Sectionwise Grand Test – Quantitative Aptitude – SWGTQ-171201

HINTS & SOLUTIONS

ANSWER KEY

1. (5)	11. (1)	21. (2)	31. (2)	41. (1)
2. (4)	12.(2)	22. (1)	32. (1)	42. (2)
3. (5)	13. (4)	23. (5)	33. (1)	43. (3)
4. (5)	14. (2)	24. (2)	34. (3)	44. (4)
5. (4)	15. (1)	25. (4)	35. (1)	45. (3)
6. (5)	16. (1)	26. (2)	36. (5)	46. (1)
7. (2)	17. (3)	27. (1)	37. (1)	47. (1)
8. (2)	18. (2)	28. (3)	38. (3)	48. (1)
9. (3)	19. (1)	29. (2)	39. (4)	49. (2)
10. (4)	20. (3)	30. (2)	40. (5)	50. (1)

HINTS & SOLUTIONS

1. (5) Let salesman's base salary be Rs. B,
and last year commission be C
Then total salary,
T = B + C ....(i)
From (i)
1.1 T = B + 1.3C ....(ii)
From (ii)
$B - C = \frac{50}{100}B$
$\Rightarrow B = 2C$
Using (i) and (ii) individually we can find the answer

2. (4) A → first prime no. greater than 10 is 11.
Numbers are 8, 10, 12 and 14
B → smallest no.= 4x
Largest no. = 7x
7x = 4x + 6
numbers are 8, 10, 12, 14
C→ Let numbers be x-3, x-1, x+ 1, x+3
$(x - 3 + x + 3)^2 = (x - 1 + x + 1)^2$
$\Rightarrow x^2 = x^2$
Using A or B, we can find the answer.

3. (5) Let smaller no. be x and larger no. be y.
A → y = x + 6
$B \rightarrow \frac{40}{100}x = \frac{30}{100}y$ or, $\frac{y}{x} = \frac{4}{3}$
$C \rightarrow \frac{y/2}{x/3} = \frac{2}{1}$
Or, $\frac{y}{x} = \frac{4}{3}$
So from A and either B or C we can find the answer.

4. (5) A → Runs scored till 30 matches = 30 × 56= 1080
B → Runs scored till 32 matches = 32 × 38 = 1216
C → nothing can be inferred
More information required.

5. (4) A → C : T = 3 : 8
B → B : T = 5 : 3
C → C + 2T = 6000
Using A and B,
C : T : B = 9 : 24 : 40
Using C,
$9x + 2 \times 24x = 6000$
$\Rightarrow x = \frac{6000}{57}$

6. (5) $x = 7$
$2y^2 - 9y - 56 = 0$
$2y^2 - 16y + 7y - 56 = 0$
$2y(y - 8) + 7(y - 8) = 0$
$y = 8, -\frac{7}{2}$
No relation

7. (2) $6x^2 + 15x + 14x + 35 = 0$
$3x(2x + 5) + 7(2x + 5) = 0$
$x = \frac{-5}{2}, \frac{-7}{3}$
$3y^2 + 9y + 10y + 30 = 0$
$3y(y + 3) + 10(y + 3) = 0$
$y = -3, \frac{-10}{3}$
$x > y$

8. (2) $2x^2 - 4x - \sqrt{17}x + 2\sqrt{17} = 0$
$2x(x - 2) - \sqrt{17}(x - 2) = 0$
$x = \frac{\sqrt{17}}{2}, 2$
$10y^2 - 18y - 5\sqrt{13}y + 9\sqrt{13} = 0$
$2y(5y - 9) - \sqrt{13}(5y - 9) = 0$
$y = \frac{9}{5}, \frac{\sqrt{13}}{2}$
$x > y$

9. (3) $64x^2 = 256$
$\Rightarrow x^2 = 4$
$x = \pm 2$
$2y^3 = 16 \Rightarrow y^3 = 8$
Y=2
x ≤ y

10. (4) $x^2 + 7x - x - 7 = 0$
$x(x + 7) - 1(x + 7) = 0$
$x = 1, -7$
41y = 123
y = 3
y > x

11. (1) Let, total no. of boxes be $35x$,

Then no. of black boxes = $\frac{2}{5} \times 35x = 14x$

And no. of blue boxes = $\frac{3}{7} \times 35x = 15x$

Now,

$14x + 15x + 18 = 35x$

or, $6x = 18$

or, $x = 3$

Total no. of boxes = $35x = 105$

An even sum can be obtained in three ways:

1. both the numbers are even

2. one number is even and the other is 0.

