

**NATIONAL TALENT SEARCH EXAMINATION, 2015-16
(STATE LEVEL)
(FOR STUDENTS STUDYING IN CLASS X)**

MENTAL ABILITY TEST (MAT)

Answers key

- | | | | | | | | |
|-----|---|-----|---|-----|---|-----|--------------------|
| 1. | C | 2. | D | 3. | A | 4. | C |
| 5. | D | 6. | B | 7. | C | 8. | D |
| 9. | D | 10. | B | 11. | D | 12. | B |
| 13. | A | 14. | D | 15. | B | 16. | C |
| 17. | B | 18. | A | 19. | B | 20. | B |
| 21. | D | 22. | C | 23. | A | 24. | C |
| 25. | B | 26. | C | 27. | A | 28. | D |
| 29. | B | 30. | D | 31. | C | 32. | A |
| 33. | A | 34. | D | 35. | C | 36. | A |
| 37. | C | 38. | A | 39. | D | 40. | B |
| 41. | D | 42. | C | 43. | C | 44. | Question not clear |
| 45. | B | 46. | C | 47. | D | 48. | B |
| 49. | C | 50. | A | | | | |

PRAASHNOOTPAR

HINTS & SOLUTIONS

1. $f(a) = 0$
 $f(-a) = -a^2 + a^3 + 2a + a + 4 = 0$
 $a = -\frac{4}{3}$

2. $C_1 + \dots + C_5 = 45$
 $C_1 + \dots + C_5 + M + M + 5 = 140$
 $\Rightarrow M = 45$

3. If $a^2 + b^2 + c^2 = ab + bc + ca$
 $\Rightarrow (a-b)^2 + (b-c)^2 + (c-a)^2 = 0$
 $\Rightarrow a = b = c$
 $\therefore \frac{a}{b} + \frac{c}{b} = 2, \frac{b}{b} = 2$

04. Arghya was born in 2002 — A
 Grandfather2002 — 2A
 $\Rightarrow (2002 - A) + (2002 - 2A) = 3854$
 $A = 50$
 $\Rightarrow (C) 51$ years in 2003

05. $\{12\% \text{ of } x\} \times \{20\% \text{ of } (x+1)\} = 61.2$
 $x(x+1) = 50 \times 51$
 or 50×-51
 $\therefore d) \text{ Both } a \text{ \& } b$

06. $V_c = \frac{1}{3} \pi r^2 L_1$
 $V_H = \frac{2}{3} \pi r^3 = \frac{2}{3} \pi r^2 \times h_2$
 $\Rightarrow \frac{1}{3} \pi r^2 h_1 = \frac{2}{3} \pi r^2 h_2$
 $\frac{h_1}{h_2} = \frac{2}{1}$

7. C

8. $(x - 10\% \text{ of } x) + 10\% \text{ of } (x - 10\% \text{ of } x) = \frac{99x}{100}$

% Change $\frac{x - \frac{99x}{100}}{x} \times 100 = 1\%$

∴ d) 1% decrease

9. d)

10. b)

$$A = P \left(1 + \frac{r}{n} \right)^n$$

∴ taking interest is being compounded yearly.

11. $1^2 + 1 = 2$

$2^2 + 2 = 6$

$3^2 + 6 = 15$

$4^2 + 15 = 31$

$5^2 + 31 = 56$ (d)

12. $11 \times 2 + 1 = 23$

∴ $99 \times 2 + 4 = 202$ (b)

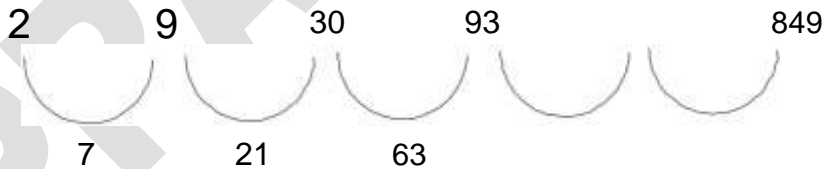
13. (a)

