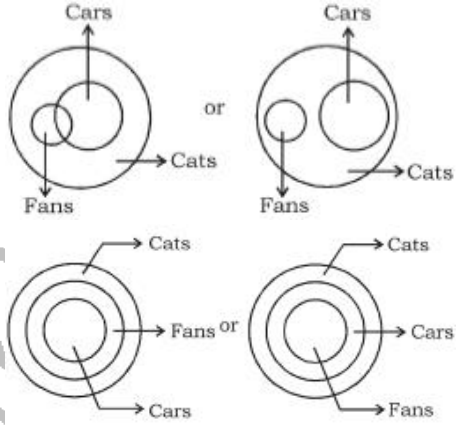
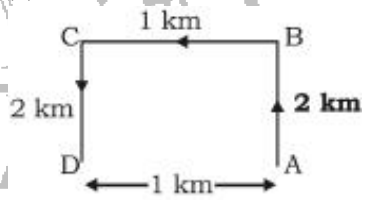
Grand Test – CGL-170201	SSC CGL

HINTS & SOLUTIONS

1. (2) Previous prime number to 97 is 89. Similarly for 43, the previous prime number is 41.
2. (4) As Tiger is found in Forest, similarly Otter is found in the water.
3. (3) Letter B E A C
   Position 2 5 1 3
   ↓ ↓
   $(2 \times 5) \times (2 + 5) = 70$ $(1 \times 3) \times (1 + 3) = 12$
4. (1) $5 : 5^3 + 5^2 :: 11 : 11^3 + 11^2$
   ↓ ↓
   150 1452
5. (4) A Huckster is one who deals in Advertising and a Gangster is one who deals in Crime.
6. (2) The country of Argentina neighbours the country of Brazil. Similarly, Iraq shares the borders with Iran.
7. (4) All except locust are reptiles, while locust is an insect.
8. (3) In all except Trifle, 'tri' indicates 'three'.
9. (3) Except (3), in rest of the options, second can be obtained by Multiplying 2.5 to first.
10. (3) Orange is the only citrus fruit in the group.
11. (2) ROCK
12. (1) When the sheet shown in question figure is folded to form a box (cuboid), then the two rectangular-shaded faces lie opposite to each other, two rectangular white faces lie opposite to each other and the two square shaped faces (one shaded and one white) lie opposite to each other. Clearly, the cuboids shown in figures (2) and (4) cannot be formed as in each of the two cuboids the two shaded rectangular faces appear adjacent to each other. So, only the cuboids in figures (1) and (3) can be formed.
13. (2) Let B and G represent the number of daughters and sons respectively.
    Then, we have:
    $B - 1 = G$ and $2 (G - 1) = B$.
    Solving these two equations, we get :
    $B = 4, G = 3$.
14. (4) The woman is the mother of Shashank's granddaughter. Hence, the woman is the daughter-in-law of Shashank.
15. (2) The pattern is $\div 1, \div 2, \div 3, \div 4, \div 5$.
    So, missing term $= 360 \div 1 = 360$.
16. (4)



    Hence, neither conclusion 1 nor 2 follows.
17. (2)



    So, initially the boy rode 2 km Northward.
18. (3) abcde/cdeab/deabc/eabcd
19. (3) $(4 + 8) \times 9 = 108 \Rightarrow 108 \times 10 = 1080$
    $(5 + 4) \times 12 = 108 \Rightarrow 108 \times 10 = 1080$
20. (4)
21. (2) 2, 6, 9 contain a triangle with its three medians as the outer element and another element (similar or different) placed inside it.
    1, 5, 7 contain a rectangle with its two diagonals as the outer element and another element (similar or different) placed inside it.
    3, 4, 8 contain a circle with its two mutually perpendicular diameters as the outer element and another element (similar or different) placed inside it.
22. (3)
23. (2)
24. (2) $2 * 3 \Rightarrow 2^3 + 3^2 = 8 + 9 = 17 \Rightarrow 17^2 = 289$
    $3 * 4 \Rightarrow 3^3 + 4^2 = 27 + 16 = 43 \Rightarrow 43^2 = 1849$
    $2 * 4 \Rightarrow 2^3 + 4^2 = 8 + 16 = 24 \Rightarrow 24^2 = 576$
25. (3)

26. (3) By the Permanent Settlement Act of 1793, the Zamindars class became more powerful than they were in the Mughal period. Earlier Zamindars in Bengal, Bihar and Orissa has been functionaries who held the right to collect revenue on behalf of the Mughal emperor and his representative or diwan in Bengal. The security of tenure of landlords and revenues intermediaries were granted prosperity, so as to minimize the tendency by British administrators to amass a small fortune in sluiced-away revenue.

