to 100 such that they have the digit '7' in their units place.

(1) 9

(2) 8

(3) 5

(4) 6

25. Which of the following statements is *incorrect* ?

(1) Non-intersecting planes are parallel to each other

(2) When more than two lines intersect at same point, then they are called concurrent lines

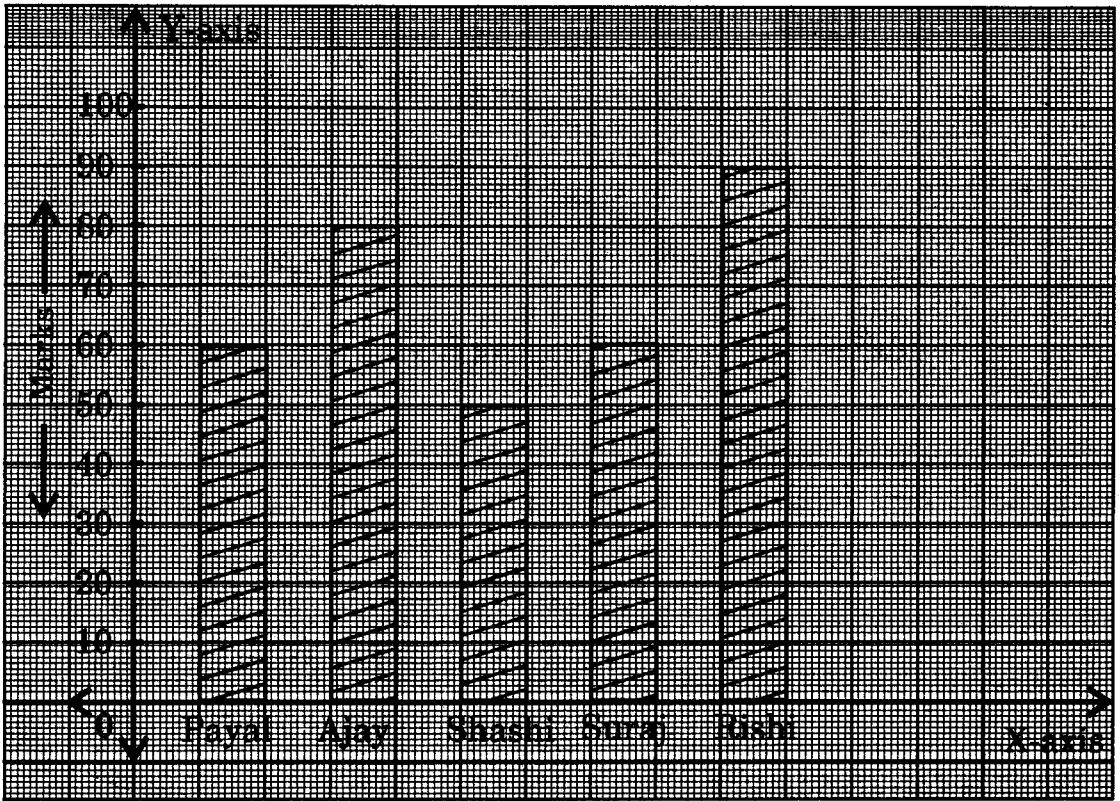
(3) If two lines do not intersect each other, then they are parallel

(4) Three non-collinear points determine a plane

**Space for Rough Work**



**26. and 27.** → The bar graph given below represents the marks of some students in mathematics. Observe the graph and answer the questions given below :



26. Which two students do not have the difference of 10 marks ?
- (1) Payal and Shashi
  - (2) Shashi and Suraj
  - (3) Ajay and Rishi
  - (4) Payal and Suraj

**Space for Rough Work**

27. Payal secured how many times the mark of Rishi ?

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

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

(3)  $\frac{1}{30}$

(4) 30

28.  $(x + 2)(x + 3)(x - 5) = ?$

(1)  $x^3 - 19x - 30$

(2)  $x^3 - 10x^2 - 19x + 30$

(3)  $x^3 - 10x^2 - 19x - 30$

(4)  $x^2 + 19x - 30$

29.  $\frac{17}{8} \times \frac{-8}{34} \div (-0.25) = ?$

(1) -2

(2)  $-\frac{1}{2}$

(3)  $\frac{1}{2}$

(4) 2

30. If 8 metres 24 cm long iron pipe is to be cut down into 80 mm long small pieces then, how many such equal pieces would be formed ?

(1) 103

(2) 1030

(3) 1003

(4) 13

**Space for Rough Work**

31. A school has 1,000 students in the year 2005. If every year the number of students increases by 20%, then what is the strength of the school in the year 2007 ?

(1) 1,440

(2) 1,400

(3) 1,200

(4) 1,240

32.  $(m + n)^2 - (m - n)^2 = \dots\dots\dots$

(1)  $-4 mn$

(2)  $4 mn$

(3)  $2 m^2 - 2n^2$

(4)  $2 m - 2n$

33.  $5(8 - 3 \times 5) = \dots\dots\dots$

(1) 125

(2) -125

(3) -35

(4) 35

34. In  $\Delta ILK$ , side LK is 3 cm more than side IL, side IK is 5 cm more than side IL. If perimeter of  $\Delta ILK$  is 32 cm, then find the length of the greatest side.

(1) 8 cm

(2) 11 cm

(3) 13 cm

(4) 15 cm

**Space for Rough Work**

35. A shopkeeper sold an article of Rs. 375 for Rs. 330. Find the percent discount offered by the shopkeeper.

(1) 12% (2) 15%

(3) 10% (4) 18%

36. If L.C.M. of three digit two numbers is 221 times the H.C.F., then find the difference between the numbers if their H.C.F. is 15.

