

CG

BW 2013

1097383

PAPER - I (QUANTITATIVE ABILITIES)

प्रश्न पत्र - I (परिमाणात्मक अभिरुचि)

**Test Form No.
टेस्ट फॉर्म सं.
334 NM 5**

Time Allowed : 2 Hours (For V.H. Candidates : 2 hrs. 40 min.)

Maximum Marks : 200

निर्धारित समय : 2 घंटे (दृष्टिबाधित उम्मीदवारों के लिए : 2 घंटे 40 मिनट)

अधिकतम अंक : 200

Read the following instructions carefully before you begin to answer the questions. This booklet contains questions in English as well as in Hindi.

प्रश्नों के उत्तर देने से पहले नीचे लिखे अनुदेशों को ध्यान से पढ़ लें। इस पुस्तिका में प्रश्न अंग्रेजी तथा हिन्दी दोनों में दिये गये हैं।

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains 100 questions.
2. In questions set bilingually in English and Hindi, in case of discrepancy, the English version will prevail.
3. All questions are compulsory and carry equal marks.
4. *The paper carries negative marking. 0-50 mark will be deducted for each wrong answer.*
5. Before you start to answer the questions you must check up this Booklet and ensure that it contains all the pages (1-20) and see that no page is missing or repeated. If you find any defect in this Booklet, you must get it replaced immediately.
6. You will be supplied the Answer-Sheet separately by the Invigilator. You must complete and code the details of Name, Roll Number, Ticket Number and Test Form Number on Side-I of the Answer-Sheet carefully. You must also put your signature and Left-Hand thumb impression on the Answer-Sheet at the prescribed place before you actually start answering the questions. These instructions must be fully complied with, failing which, your Answer-Sheet will not be evaluated and you will be awarded 'ZERO' mark. (V.H. candidates will have to ensure that these details are filled in by the scribe. However all V.H. candidates must put their left-hand thumb impression at the space provided in the Answer-Sheet. Those V.H. candidates who can sign should also put their signatures in addition to thumb impression.)
7. Answers must be shown by completely blackening the corresponding ovals on Side-II of the Answer-Sheet against the relevant question number by Black/Blue Ball-point Pen only. Answers which are not shown by Black/Blue Ball-point Pen will not be awarded any mark.
8. A machine will read the coded information in the OMR Answer-Sheet. In case the information is incomplete or different from the information given in the application form, such candidate will be awarded 'ZERO' mark.
9. The Answer-Sheet must be handed over to the Invigilator before you leave the Examination Hall.
10. Failure to comply with any of the above instructions will render a candidate liable to such action/penalty as may be deemed fit.
11. The manner in which the different questions are to be answered has been explained at the back of this Booklet (Page No. 20), which you should read carefully before actually answering the questions.
12. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any question.
13. In lieu of Question Nos. 97 to 100 relating to figural portions, alternate questions have been provided to be attempted by V.H. candidates only.
14. No rough work is to be done on the Answer-Sheet. Space for rough work has been provided below the questions.
15. "Mobile phones and wireless communication devices are completely banned in the examination halls/rooms. Candidates are advised not to keep mobile phones/any other wireless communication devices with them even switching it off, in their own interest. Failing to comply with this provision will be considered as using unfair means in the examination and action will be taken against them including cancellation of their candidature."