3. both numbers are odd.

Required probability

$= \frac{35}{105} \times \frac{34}{104} + \frac{35}{105} \times \frac{34}{104} + \frac{35}{105} \times \frac{35}{104} = \frac{35(34+34+35)}{105 \times 104} = \frac{103}{312}$

12.(2) Total no. of boxes = 105

13. (4) The amount @ 10% C.I. could become Rs. 1331. Also, Rs. 1728 depreciated at R% has to become Rs. 1331.
Thus, $1728 \times \left[\frac{100-R}{100}\right]^3 = 1331(approximately)$.
The closest value of R = 8%
Thus, the difference is 2%.

14. (2) Let the amount with him at the start of the game be Rs. A. Amounts (in Rs.) with him at the ends of the first, second and third round are 2A – X, 4A – 3x and 8A – 7X respectively.
Given, $(8A - 7X) - (4A - 3X + 2A - X) = 140$
$2A - 3x = 140 \rightarrow (1)$
$4A - 3X - (2A - X) = 160$
$A - X = 80 \rightarrow (2)$
Solving (1) and (2), X = 20

15. (1) Required percentage $= \frac{180-100}{100} \times 100 = 80\%$

16. (1) Number of commerce graduates employees
$= 30\% \, of \, 600 = \frac{30}{100} \times 600 = 180$
Number of arts graduates employees
$= 28\% \, of \, 600 = 168$
∴ Difference = 180 – 168 = 12

17. (3) Average number of commerce graduate employees and science graduate employees in company Z = 338
Total number of commerce and science graduate employees in company Z = 676
Total number of employees in Z
$= 676 \times \frac{100}{65} = 1040$

18. (2) Number of Arts graduate employees
$= \frac{32}{100} \times 1000 = 320$
Number of science graduate and commerce graduate employees
$= 1000 - 320 = 680$
∴ Number of commerce graduate employees in K
$= 680 \times \frac{7}{17} = 280$

19. (1) Total employees in company L in 2009
$= 600 \times \frac{120}{100} = 720$
Arts Graduate in company L in December 2009
$= \frac{20}{100} \times 720 = 144$

20. (3) (40% – 20%) of number of employees in company Y
= 120
∴ Number of employees in company Y
= 600
∴ Total number of employees in company X
= 1800

21. (2) $(3^4)^3 \div (3^4)^4 \times (3^7)^2 = (3)^{?+6}$
$\frac{3^{12} \times 3^{14}}{3^{16}} = (3)^{?+6}$
$3^{10} = (3)^{?+6}$
$? + 6 = 10$
$? = 4$

22. (1) $\frac{120}{100} \times 1500 + \frac{40}{100} \times 2850 = 2420 + \frac{24}{100} \times ?$
$1800 + 1140 = 2420 + \frac{24}{100} \times ?$
$? = 2166.67 \simeq 2168$

23. (5) $\simeq \frac{0.2}{100} \times 355 + \frac{0.8}{100} \times 780$
$\simeq 0.71 + 6.24$
$\simeq 6.95 \simeq 7$

24. (2) $\simeq \frac{1400}{35} + \sqrt{1024} \times 20$
$\simeq 40 + 32 \times 20 \simeq 40 + 640$
$\simeq 680$

25. (4) $\simeq 52 \times 60 \simeq 120 \times ?$
$? \approx 26$

26. (2) Let C.P. of R = 1100 Rs.
Then C.P. of P = $1100 + \left(36\frac{4}{11}\right)\%$ of 1100
= 1100 + 400
= 1500 Rs.
S.P. of product P = 2 × 1500 = 3000 Rs.
M.P. of product R = $\frac{170}{100} \times 1100 = 1870$
Required % = $\frac{3000-1870}{1870} \times 100 \approx 60\%$

27. (1) Let C.P. of Q = x
Let C.P. of R = y
$x - y = 25$ .....(i)
And $1.4x - 1.7y = 8$
$14x - 17y = 80$ .....(ii)
From (i) and (ii)
$y = 90$ Rs.
$x = 115$ Rs.
Required sum = 205 Rs.

28. (3) C.P. of S = $\frac{100}{160} \times 320 = 200$ Rs.
C.P. of T = = $\frac{100}{190} \times 570 = 300$ Rs.
Profit of S = 200 Rs.
Profit of T = 2 × 300 = 600 Rs.
Required average profit = $\frac{200+600}{2} = 400$ Rs.