(1) 65 (2) 60

(3) 70 (4) 450

37. Ages of Sonal and Komal are in the ratio 6 : 5. If 6 years before, age of Sonal was 30 years, then find age of Komal 5 years hence.

(1) 35 years (2) 25 years

(3) 30 years (4) 20 years

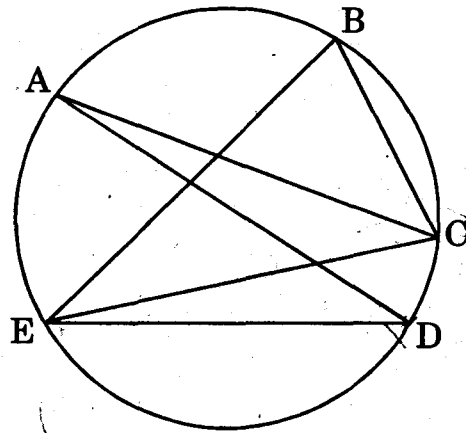
38. What is  $7\frac{3}{4}$  percent ?

(1) 0.775 (2) 7.75

(3) 0.00775 (4) 0.0775

**Space for Rough Work**

39. In the following figure, which pair of angles is congruent ?



- (1)  $\angle CAD$  and  $\angle BED$                       (2)  $\angle ADE$  and  $\angle ACB$   
 (3)  $\angle DEC$  and  $\angle CEB$                       (4)  $\angle EDA$  and  $\angle ACE$

40. If an article is sold for Rs. 29, the profit occurred is half the loss occurred when the same article is sold for Rs. 20, then find the original price of the article.

- (1) Rs. 26    (2) Rs. 9  
 (3) Rs. 23    (4) Rs. 24.5

41.  $\frac{2^4 - 2^3 \times 3 + 3^2}{2^2 - 3}$ , this expression is similar to which of the following algebraic expression ?

- (1)  $\frac{a^2 - b^2}{a - b}$     (2)  $\frac{(a - b)^2}{a - b}$   
 (3)  $\frac{(a + b)^2}{a - b}$     (4)  $\frac{a^2 + b^2}{a - b}$

**Space for Rough Work**

42. A solid rectangular parallelepiped of dimensions 8 cm, 6 cm and 5 cm is melted to form smaller rectangular parallelepipeds of dimensions 8 mm, 5 mm and 4 mm. How many such smaller rectangular parallelepipeds will be formed?

- (1) 240 (2) 1500  
(3) 150 (4) 2400

43. Observe the table, identify the type of variation and hence find the number which should be written in the blank space.

$x$	12	30	9
$y$	4	10	.....

- (1) 3 (2)  $\frac{1}{3}$   
(3) 27 (4)  $\frac{1}{27}$

44. How many of the following statements are *true* ?

- (A) Square is a rectangle  
(B) Rectangle is a parallelogram  
(C) Rhombus is a parallelogram  
(D) Square is a parallelogram  
(E) Square is a trapezium

- (1) 5 (2) 3  
(3) 4 (4) 2

Space for Rough Work

45. How many times is the place value of 2 to that of place value of 8 in the number 343.0258.

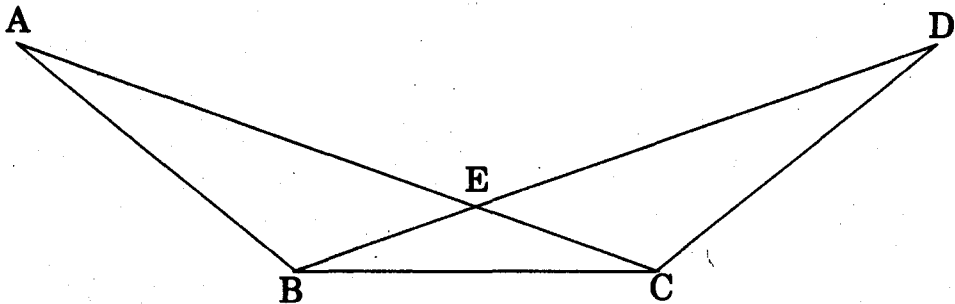
(1) 200

(2)  $\frac{1}{200}$

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

(4) 25

46. If  $\triangle ABC \cong \triangle DCB$ , which of the following statements is *incorrect* ?



(a)  $\text{seg } BD \cong \text{seg } CA$

(b)  $\text{seg } AB \cong \text{seg } CD$

(c)  $\angle BDC \cong \angle BAC$

(d)  $\angle DCB \cong \angle BAC$

(1)  $a$

(2)  $b$

(3)  $c$

(4)  $d$

47. A shopkeeper sold two articles each for Rs. 1,560, then he secured 20% profit on first and 30% profit on other, then what was the total cost price of both the articles ?

(1) Rs. 3,120

(2) Rs. 2,340

(3) Rs. 2,500

(4) Rs. 1,950

Space for Rough Work

48. Difference between 5 times and 9 times a number is 144. Find  $\frac{2}{3}$ rd of the same number.
- (1) 28 (2) 30  
(3) 24 (4) 36
49. If supplement of an angle is  $\frac{5}{2}$  times the complement of same angle, then find the supplementary angle.
- (1)  $150^\circ$  (2)  $60^\circ$   
(3)  $30^\circ$  (4)  $120^\circ$
50. An amount doubles in 5 years by the simple interest. How many years are required for the same amount with same rate of interest to get converted to five times the original amount ?
- (1)  $12\frac{1}{2}$  years (2) 20 years  
(3) 25 years (4) 10 years

Space for Rough Work