उम्मीदवारों के लिए अनुदेश

1. इस पुस्तिका में कुल 100 प्रश्न हैं।
2. अंग्रेजी और हिन्दी भाषा में तैयार किए गए द्विभाषी प्रश्नों में कोई विसंगति होने की स्थिति में अंग्रेजी विवरण मान्य होगा।
3. सभी प्रश्न अनिवार्य हैं तथा सबके बराबर अंक हैं।
4. प्रश्न पत्र में नकारात्मक अंकन होगा। हर गलत उत्तर के लिए 0-50 अंक काटा जाएगा।
5. प्रश्नों के उत्तर देने से पहले आप इस पुस्तिका की जाँच करके देख लें कि इसमें पूरे पृष्ठ (1-20) हैं तथा कोई पृष्ठ कम या दुबारा तो नहीं आ गया है। यदि आप इस पुस्तिका में कोई त्रुटि पाएँ, तो तत्काल इसके बदले दूसरी पुस्तिका ले लें।
6. निरीक्षक द्वारा आपको उत्तर-पत्रिका अलग से दी जाएगी। उत्तर-पत्रिका के Side-I में नियमावली के अनुसार ध्यानपूर्वक अपना नाम, रोल नम्बर, टिकट नम्बर और टेस्ट फॉर्म संख्या अवश्य लिखें। प्रश्नों के उत्तर वास्तव में शुरू करने से पहले उत्तर-पत्रिका पर निर्धारित स्थान में आप अपने हस्ताक्षर एवं बाएँ हाथ के अंगूठे का निशान भी अवश्य लगाएँ। उपर्युक्त अनुदेशों का पूरी तरह अनुपालन किया जाए, अन्यथा आपकी उत्तर-पत्रिका को जाँचा नहीं जाएगा और 'शून्य' अंक दिया जाएगा। (दृष्टिबाधित उम्मीदवार सुनिश्चित करें कि यह विवरण लिपिक द्वारा भरा जाए। परन्तु सभी दृष्टिबाधित उम्मीदवार उत्तर-पत्रिका में निर्धारित स्थान पर अपने बाएँ हाथ के अंगूठे का निशान अवश्य लगाएँ। जो दृष्टिबाधित उम्मीदवार हस्ताक्षर कर सकते हैं, ये अंगूठे के निशान के अलावा अपने हस्ताक्षर भी कर दें।)
7. उत्तर-पत्रिका में सभी उत्तर Side-II में प्रश्न संख्या के सामने दिये गये सम्बन्धित अण्डाकार खानों को केवल काले/नीले बॉल-पॉइंट पेन से पूरी तरह काला करके दिखाएँ। जो अण्डाकार खाने काले/नीले बॉल-पॉइंट पेन से नहीं भरे जाएँगे, उनके लिए कोई अंक नहीं दिया जाएगा।
8. ओ.एम.आर. उत्तर-पत्रिका में भरी गई कूट सूचना को एक मशीन पढ़ेगी। यदि सूचना अपूर्ण है अथवा आवेदन प्रपत्र में दी गई सूचना से भिन्न है, तो ऐसे अभ्यर्थी को 'शून्य' अंक दिया जाएगा।
9. परीक्षा हॉल छोड़ने से पहले परीक्षार्थी को उत्तर-पत्रिका निरीक्षक के हवाले कर देनी चाहिए।
10. ऊपर के अनुदेशों में से किसी एक का भी पालन न करने पर उम्मीदवार पर विवेकानुसार कार्यवाही की जा सकती है या दण्ड दिया जा सकता है।
11. विभिन्न प्रश्नों के उत्तर देने की विधि इस पुस्तिका के पीछे (पृष्ठ संख्या 20) में छपे हुए निर्देशों में दे दी गई है, इसे आप प्रश्नों के उत्तर देने से पहले ध्यानपूर्वक पढ़ लें।
12. प्रश्नों के उत्तर जितनी जल्दी हो सके तथा ध्यानपूर्वक दें। कुछ प्रश्न आसान तथा कुछ कठिन हैं। किसी एक प्रश्न पर बहुत अधिक समय न लगाएँ।
13. आकृति से सम्बन्धित प्रश्न संख्या 97 से 100 के बदले में केवल दृष्टिबाधित उम्मीदवारों द्वारा हल किए जाने के लिए वैकल्पिक प्रश्न दिए गए हैं।
14. कोई रफ कार्य उत्तर-पत्रिका पर नहीं करना है। रफ कार्य के लिए स्थान प्रश्नों के नीचे दिया गया है।
15. "परीक्षा हॉलों/कमरों में मोबाइल फोन तथा बेतार संचार साधन पूरी तरह निषिद्ध हैं। उम्मीदवारों को उनके अपने हित में सलाह दी जाती है कि मोबाइल फोन/किसी अन्य बेतार संचार साधन को स्विच ऑफ करके भी अपने पास न रखें। इस प्रावधान का अनुपालन न करने को परीक्षा में अनुचित उपायों का प्रयोग माना जाएगा और उनके विरुद्ध कार्रवाई की जाएगी, उनकी अभ्यर्चिता रद्द कर देने सहित।"

1. Which one of the numbers is divisible by 25 ?
 (A) 303310 (B) 373355
 (C) 303375 (D) 22040
2. Find the sum of

$$\left(1 - \frac{1}{n+1}\right) + \left(1 - \frac{2}{n+1}\right) + \left(1 - \frac{3}{n+1}\right) + \dots$$