29. (2) Let S.P. of R = 750
Let S.P. of S = 1500 Rs.
∴ C.P. of R = $\frac{100}{250} \times 750 = 300$
And, CP of S = $\frac{100}{200} \times 1500$
$= \frac{1500}{2} = 750$ Rs.
Required ratio = $\left(\frac{170}{100} \times 300\right) : \left(\frac{160}{100} \times 750\right)$
$= (17 \times 30) : (16 \times 75)$
$= 17 : 40$

30. (2) Profit % of S = 100%
Profit % of T = 200%
Required % = $\frac{200-100}{200} \times 100$
$= \frac{100}{200} \times 100 = 50\%$

31. (2) Ratio of Abhishek and Sudin for 3 years
= (50,000 × 36) + (30,000 × 24) : (70,000 × 24)
= (18,00,000 + 7,20,000) : 16,80,000 = 3 : 2
Hence share of Sudin in the profit earned from the business.
$= \frac{87,500}{(3+2)} \times 2 = Rs \, 35{,}000$

32. (1) Let us assume his CP/1000 gm = Rs 100
So, his SP/kg (800 gm) = Rs 126
So, his CP/800 gm = Rs 80
So, profit = Rs 46
So profit percentage = 46/80 × 100 = 57.5%

33. (1) Work done by the waste pipe in 1 minutes
$= \frac{1}{20} - \left(\frac{1}{12} + \frac{1}{15}\right) = -\frac{1}{10}$ [–ve sign means emptying]
∴ Waste pipe will empty the full cistern in 10 minutes

34. (3) Suppose they meet x hrs after 8 a.m. then,
(distance moved by first train in x hrs)
+ [Distance moved by second train in (x – 1) hrs] = 330
∴ 60x + 75 (x - 1) = 330
⇒ x = 3
So, they meet at (8 + 3), i.e. 11 a.m.

35. (1) Considering the two vowels E and A as one letter, the total no. of letters in the word 'EXTRA' is 4 which can be arranged in $^4P_4$, i.e. 4! Ways and the two vowels can be arranged among themselves in 2! Ways.
∴ reqd. no. = 4! × 2! = 4 × 3 × 2 × 1 × 2 × 1 = 48

36. (5) $\frac{12 \times 48}{x - 6} = \frac{14 \times 24}{15 + 5} \times \frac{6}{7}$
$x - 6 = 40$
$x = 46$ km/hr

37. (1) $\frac{16\times48}{x-5}=\frac{14\times24}{x+5}+27\frac{1}{5}$

By option if we put $x = 25$

Then L.H.S. = R.H.S.

38. (3) Given

Speed of boat in still water on Saturday = 27 km/hr

and Speed of boat in still water on Wednesday = 27 + 18

= 45 km/hr

Now, $\frac{12\times48}{45-6}=\frac{18\times24}{27+x}\times\frac{16}{13}$

solving

$x = 9$ kmph

39. (4) Speed of boat in still water on Saturday = 21 km/hr

Speed of boat in still water on Sunday = 21 + 6 = 27 km/hr

$\frac{10\times48}{21-x}=\frac{5}{2}\times\frac{12\times24}{27+3}$

$21-x=20$

$x = 1$ km/hr

Required time $=\frac{125}{21-1}=\frac{125}{20}$

= 6 hrs 15 min

40. (5) $\frac{14\times48}{17-1}=30+\frac{11\times24}{x+6}$

$x+6=22$

$x = 16$ km

Upstream speed on Wednesday

= 16 – 6

= 10 km/hr

41. (1) Time taken by P to cross the tunnel $=\frac{900}{72\times\frac{5}{18}}=45$ seconds

Time taken by Q to cross the tunnel $=\frac{1200}{90\times\frac{5}{18}}=48$ seconds

∴ P exits the tunnel first. When P exits, Q will have travelled a distance of

$90\times\frac{5}{18}\times45=1125\ m.$

∴ 75 m of Q would still be inside the tunnel.

42. (2) The rear ends of the trains will cross each other when the trains completely cross each other.

This will happen after. $\frac{1500}{(72+90)\frac{5}{18}}$ seconds.

(Relative distance = 600 + 300 + 600 = 1500)

$=\frac{100}{3}$ seconds

Distance travelled by the slower train in this time

$=\frac{100}{3}(72)\left(\frac{5}{18}\right)=666\frac{2}{3}m$

Distance between the point where the rear ends of the trains cross each other and the point of entry of the slower train

$=666\frac{2}{3}-300=366\frac{2}{3}\ meter$□

43. (3) Let, Mohit's estimated expenses on accommodation, food and travel be Rs. 9x, Rs. 7x and Rs. 5x respectively,

Then

$\frac{4}{10}\times9x+\frac{4}{7}\times7x+\frac{1}{8}\times5x=8225$

or, $3.6x+4x+0.625x=8225$

or, $8.225x=8225$

or, $x=1000$

Required answer= 1125

44. (4) Total salary=21x=21000

45. (3) Let shopkeeper have Rs. 100.