27. (1) Influenza, commonly known as the 'flu', is an infectious disease of birds and mammals caused by RNA viruses. The most common symptoms are fever, sore throat, muscle pains, headache (often severe), cough, weakness/fatigue and general discomfort. Typically, Influenza is transmitted through the air by coughs or sneezes, creating aerosols containing the virus.

31. (3) Pulses are (20 to 25%) protein by weight, which is double the protein content of wheat and three times that of rice. While pulses are generally high in protein, and the digestibilty of that protein is also high, they are often relatively poor in the essential amino acid methionine.

32. (1) Among the Standing Committees, the three Financial Committees i.e. Committees on Estimates, Public Accounts and Public Undertakings, constitute a distinct group as they keep an unremitting vigil over Government expenditure and performance. While Committees of the Rajya Sabha are associated with Committees on Public Accounts and Public Undertakings, the members of the Committee on Estimates are drawn entirely from the Lok Sabha.

35. (1) The busiest rail section in respect to goods transportation is Delhi-Kolkata section.

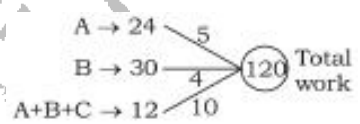
42. (3) Copper : 9% less conductive than silver, aluminium is 10% less conductive than than copper, while steel is the least conductive among the given options. So, the most electrically conductive metal is silver.

45. (2) Reflected waves are simply those waves that are neither transmitted nor absorbed, but are reflected from the surface of the medium they encounter. The amount of incident-wave energy that is reflected from a surface depends on the nature of the surface and the angle at which the wave strikes the surface. The amount of wave energy reflected increases as the angle of incidence. The reflection of energy is the reflecting surface.

47. (3) Ethylene glycol (IUPAC name: ethane- 1,2- diol) is an organic compound widely used an automotive antifreeze and a precursor to polymers. In its pure form, it is an odourless, colourless, syrupy, sweet-tasting liquid. Ethylene glycol is a toxic and ingestion which can result in death. Due to its low freezing point ethylene glycol resists freezing. A mixture of 60% ethylene glycol and 40% water freezes at - 45 degree C (-49 degree F). Diethylene glycol behaves similarly. It is used as a deicing fluid for windshields and aircraft. The antifreeze capabillities of ethylene glycol have made it an important component of vitrification (anticrysatallization) mixture for low-temperature preservation of biological tissues and organs.

49. (1) In order to give more strength and more elasticity, natural rubber is heated with sulphur or sulphur compounds at 150°C temperature. Vulcanized rubber has good tensile strength. The working temperature of vulcanized rubber is enhanced up to 100°C. It has good resistance to organic solvents.

51. (2)



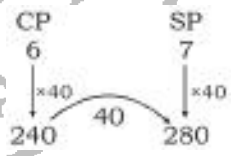
Efficiency of C = 10 – (5 + 4) = 1 unit/day

Required time for C = $\frac{120}{1}$ = 120 days

52. (2) $14\frac{2}{7}\% = \frac{1}{7}$

SP = 7 units, CP = (7 – 1) = 6 units

According to the question,



% Actual profit = $\frac{40}{240}\times 100 = 16.66\%$

53. (1) $5x - \frac{5}{x} = 10 \Rightarrow x - \frac{1}{x} = 2$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 2^2 \Rightarrow x^2 + \frac{1}{x^2} - 2 = 4$

$\Rightarrow x^2 + \frac{1}{x^2} = 6$

54. (2) $\because$ PR||TS

$\therefore \angle PRQ = \angle USR = 50°$

In ΔPQR :

$\angle PQR = 180° - (50° + 60°) = 70°$

$\therefore \angle TPU = \angle PQR = 70°$

[$\because$ PU || RS || QS]