$$\left(1 - \frac{n}{n+1}\right)$$

 (A) n (B) $\frac{1}{2}n$
 (C) (n + 1) (D) $\frac{1}{2}(n + 1)$
3. In a class there are 'z' students. Out of them 'x' are boys. What part of the class is composed of girls ?
 (A) $\frac{x}{z}$ (B) $\frac{z}{x}$
 (C) $1 - \frac{x}{z}$ (D) $\frac{x}{z} - 1$
4. If the students of 9th class are arranged in rows of 6, 8, 12 or 16, no student is left behind. Then the possible number of students in the class is
 (A) 60 (B) 72
 (C) 80 (D) 96
5. The unit digit in $3 \times 38 \times 537 \times 1256$ is
 (A) 4 (B) 2
 (C) 6 (D) 8
6. If a clock strikes appropriate number of times at each hour, how many times will it strike in a day ?
 (A) 300 (B) 156
 (C) 68 (D) 78
7. When 335 is added to 5A7, the result is 8B2. 8B2 is divisible by 3. What is the largest possible value of A ?
 (A) 8 (B) 2
 (C) 1 (D) 4
8. The greatest 4-digit number exactly divisible by 10, 15, 20 is
 (A) 9990 (B) 9960
 (C) 9980 (D) 9995

9. If x men can do a piece of work in x days, then the number of days in which y men can do the same work is
 (A) xy days (B) $\frac{y^2}{x}$ days
 (C) $\frac{x^2}{y}$ days (D) x^2y days
10. Three persons undertake to complete a piece of work for ₹ 1,200. The first person can complete the work in 8 days, second person in 12 days and third person in 16 days. They complete the work with the help of a fourth person in 3 days. What does the fourth person get ?
 (A) ₹ 180 (B) ₹ 200
 (C) ₹ 225 (D) ₹ 250
11. Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$ as efficiently as he actually did, the work would have been completed in 3 days. To complete the job alone, A would require
 (A) $5\frac{1}{5}$ days (B) $6\frac{1}{4}$ days
 (C) $7\frac{1}{2}$ days (D) $8\frac{3}{4}$ days
12. A can do a piece of work in 20 days and B in 30 days. They work together for 7 days and then both leave the work. Then C alone finishes the remaining work in 10 days. In how many days will C finish the full work ?
 (A) 25 days (B) 30 days
 (C) 24 days (D) 20 days
13. Find the value of $\sqrt{30 + \sqrt{30 + \sqrt{30 + \dots}}}$
 (A) 5 (B) $3\sqrt{10}$
 (C) 6 (D) 7
14. The odd term in the sequence 0, 7, 26, 63, 124, 217 is
 (A) 217 (B) 7
 (C) 26 (D) 63

15. The marked price of a piano was ₹ 15,000. At the time of sale, there were successive discounts of 20%, 10% and 10% respectively on it. The sale price was
 (A) ₹ 9,720 (B) ₹ 9,750
 (C) ₹ 9,760 (D) ₹ 9,780
16. Sunil completes a work in 4 days, whereas Dinesh completes the work in 6 days. Ramesh works $1\frac{1}{2}$ times as fast as Sunil. The three together can complete the work in
 (A) $1\frac{5}{12}$ days (B) $1\frac{5}{7}$ days
 (C) $1\frac{3}{8}$ days (D) $1\frac{5}{19}$ days
17. A farmer can plough a field working 6 hours per day in 18 days. The worker has to work how many hours per day to finish the same work in 12 days?
 (A) 7 (B) 9
 (C) 11 (D) 13
18. Two successive discounts of a% and b% on the marked price of an article are equivalent to the single discount of
 (A) $(a + b)\%$ (B) $\left(a + b - \frac{ab}{100}\right)\%$
 (C) $\frac{a + b}{100}\%$ (D) $\frac{a + b}{2}\%$
19. A tradesman marks his goods 30% more than the cost price. If he allows a discount of $6\frac{1}{4}\%$, then his gain percent is
 (A) $23\frac{3}{4}\%$ (B) 22%
 (C) $21\frac{7}{8}\%$ (D) 30%
20. A shopkeeper purchased a chair marked at ₹ 600 at two successive discounts of 15% and 20% respectively. He spent ₹ 28 on transportation and sold the chair for ₹ 545. His gain percent was
 (A) 25% (B) 30%
 (C) 35% (D) 20%
21. Three numbers are in the ratio 2 : 3 : 4. If the sum of their squares is 1856, then the numbers are
 (A) 8, 12 and 16 (B) 16, 24 and 32
 (C) 12, 18 and 24 (D) None of the above
22. If x runs are scored by A, y runs by B and z runs by C, then $x : y = y : z = 3 : 2$. If total number of runs scored by A, B and C is 342, the runs scored by each would be respectively
 (A) 144, 96, 64 (B) 162, 108, 72
 (C) 180, 120, 80 (D) 189, 126, 84
23. ₹ 900 is divided among A, B, C; the division is such that $\frac{1}{2}$ of A's money = $\frac{1}{3}$ rd of B's money = $\frac{1}{4}$ th of C's money. Find the amount (in ₹) received by A, B, C.
 (A) 300, 400, 200 (B) 350, 450, 100
 (C) 200, 300, 400 (D) 400, 150, 350
24. If ₹ 126.50 is divided among A, B and C in the ratio of 2 : 5 : 4, the share of B exceeds that of A by
 (A) ₹ 36.50 (B) ₹ 35.50
 (C) ₹ 34.50 (D) ₹ 33.50
25. The average of first three numbers is double of the fourth number. If the average of all the four numbers is 12, find the 4th number.
 (A) 16 (B) $\frac{48}{7}$
 (C) 20 (D) $\frac{18}{7}$
26. The third proportional of 12 and 18 is
 (A) 3 (B) 6
 (C) 27 (D) 144
27. Ram got twice as many marks in English as in Science. His total marks in English, Science and Maths are 180. If the ratio of his marks in English and Maths is 2 : 3, what are his marks in Science?
 (A) 30 (B) 60
 (C) 72 (D) 90