He buys goods worth : 1.2 × 100 = Rs. 120.

He sells goods worth ; $\frac{125}{100}\times120=Rs.150$

∴ Profit % = 50%

46. (1) Circumference = 44

$r = 7\ cm$

∴ diameter = 14 cm = edge of square

Area of square = $14^2=196$cm

Area of circle = $IIr^2=\frac{22}{7}\times7\times7$

$= 154\ cm^2$

Area of triangle EGF = $\frac{1}{2}\times14\times14$

$= 98\ cm^2$

Area of EHF = $\frac{98}{2}=49\ cm^2$

$\therefore Area\ of\ shaded\ region$

$=\frac{1}{2}[Area\ of\ semicircle-Area\ of\ EFH]$

$+\frac{1}{4}[Area\ a\ of\ square-Area\ of\ circle]$

$=\frac{1}{2}[77-49]+\frac{1}{4}(196-154)$

$=\frac{1}{2}\times28+\frac{1}{4}\times42$

= 14 + 10.5

Quantity II = 24.5 cm^2

Quantity I → 27.5 cm^2

Quantity I > Quantity II

47. (1) Quantity I → SI = $\frac{16000\times30}{100}=4800$

∴ Amount = 16000 + 4800 = 20800

Now, amount = $20800\times\left(1+\frac{12}{100}\right)^2$

$=20800\times\frac{28}{25}\times\frac{28}{25}$

= 26091.52 (Amount)

∴ A–P = 26091.52 – 20800

= 5291.52

After four years, interest = 5291.52 + 4800

= 10091.52.

Quantity II = Let the sum of money lent by Sumit to Mohit be Rs. x.

Then, simple interest paid by Mohit after 1 year

$=\frac{x\times5\times1}{100}=Rs.\frac{5x}{100}.$

Also, the simple interest received by Mohit from Birju after 1 year

$=\frac{x\times\frac{17}{2}\times1}{100}=Rs.\frac{17x}{200}.$

Given: $\frac{5x}{100}+350=\frac{17x}{200}$

$\Rightarrow 1700x-1000x=7000000$

Or, 700x = 7000000

Or, $x = \frac{7000000}{700} = Rs.\ 10{,}000.$

Thus, the sum of money lent by Sumit

to Mohit is Rs. 10,000.

Quantity I > Quantity II

48. (1) Probability of one red ball $\rightarrow \frac{1}{3}$

Probability of one blue ball $\rightarrow \frac{1}{7}$

Let total no. of balls in the bag = 21

$\therefore$ Red $\rightarrow 7$

Blue $\rightarrow 3$

Yellow $\rightarrow 1$

$\therefore$ White $\rightarrow 21 - (7 + 3 + 1)$

$= 10$

Quantity I $\rightarrow$ probability of selecting three white

Ball $= \frac{10}{21} \times \frac{9}{20} \times \frac{8}{19} = \frac{12}{133}$

Quantity II $\rightarrow$ probability of selecting one yellow ball

$= \frac{1}{21}$

$\therefore$ Quantity I > Quantity II

49. (2) **Quantity I**

Let the v liters of acid were drawn off

$\frac{24}{54} = \left(1 - \frac{v}{54}\right)^2$

$\frac{4}{9} = \left(1 - \frac{v}{54}\right)^2$

$\frac{2}{3} = 1 - \frac{v}{54}$

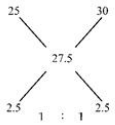
$\frac{v}{54} = \frac{1}{3}$

$v = 18$ Litres

Quantity II

Cost price of Blended tea $= \frac{100}{110} \times 30.25$

$= 27.5$



Amount tea of Rs 25 per kg = 30 kg

Quantity I < Quantity II

50. (1) **Quantity I**

Let C.P. of radio be 'x'.

$\frac{97.5x}{100} + 100 = \frac{107.5x}{100}$

$\Rightarrow x = 1000$

S.P. to get 12.5% gain = 1000 × 1.125 = 1125

Quantity I

C.P. for jobber = $24 - \frac{1}{8} \times 24 = 21$

$\frac{4}{3} \times 21 = \frac{80}{100} \times \text{M.P.}$

$\Rightarrow$ M.P. $= \frac{28 \times 10}{8} = 35$