55. (2) $8\frac{1}{2}-\left[3\frac{1}{4}\div\left\{1\frac{1}{4}-\frac{1}{2}\left(1\frac{1}{2}-\frac{1}{3}-\frac{1}{6}\right)\right\}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\div\left\{\frac{5}{4}-\frac{1}{2}\left(\frac{3}{2}-\frac{1}{3}-\frac{1}{6}\right)\right\}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\div\left\{\frac{5}{4}-\frac{1}{2}\left(\frac{9-2-1}{6}\right)\right\}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\div\left\{\frac{5}{4}-\frac{1}{2}\times\frac{6}{6}\right\}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\div\left\{\frac{5}{4}-\frac{1}{2}\right\}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\div\left\{\frac{5-2}{4}\right\}\right]=\frac{17}{2}-\left[\frac{13}{4}\div\frac{3}{4}\right]$

$=\frac{17}{2}-\left[\frac{13}{4}\times\frac{4}{3}\right]=\frac{17}{2}-\frac{13}{3}=\frac{51-26}{6}=\frac{25}{6}=4\frac{1}{6}$

56. (2) Let the cricketer's average runs for his 64 innings be x runs.

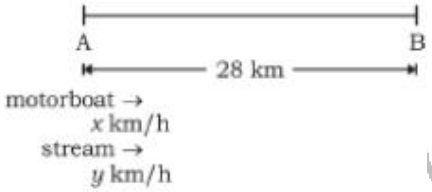
$\therefore$ Total runs in 64 innings = 64x

According to the question,

$\frac{64x+0}{65}=x-2\Rightarrow 64x=65x-130\Rightarrow x=130$

$\therefore$ New average of runs = x – 2 = 130 – 2 = 128

57. (1)



Let the speed of motorboat and of stream be x km/h and y km/h respectively.

Condition (i),

$2\left(\frac{28}{x+y}\right)=\frac{28}{x-y}\Rightarrow 2x-2y=x+y$

Condition (ii)

When the speed of the stream is doubled

$\frac{28}{x+2y}+\frac{28}{x-2y}=\frac{672}{60}$ [put x = 3y]

$\frac{28}{5y}+\frac{28}{y}=\frac{672}{60}\Rightarrow\frac{1}{5y}+\frac{1}{y}=\frac{672}{60}$

$\Rightarrow\frac{1}{5y}+\frac{1}{y}=\frac{24}{60}\Rightarrow\frac{1+5}{5y}=\frac{2}{5}\Rightarrow y=3\text{ km/h}$

$\Rightarrow$ x = 9 km/h

58. (4) Since, the diagonals of a rectangle bisect each other and are equal.

$\therefore$ OA = OD $\Rightarrow\angle$ODA = $\angle$OAD

But, $\angle$AOD = 44° (vertically opposite angle to $\angle$BOC)

$\therefore$ OAD $=\frac{1}{2}(180°-44°)=\frac{1}{2}(136°)=68°$

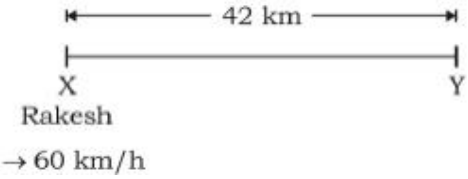
59. (2) Let the number be x.

Then,

$\frac{3}{4}x-\frac{3}{14}x=150\Rightarrow\frac{21x-6x}{28}=150$

$\Rightarrow 15x=28\times 150\Rightarrow x=\frac{28\times 150}{15}=280$

60. (2)



Distance travelled by Rakesh in first 10 minutes

$=60\times\frac{10}{60}=10$ km

Now he will reduce his speed by 6 km/h

= (60 – 6) = 54 km/h

Distance in next 10 minutes

$=54\times\frac{10}{60}=9$ km

Similarly:

Time (10 min) →	I	II	III	IV	V
Distance (km) →	10	9	8	7	6

Total time = 50 min, Total distance covered = 40 km

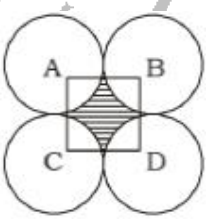
Remaining distance = 42 – 40 = 2 km

Now speed of Rakesh = 30 km/h

Required time $=\frac{2}{30}\times 60=4$ min

Total time = (50 + 4) = 54 minutes

61. (2)



Area of the shaded region

= Area of square of side 6 cm – 4 × area of right angled sector

$=36-4\times\frac{\pi\times 3^2}{4}=36-9\pi=9(4-\pi)$ sq. cm

62. (4) If the remainder be x, then (11284 – x) and (7655 – x) are divisible by three digit number. i.e.