28. Sachin Tendulkar has a certain average for 11 innings. In the 12th innings he scores 120 runs and thereby increases his average by 5 runs. His new average is
 (A) 60 (B) 62
 (C) 65 (D) 66
29. The average of 11 results is 50. If the average of the first six results is 49 and that of the last six is 52, the sixth result is
 (A) 48 (B) 50
 (C) 52 (D) 56
30. By selling 25 metres of cloth a trader gains the selling price of 5 metres of cloth. The gain of the trader in % is
 (A) 25 (B) 20
 (C) 28 (D) 29
31. A sells a suitcase to B at 10% profit. B sells it to C at 30% profit. If C pays ₹ 2,860 for it, then the price at which A bought it is
 (A) ₹ 1,000 (B) ₹ 1,600
 (C) ₹ 2,000 (D) ₹ 2,500
32. If the average of 6 consecutive even numbers is 25, the difference between the largest and the smallest number is
 (A) 8 (B) 10
 (C) 12 (D) 14
33. A train goes from Ballygunge to Sealdah at an average speed of 20 km/hour and comes back at an average speed of 30 km/hour. The average speed of the train for the whole journey is
 (A) 27 km/hr (B) 26 km/hr
 (C) 25 km/hr (D) 24 km/hr
34. The arithmetic mean of 100 observations is 24, 6 is added to each of the observations and then each of them is multiplied by 2.5. Find the new arithmetic mean.
 (A) 30 (B) 75
 (C) 35 (D) 60
35. Sourav purchased 30 kg of rice at the rate of ₹ 10 per kg and 35 kg at the rate of ₹ 11 per kg. He mixed the two. At what price per kg (in ₹) should he sell the mixture to make a 30% profit in the transaction?
 (A) 12.5 (B) 13
 (C) 13.7 (D) 14.25
36. A number increased by $22\frac{1}{2}\%$ gives 98. The number is
 (A) 45 (B) 18
 (C) 80 (D) 81
37. Two items A and B are sold at a profit of 10% and 15% respectively. If the amount of profit received is the same, then the cost price of A and B may be
 (A) ₹ 1,000, ₹ 1,500
 (B) ₹ 5,000, ₹ 2,000
 (C) ₹ 3,000, ₹ 2,000
 (D) ₹ 3,000, ₹ 5,000
38. In an examination A got 25% marks more than B, B got 10% less than C and C got 25% more than D. If D got 320 marks out of 500, the marks obtained by A were
 (A) 405 (B) 450
 (C) 360 (D) 400
39. Gita buys a plot of land for ₹ 96,000. She sells $\frac{2}{5}$ of it at a loss of 6%. She wants to make a profit of 10% on the whole transaction by selling the remaining land. The gain % on the remaining land is
 (A) 20 (B) $20\frac{2}{3}$
 (C) 14 (D) 7
40. An article is sold at a gain of 15%. Had it been sold for ₹ 27 more, the profit would have been 20%. The cost price of the article is
 (A) ₹ 500 (B) ₹ 700
 (C) ₹ 540 (D) ₹ 545
41. On selling 17 balls at ₹ 720, there is a loss equal to the cost price of 5 balls. The cost price (in ₹) of a ball is
 (A) 45 (B) 50
 (C) 55 (D) 60

