DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

T.B.C. : STS-K-TPT
Serial No.:

Test Booklet Series

**B**

TEST BOOKLET

**Subject : Test 14 – CSAT**
**Answer Key**

**Time Allowed : Two Hours** **Maximum Marks : 200**

## INSTRUCTIONS

1.IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GOT IT REPLACED BY A COMPLETE TEST BOOKLET.

**2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the Answer Sheet liable for rejection.**

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. DO NOT write anything else on the Test Booklet.

4. This Test Booklet contains 100/80 items (questions). Each item is printed in English. Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See directions in the Answer Sheet.

6. All items carry equal marks

7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.

8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator only the Answer Sheet. You are permitted to take away with you the Test Booklet.

9. Sheets for rough work are appended in the Test Booklet at the end.

10. **Penalty for wrong answers:**

THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS

(i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one third** if the marks assigned to that question will be deducted as penalty.

(ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to that question.

(iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.

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**Answer Key & Explanations**

Q1. Sum = 84, HCF = 12.

Numbers = 12m,12n with m+n=7, gcd(m,n)=1. Possible coprime pairs: (1,6), (2,5), (3,4). → 3 pairs. **Answer: B) 3**

Q2. Number ≡ 63 (mod 899).

Since 899 = 29 × 31, remainder mod 29 = 63 mod 29 = 5. **Answer: A) 5**

Q3. LCM(12,15,20) = 60. Required number = 60k + 7. Smallest is 67. **Answer: A) 67**

Q4. Product = 255. Check: 15 × 17 = 255. Smaller = 15. **Answer: B) 15**

Q5. Go by options **Answer: A) 336**

Q6. Sum of first n odd numbers = $n^2$. For n=50 → $50^2$=2500. **Answer: B) 2500**

Q7. Difference of squares: $(n+1)^2-n^2 = 2n+1$. Always odd. **Answer: A) Odd**

Q8. Divisibility rule: If sum of digits divisible by 9 → number divisible by 9. **Answer: C) 9**

Q9. LCM(35,45,55) = 3465. Required number = 3465k + 18. Smallest is 3465+18=3483. **Answer: C) 3483**

Q10. Let number = 10a+b, with a+b=9. Reversed = 10b+a. Difference = 9(b-a)=27 → b-a=3. Solve: a+b=9, b-a=3 → a=3, b=6 → number=36. **Answer: A) 36**

11. Total factors = (exponent + 1) multiplied: (4+1) × (3+1) = 5 × 4 = 20 **Answer: C) 20**

12. Let common value = k. Then A=k/3, B=k/4, C=k/6 → Ratio = (1/3):(1/4):(1/6) → LCM=12 → 4:3:2. **Answer: B) 4:3:2**

13. Total parts=9. Each=80. C=4×80=320. **Answer: B) ₹320**

14. Time ∝ 1/speed. Ratio of times=5:3. Slower=40 → Faster=40×3/5=24. **Answer: A) 24 min.**

15. Income=7x, Expenditure=5x, Savings=2x=600 → x=300 → Income=2100. **Answer: A) 2100.**

16. A:B=2:3 → A=2k, B=3k. B:C=4:5 → B=4m, C=5m. Equate B: 3k=4m → k=4, m=3. Then A=8, B=12, C=15. **Answer: A) 8:12:15**

17. Let milk=7x, water=5x. After adding 6 → ratio=7x:(5x+6)=7:8 → 56x=35x+42 → 21x=42 →x=2 Milk=14. **Answer: D) 14 L.**

18.143/13= 11 **Answer: B) 11**

19. A=4x, B=7x → Total=11x=1210 → x=110 → A=440. **Answer: A) 440.**

20. Let ages=7x,3x. After 6 → (7x+6):(3x+6)=8:4=2:1 → 7x+6=2(3x+6) → 7x+6=6x+12 → x=6 → Son=18.

**Answer: B) 18**

21. (LCM of 12,15,20 = 60 min → 1 hour later) **Answer : A) 9:00 AM**

22. LCM of 6,8,10,12 = 120.

**Answer A) 120)**

23. ax(a + 18) = 108 x 18

**Answer A) 36 and 54**

24. LCM =216 Add 15 then num= 231
**Answer: D) 231**

25. Find LCM of 48, 72, 108 = 432 seconds
= 432 ÷ 60 = 7 minutes 12 seconds
**Answer: B) 7 minutes 12 seconds**

26. → (LCM of 9,12,15=180 min → every 3 hours → in 12 hours = 4 times excluding first → 4 **Answer: D) 4**

27. (23x1449) / 69 = 483
**Answer: C) 483**

28. We need the maximum possible equal length, so find GCD (HCF). GCD = $2^2 \times 3$ = $4 \times 3$ = 12

**Answer: C) 12 m**

29. Since we need the maximum number that divides all numbers exactly, we find the GCD (HCF). GCD = $2^3 \times 3 = 8 \times 3$ = 24
**Answer: B) 24**