$\frac{54}{2} = 27$

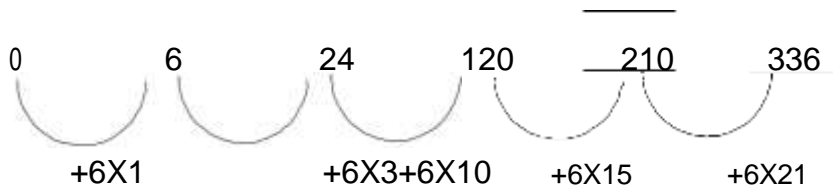
14. (d)

$11^2 + 1 = 122$

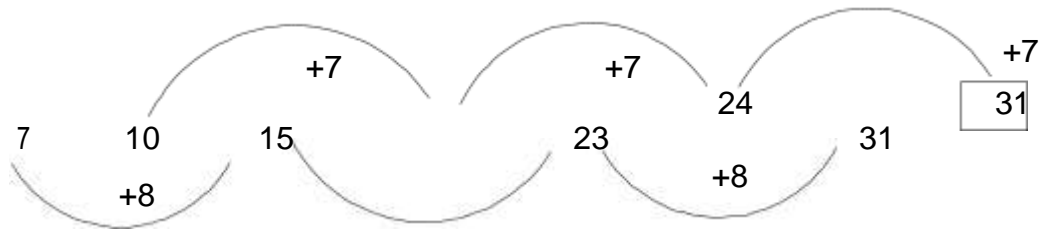
15. (b)



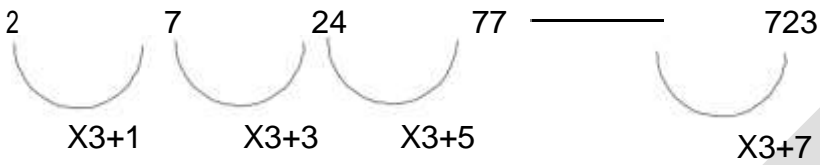
16. (c) 336



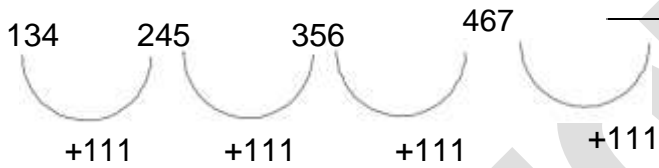
17. (b) 5^3
 18. (a) 31



19. (b)



20. (c)



21. D
 22. C
 23. A
 24. C
 25. B
 26. C
 27. A
 28. B
 29. B
 30. D
 31. C
 32. A
 33. A
 34. D
 35. C
 36. A
 37. C
 38. A
 39. D
 40. B

41. $1157 = 25$
 $25+3=28$ (d)

42. C

$4^3 + 1 = 65$

43. $(1+5) \times 4 = 24$
 $(2+2) \times 9 = 36$
 $(?+4) \times 7 = 56$

(C) 4

44. Question not clear

45. (B)
 $(4 \times 9 \times 7) + (6 \times 5 \times 8) = 492$

$\therefore (2 \times 5 \times 7) + (3 \times 4 \times 5) = 130$

46. $2^2 \cdot 4^2 \Rightarrow 2 \times 4 = 8$ 5^2
 $8^2 \Rightarrow 5 \times 8 = 40$

(C)

47. $27 + 22 = 49 + 1 = 50$
(D)

48. $5^2 + 4^2 - 1 = 40$
 $\therefore 10^2 + 6^2 - 1 = 135$
(B)

49. $2 \times 2 = 4$
 $2 \times 5 = 10$
 $2 \times 11 = 22$
 $2 \times 23 = 46$
 $2 \times 47 = 94$
 $2 \times (47 + 48) = 190$

(C)

50. A