42. The distance between places A and B is 999 km. An express train leaves place A at 6 am and runs at a speed of 55.5 km/hr. The train stops on the way for 1 hour 20 minutes. It reaches B at
 (A) 1:20 am (B) 12 pm
 (C) 6 pm (D) 11 pm
43. If a boy walks from his house to school at the rate of 4 km per hour, he reaches the school 10 minutes earlier than the scheduled time. However, if he walks at the rate of 3 km per hour, he reaches 10 minutes late. Find the distance of his school from his house.
 (A) 5 km (B) 4 km
 (C) 6 km (D) 4.5 km
44. Two trains are running 40 km/hr and 20 km/hr respectively in the same direction. The fast train completely passes a man sitting in the slow train in 5 seconds. The length of the fast train is
 (A) $23\frac{2}{9}$ m (B) 27 m
 (C) $27\frac{7}{9}$ m (D) 23 m
45. The compound interest on ₹ 5,000 for 3 years at 10% p.a. will amount to
 (A) ₹ 1,654 (B) ₹ 1,655
 (C) ₹ 1,600 (D) ₹ 1,565
46. Three sets of 40, 50 and 60 students appeared for an examination and the pass percentage was 100, 90 and 80 respectively. The pass percentage of the whole set is
 (A) $88\frac{2}{3}$ (B) $84\frac{2}{3}$
 (C) $88\frac{1}{3}$ (D) $84\frac{1}{3}$
47. A certain distance is covered by a cyclist at a certain speed. If a jogger covers half the distance in double the time, the ratio of the speed of the jogger to that of the cyclist is
 (A) 1 : 4 (B) 4 : 1
 (C) 1 : 2 (D) 2 : 1
48. If a sum of money compounded annually becomes 1.44 times of itself in 2 years, then the rate of interest per annum is
 (A) 25% (B) 22%
 (C) 21% (D) 20%
49. A lawn is in the form of a rectangle having its breadth and length in the ratio 3 : 4. The area of the lawn is $\frac{1}{12}$ hectare. The breadth of the lawn is
 (A) 25 metres (B) 50 metres
 (C) 75 metres (D) 100 metres
50. A right circular cone is 3.6 cm high and radius of its base is 1.6 cm. It is melted and recast into a right circular cone with radius of its base as 1.2 cm. Then the height of the cone (in cm) is
 (A) 3.6 (B) 4.8
 (C) 6.4 (D) 7.2
51. The area of a rectangle is thrice that of a square. The length of the rectangle is 20 cm and the breadth of the rectangle is $\frac{3}{2}$ times that of the side of the square. The side of the square, in cm, is
 (A) 10 (B) 20
 (C) 30 (D) 60
52. What sum will give ₹ 244 as the difference between simple interest and compound interest at 10% in $1\frac{1}{2}$ years compounded half yearly?
 (A) ₹ 40,000 (B) ₹ 36,000
 (C) ₹ 32,000 (D) ₹ 28,000
53. A sum of ₹ 3,200 invested at 10% p.a. compounded quarterly amounts to ₹ 3,362. Compute the time period.
 (A) $\frac{1}{2}$ year (B) 1 year
 (C) 2 years (D) $\frac{3}{4}$ year