30. First find LCM of 18, 24, 30
LCM = $2^3 \times 3^2 \times 5 = 8 \times 9 \times 5$ = 360 minutes = 6 hours
In 12 hours, 12 ÷ 6 = 2 times,But counting after 6:00 AM .They meet at 12:00 PM,6.00 P.M Total = 2 times **Answer: B) 2**

31. 40 x 15 = 600 41 x 15.5 = 635.5
Difference = 35.5 **Answer: A) 35.5**

32. Total = 20x45 =900
900-85+58 = 900 – 27 = 873
873/20 = 43.65 **Answer: A) 43.65**

33. Let number of boys = $b$ Then girls = $50 - b$, Using weighted average: $75b + 70(50 - b) = 72 \times 50$ $75b + 3500 - 70b = 3600$
$5b = 100 \Rightarrow b = 20$ **Answer: A) 20**

34. 30 x 50 = 1500 31 x 52 = 1612
Difference = 112 **Answer B) 112 kg**

35. Average of 5 consecutive odd numbers = 53 , For consecutive numbers:
Average = middle number
So middle number = 53
Numbers: 49,51,53,55,57
Largest number = 57 **Answer: B) 57**

36. First student: 0.4M=P−20.

Second student: 0.5M=P+30. Subtract equations: 0.5M−0.4M=(P+30)−(P−20).
0.1M=50 ⟹ M=500. **Answer:C) 500**

37. Man spends 40% + 25% + 15% = 80% of income. Savings = 20% of income = ₹900.
Income = 900÷0.2=4500**.** **Answer: D) ₹4500**

38. Let initial price=100, consumption= 1
Expenditure = 100 After 20% increase → new price = 120 To keep expenditure same (100): New consumption = $\frac{100}{120} = \frac{5}{6}$
Reduction:$1 - \frac{5}{6} = \frac{1}{6} = 16.66\%$
**Answer: A) 16.66%**

39. Cost price (CP) of 12 bananas = ₹10
Selling price (SP):2 bananas = ₹3 ⇒ 12 bananas = $6 \times 3$ = ₹18
Profit=18 − 10 = 8 Gain %:$\frac{8}{10} \times 100 = 80\%$

**Answer: D) 80%**

40. Salary ↑ 20% then ↓ 20%. Net effect = (1.2×0.8)−1=0.96−1=−0.04. = 4% decrease.
**Answer: B) 4% decrease**

41. Marked price = 140 (if cost = 100). Discount = 20% → Selling price = 140 × 0.8 = 112. Profit = 112 – 100 = 12. Profit % = 12%. **Answer: A)12%**

42. Let CP = x. SP = 1.2x.

If CP reduced by 20% → 0.8x.

New SP = 1.2x – 48. Profit % = 25%.
So: (1.2x – 48 – 0.8x)/0.8x = 0.25. Simplify: (0.4x – 48)/0.8x = 0.25 → 0.4x – 48 = 0.2x → 0.2x = 48 → x = 240.

**Answer: A) ₹240**

43. First article: SP = 450, gain 20% → CP = 450/1.2 = 375. Second article: SP = 450, loss 20% → CP = 450/0.8 = 562.5. Total CP = 937.5, total SP = 900. Loss = 37.5. Loss % = 37.5/937.5 × 100 = 4%.

**Answer: B) 4% loss**

44.Total pens=120, CP=120×10 = 1200. 1/3rd=40 pens at 10% loss → SP= 40 × 9 = 360.

1/4th = 30 pens at cost → SP = 30 × 10 = 300. Remaining = 50 pens at 20% profit → SP = 50 × 12 = 600. Total SP = 1260. Profit = 1260 – 1200 = 60. Profit % = 60/1200 × 100 = 5%.
**Answer:A) 5%**

45. Loan = 5000, rate = 12%. Year 1: Amount = 5000 × 1.12 = 5600. Pay 1800 → balance = 3800. Year 2: 3800 × 1.12 = 4256. Pay 1800 → balance = 2456. Year 3: 2456 × 1.12 = 2740. Pay 1800 → balance = 940.
**Answer: C) ₹940**

46. SI = (P × R × T)/100 = (5000 × 10 × 2)/100 = 1000. CI = P(1+R/100)^T – P = 5000(1.1^2 – 1) = 5000(1.21 – 1) = 1050. Difference = 50.

**Answer: A) ₹50**

47. Money doubles in 5 years → growth factor = 2. To become 8 times → 2^3 = 8 → 3 cycles of 5 years = 15 years.

**Answer: B) 15 years**

48. Amount = 9261, Principal = 8000, Time = 1 year 2 months = 4/3 years. Formula: A = P(1+R/100)^(4/3). 9261/8000 = (1+R/100)^(4/3). Ratio = 1.157625. Cube root = 1.05. Square = 1.1025. So 1+R/100 ≈ 1.12 → R = 12%.