(11284 – x) – (7655 – x) = 3629 is divisible by that number.

3629 = 19 × 191

Hence, required number = 191

Sum of digits = 1 + 9 + 1 = 11

63. (1)

CP	:	SP
(100 – 12)	:	(100 + 32)
88	:	132

Now according to the question,

$$SP = 132 \times \frac{(100-20)}{100} = 105.6$$

$$\text{Profit } \% = \frac{105.6-88}{88} \times 100 = \frac{17.6}{88} \times 100 = 20\%$$

64. (4) $\because x + y + z = 0$

$\therefore x^3 + y^3 + z^3 = 3xyz$

$$\Rightarrow \frac{x^3}{xyz} + \frac{y^3}{xyz} + \frac{z^3}{xyz} = 3 \Rightarrow \frac{x^2}{yz} + \frac{y^2}{xz} + \frac{z^2}{xy} = 3$$

65. (1) $x + \frac{1}{x} = 5 = a$ (say)

$$\therefore x^2 + \frac{1}{x^2} = a^2 - 2 = 25 - 2 = 23$$

Now, $\frac{x^4 + 3x^3 + 5x^2 + 3x + 1}{x^4 + 1}$

$$= \frac{x^2\left(x^2 + 3x + 5 + \frac{3}{x} + \frac{1}{x^2}\right)}{x^2\left(x^2 + \frac{1}{x^2}\right)}$$

$$= \frac{\left(x^2 + \frac{1}{x^2}\right) + 3\left(x + \frac{1}{x}\right) + 5}{x^2 + \frac{1}{x^2}}$$

$$= \frac{23 + 3 \times 5 + 5}{23} = \frac{23 + 20}{23} = \frac{43}{23}$$

66. (1) For a diff. of 10', diff. in value
= 0.7133 – 0.7112

$\therefore$ for a diff. of 8', diff. in value

$$= \frac{0.0021}{10} \times 8 = 0.00168$$

$\therefore \cos 44° 38' = (0.7133 - 0.00168) = 0.71162$

67. (3) $20\% = \frac{1}{5}$

	Old	:	New
Wages →	5	:	6
Time →	5	:	4
Total wages →	25	:	24
	× 160		× 160
	4000		3840

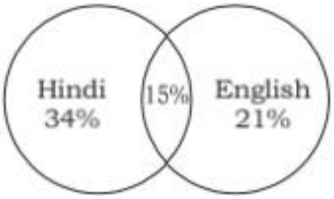
for 1 week, wages = ` 3840

for 4 week, wages = 3840 × 4 = ` 15360

68. (3) Radius of sector = Slant height of cone

$$= \sqrt{h^2 + r^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10 \text{ cm}$$

69. (2) Venn diagram of the soldiers



Total % of soldiers who do not speak any language
= 100 – (34 + 15 + 21) = 30%
According to the question,
30% = 900

$$1\% = \frac{900}{30}$$

$$21\% = \frac{900}{30} \times 21 = 630$$

70. (1) $-1^{25} + 1^{32} = -1 + 1 = 0$

71. (3) Overall by B in all subjects

$$\% = \frac{399}{600} \times 100 = 66.5\%$$

72 (4) Ratio $= \frac{360}{435} = \frac{24}{29} = 24 : 29$

73. (1) Average $= \frac{441}{6} = 73.5$

74. (4) Average % marks

$$= \frac{633}{500} \times 100 = 70.3\% \approx 70\%$$

75. (4) $\text{Total}_A = 84 + 66 + 73 + 61 + 24 + 52 = 360$

$\text{Total}_E = 108 + 78 + 78 + 70 + 39 + 48 = 421$

$\therefore$ Required %

$$= \frac{421 - 360}{360} \times 100 = \frac{6100}{360} \approx 17\%$$

76. (3) Remove 'for'.

77. (2) Replace 'in' by 'to'. 'Appoint' will take 'to' after it, as 'appoint someone to some- thing' means 'choose somebody for a job or position of responsibility'.

81. (3) Since 'remain' is not used usually in progressive tenses.

82. (3) Phrase 'To rise to the occasion' means 'perform better than usual in response to a special situation or event'.

84. (2) 'Come by train/bus/metro' is a phrase.