54. The diagonals of a rhombus are 12 cm and 16 cm respectively. The length of one side is
 (A) 8 cm (B) 6 cm
 (C) 10 cm (D) 12 cm
55. A rectangular block of metal has dimensions 21 cm, 77 cm and 24 cm. The block has been melted into a sphere. The radius of the sphere is (Take π as $\frac{22}{7}$)
 (A) 21 cm (B) 7 cm
 (C) 14 cm (D) 28 cm
56. If h , c , v are respectively the height, curved surface area and volume of a right circular cone, then the value of $3\pi v h^3 - c^2 h^2 + 9v^2$ is
 (A) 2 (B) -1
 (C) 1 (D) 0
57. The volume of a conical tent is 1232 cu. m and the area of its base is 154 sq. m. Find the length of the canvas required to build the tent, if the canvas is 2 m in width. (Take $\pi = \frac{22}{7}$)
 (A) 270 m (B) 272 m
 (C) 276 m (D) 275 m
58. Assume that a drop of water is spherical and its diameter is one-tenth of a cm. A conical glass has a height equal to the diameter of its rim. If 32,000 drops of water fill the glass completely, then the height of the glass, in cm, is
 (A) 1 (B) 2
 (C) 3 (D) 4
59. The total number of spherical bullets, each of diameter 5 decimeter, that can be made by utilizing the maximum of a rectangular block of lead with 11 metre length, 10 metre breadth and 5 metre width is (assume that $\pi > 3$)
 (A) equal to 8800 (B) less than 8800
 (C) equal to 8400 (D) greater than 9000
60. The area of an equilateral triangle is $9\sqrt{3}$ m². The length (in m) of the median is
 (A) $2\sqrt{3}$ (B) $3\sqrt{3}$
 (C) $3\sqrt{2}$ (D) $2\sqrt{2}$
61. If each edge of a cube is increased by 50%, the percentage increase in surface area is
 (A) 125% (B) 50%
 (C) 100% (D) 75%
62. How many tiles, each 4 decimeter square, will be required to cover the floor of a room 8 m long and 6 m broad?
 (A) 200 (B) 260
 (C) 280 (D) 300
63. If the surface areas of two spheres are in the ratio 4 : 9, then the ratio of their volumes will be
 (A) 4 : 9 (B) 16 : 27
 (C) 8 : 27 (D) 16 : 9
64. If $x = y = 333$ and $z = 334$, then the values of $x^3 + y^3 + z^3 - 3xyz$ is
 (A) 0 (B) 667
 (C) 1000 (D) 2334
65. If $\frac{x - a^2}{b + c} + \frac{x - b^2}{c + a} + \frac{x - c^2}{a + b} = 4(a + b + c)$, then x is equal to
 (A) $(a + b + c)^2$
 (B) $a^2 + b^2 + c^2$
 (C) $ab + bc + ca$
 (D) $a^2 + b^2 + c^2 - ab - bc - ca$
66. If a right circular cone of height 24 cm has a volume of 1232 cm³, then the area (in cm²) of curved surface is
 (A) 550 (B) 704
 (C) 924 (D) 1254
67. The diameter of a circular wheel is 7 m. How many revolutions will it make in travelling 22 km?
 (A) 100 (B) 400
 (C) 500 (D) 1000

81. Let C be a point on a straight line AB. Circles are drawn with diameters AC and AB. Let P be any point on the circumference of the circle with diameter AB. If AP meets the other circle at Q, then
- (A) $QC \parallel PB$
 (B) QC is never parallel to PB
 (C) $QC = \frac{1}{2} PB$
 (D) $QC \parallel PB$ and $QC = \frac{1}{2} PB$
82. In a right-angled triangle, the product of two sides is equal to half of the square of the third side, i.e., hypotenuse. One of the acute angles must be
- (A) 60° (B) 30°
 (C) 45° (D) 15°
83. If two concentric circles are of radii 5 cm and 3 cm, then the length of the chord of the larger circle which touches the smaller circle is
- (A) 6 cm (B) 7 cm
 (C) 10 cm (D) 8 cm
84. Inside a square ABCD, $\triangle BEC$ is an equilateral triangle. If CE and BD intersect at O, then $\angle BOC$ is equal to
- (A) 60° (B) 75°
 (C) 90° (D) 120°
85. A point D is taken from the side BC of a right-angled triangle ABC, where AB is hypotenuse. Then
- (A) $AB^2 + CD^2 = BC^2 + AD^2$
 (B) $CD^2 + BD^2 = 2 AD^2$
 (C) $AB^2 + AC^2 = 2 AD^2$
 (D) $AB^2 = AD^2 + BD^2$
86. D and E are two points on the sides AC and BC respectively of $\triangle ABC$ such that $DE = 18$ cm, $CE = 5$ cm and $\angle DEC = 90^\circ$. If $\tan \angle ABC = 3.6$, then $AC : CD =$
- (A) $BC : 2 CE$ (B) $2 CE : BC$
 (C) $2 BC : CE$ (D) $CE : 2 BC$
87. D is a point on the side BC of a triangle ABC such that $AD \perp BC$. E is a point on AD for which $AE : ED = 5 : 1$. If $\angle BAD = 30^\circ$ and $\tan (\angle ACB) = 6 \tan (\angle DBE)$, then $\angle ACB =$
- (A) 30° (B) 45°
 (C) 60° (D) 15°
88. If $\sin \theta + \cos \theta = \sqrt{2} \cos \theta$, then the value of $(\cos \theta - \sin \theta)$ is
- (A) $\sqrt{3} \cos \theta$ (B) $\sqrt{3} \sin \theta$
 (C) $\sqrt{2} \cos \theta$ (D) $\sqrt{2} \sin \theta$
89. An isosceles triangle ABC is right-angled at B. D is a point inside the triangle ABC. P and Q are the feet of the perpendiculars drawn from D on the sides AB and AC respectively of $\triangle ABC$. If $AP = a$ cm, $AQ = b$ cm and $\angle BAD = 15^\circ$, $\sin 75^\circ =$
- (A) $\frac{2b}{\sqrt{3} a}$ (B) $\frac{a}{2b}$
 (C) $\frac{\sqrt{3} a}{2b}$ (D) $\frac{2a}{\sqrt{3} b}$
90. Each interior angle of a regular octagon in radians is
- (A) $\frac{\pi}{4}$ (B) $\frac{3\pi}{4}$
 (C) $\frac{2\pi}{3}$ (D) $\frac{1}{3} \pi$