**Answer: B)12%**

49. P = 10000, R = 12%, T = 3. Amount = 10000(1.12)^3 = 10000 × 1.404928 = 14049.28. CI = 4049.28 ≈ 4050.

**Answer: A) ₹4050**

50. A = 1331, T = 3, R = 10%. Formula: A = P(1+R/100)^T = P(1.1)^3 = P × 1.331. So P = 1331/1.331 = 1000.

**Answer: B) ₹1000**

51. Interest for 5 years = 1440 − P
Interest for 2 years = 1260 – P Difference (3 years interest): 1440 − 1260 = 180
So, 3 years interest = 180 ⇒ 1 year interest = 60

**Interest for 2 years:** $2 \times 60 = 120$
$P = 1260 - 120 = 1140$

**Answer: C) ₹1140**

52. R= (Ix100) / PT = 19
**Answer: c) Rate = 19% per annum**

53. Time = (100 × 100)/(100 × 15) = $6\frac{2}{3}$
**Answer: C) $6\frac{2}{3}$**

54. Water rise = Volume of immersed object ÷ Base area of cylinder Volume of cone, V=(1/3)π(3)²(9)=27π
Base area of cylinder $= \pi R^2 \pi(6)^2 = 36\pi$
**h**=27π/36π=3/4=0.75 m

**Answer a) 0.75m**

55. Frustum of cone Height of cone = $13^2-5^2=12$. Volume of cone = 1/3πr²h=100π. Smaller cone (half height, radius 2.5) → Volume = 12.5π.
Frustum volume=10π−12.5π=87.5π≈275.
**Answer: A) 275 cm³**

56. Cube cut into 1000 smaller cubes Original cube SA = $6\times10^2=600$. Small cube side = 1 cm → SA = 6 $cm^2$. Total = $1000\times6=6000$. Ratio = 6000:600 = 10:1.

**Answer: B) 10:1**

57. Hemisphere water into glasses Hemisphere volume = $2/3\ \pi r^3=486\pi$. Glass volume = $\pi r^2h=54\pi$. Number = $486\pi/54\pi=9$.

**Answer: C) 9**

58. Sphere melted into smaller spheres Large sphere volume = $4/3\ \pi(6)^3=288\pi$. Small sphere volume= $4/3\ \pi(2)^3=(32/3)\pi$. Number = $288\pi/(32/3)\pi=27$.

**Answer: B) 27**

59. Hollow cylinder volume

Volume = $\pi h(R^2-r^2)$ $=\pi(35)(100-64)$ $=\pi(35)(36)=1260\pi\approx3960$.
**Answer: A) 3960 $cm^3$**

60. Surface area = Cylinder curved + Hemisphere curved + Base = $2\pi rh+2\pi r^2+\pi r^2$ $= 140\pi+98\pi+49\pi=287\pi\approx900$.

**Answer: D) 900 $cm^2$**

61 → **Answer:B**) Only 2 follows (dogs ⊆ animals, cats unrelated).

62 → **Answer: A)** Brother (grandfather's only son = father → his son = brother).

63 → **Answer: B)** 3 km (net displacement east = 3, north-south cancels).

6 4 → **Answer: A)** NGCH (each letter shifted +2).

65 → **Answer: D)** E (arrangement places E in middle).

66 → **Answer: A)** Cutting (book is for reading, knife for cutting).

67 → **Answer: B)** 30 (pattern: +4, +6, +8, +10).

6 8 → **Answer: B)** Q (R = engineer, P ≠ doctor → Q = doctor).

69 → **Answer: C)** Both implicit (seat belts reduce accidents, people don't use them).

70 → **Answer: C)** Both together (brother's age known, Rahul = 15).

71. Average sales of all companies Sales: A = 40, B = 55, C = 70, D = 65, E = 50 Total = 40 + 55 + 70 + 65 + 50 = 280 Average = 280 ÷ 5 = 56 Lakhs **Answer: C) ₹56 Lakhs**

72.Sales 30% more than Company A Company A = 40 → 40 × 1.3 = 52 Company E = 50, Company B = 55 → closest is Company B **Answer: A) Company B**

73. Percent difference between Company C and E C = 70, E = 50 → Diff. = 20 % = (20 ÷ 50) × 100 = 40%

**Answer: C) 40%**

74. Company D's sales after 20% increase D = 65 → 65 × 1.2 = 78 Lakhs

**Answer: B) ₹78 Lakhs**

Q75. Ratio of Company B to C B = 55, C = 70 → Ratio = 55:70 = 11:14

**Answer: A) 11:14**

76. Total students passing Math = 80, Science = 95, English = 70, History = 60, Geography = 85 Total = 80 + 95 + 70 + 60 + 85 = 390 **Answer: B) 390**

77. Subject with 25% fewer students than Science Science = 95 → 95 × 0.75 = 71.25 Closest subject = English (70)

**Answer: B) English**

78. Percent difference between Math and English Math = 80, English = 70 → Difference = 10% = (10 ÷ 70) × 100 = 14.3%
**Answer: C) 14.3%**

79. New avg. if 10 more pass in History New History = 60 + 10 = 70 New total = 390 + 10 = 400 Average = 400 ÷ 5 = 80 **Answer: C) 80**

Q80. Ratio of Science to History Science = 95, History = 60 → Ratio = 95:60 = 19:12
**Answer: C) 19:12**