91. If $r \sin \theta = 1$, $r \cos \theta = \sqrt{3}$, then the value of $(\sqrt{3} \tan \theta + 1)$ is

- (A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$
 (C) 1 (D) 2

92. In a frequency distribution, ogives are graphical representation of

- (A) frequency
 (B) relative frequency
 (C) cumulative frequency
 (D) raw data

93. If $x \sin 45^\circ = y \operatorname{cosec} 30^\circ$, then $\frac{x^4}{y^4}$ is equal to

- (A) 4^3 (B) 6^3
 (C) 2^3 (D) 8^3

94. The angle of elevation of a tower from a distance 50 m from its foot is 30° . The height of the tower is

- (A) $50\sqrt{3}$ m (B) $\frac{50}{\sqrt{3}}$ m
 (C) $75\sqrt{3}$ m (D) $\frac{75}{\sqrt{3}}$ m

95. ABCD is a rectangle where the ratio of the lengths of AB and BC is 3 : 2. If P is the mid-point of AB, then the value of $\sin \angle CPB$ is

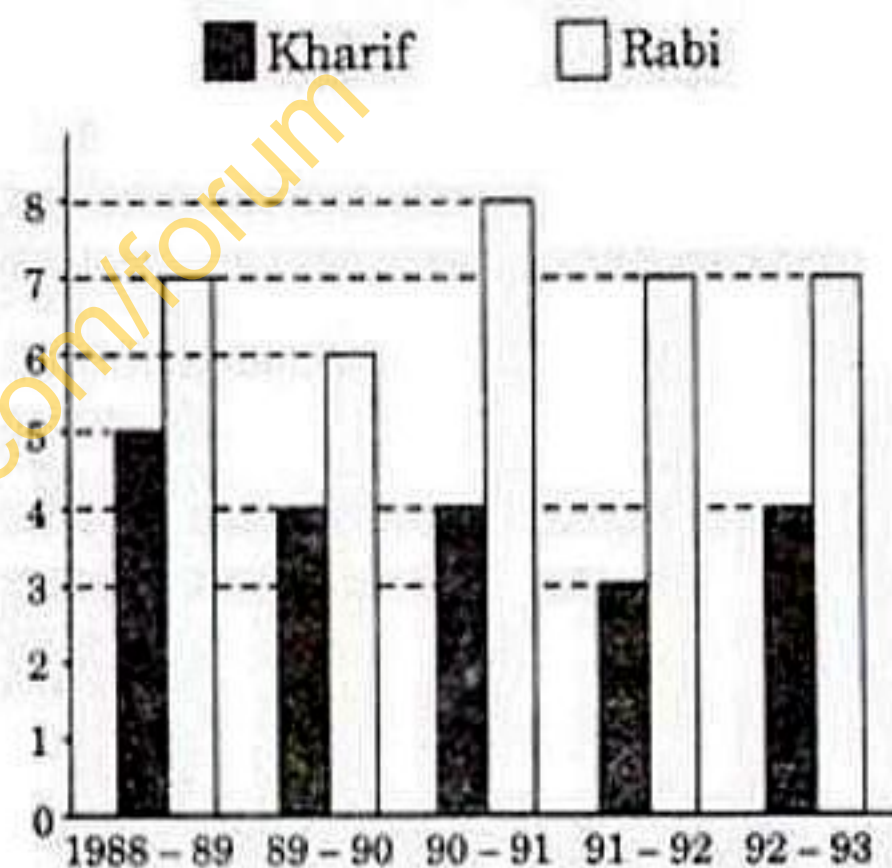
- (A) $\frac{3}{5}$ (B) $\frac{2}{5}$
 (C) $\frac{3}{4}$ (D) $\frac{4}{5}$

96. $\frac{\sin A}{1 + \cos A} + \frac{\sin A}{1 - \cos A}$ is ($0^\circ < A < 90^\circ$)

- (A) $2 \operatorname{cosec} A$ (B) $2 \sec A$
 (C) $2 \sin A$ (D) $2 \cos A$

97. The average Kharif production of the given years is

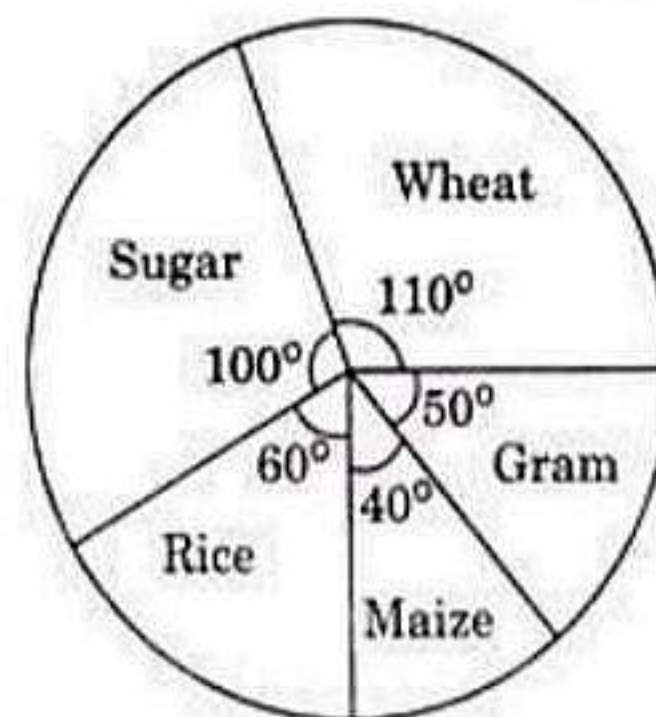
Production of pulses in Rabi and Kharif season (in million tonnes)



- (A) 4 million tonnes
 (B) 5 million tonnes
 (C) 4.5 million tonnes
 (D) 5.5 million tonnes

Directions : The annual agricultural production (in tonnes) of an Indian State is given in the pie chart. The total production is 9000 tonnes. Read the pie chart and answer question no. 98.

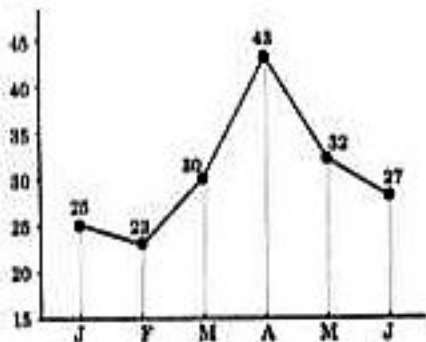
(in tonnes)



98. What is the annual production of wheat ?

- (A) 2750 tonnes (B) 3000 tonnes
 (C) 3540 tonnes (D) 3500 tonnes

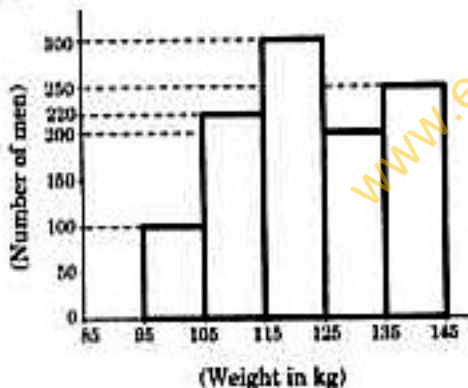
99. Given is a line graph showing the number of accidents in a city during the first 6 months of 1999.



The decrease % of accidents from May to June is

- (A) $15\frac{3}{8}\%$ (B) $15\frac{1}{8}\%$
 (C) $15\frac{5}{8}\%$ (D) $15\frac{7}{8}\%$

Directions : Study the histogram of weight distribution of different men and answer question no. 100.



100. Average number of men per interval who participated in this survey is

- (A) 200 (B) 180
 (C) 214 (D) 194

FOR VISUALLY HANDICAPPED CANDIDATES ONLY

97. The average of four consecutive even numbers is 27. Find the largest of these numbers.

- (A) 24
 (B) 26
 (C) 30
 (D) 28

98. A man goes from A to B with a speed of 6 km/hr and comes back from B to A at 3 km/hr. His average speed, in km/hr, is

- (A) $4\frac{1}{2}$ (B) 4
 (C) $3\frac{1}{2}$ (D) 3

99. If two typists can type two pages in five minutes, how many typists are needed to type 20 pages in 10 minutes?

- (A) 15
 (B) 12
 (C) 10
 (D) 9

100. If the salary of a worker is first decreased by 15% and then increased by 5%, then the percentage effect on his salary is

- (A) decrease of 10%
 (B) increase of 10%
 (C) decrease of 10.75%
 (D) increase of 10.75%