

HINTS & SOLUTIONS

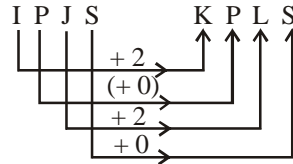
1. (b) The last line of the 7th paragraph clearly mentions the fact of Manchester United spending (4 times Wigan's) double the amount as done by Aston Villa (2 times Wigan's).
Option (c) is wrong as their research only talks of the club's relative wage bill. It says nothing about the wages paid to individual footballers.
Option (d) *The Guardian* has collaborated with Opta sports and not ESPN Sports to publish the data (9th paragraph).
2. (d) Refer 13th paragraph of the passage, 3rd sentence, which clearly mentions it.
3. (d) Martinez-manager mentioned in the 12th para, line 1. Larcada-an ESPN's analyst also mentioned in the same para. Hugo is mentioned in the 13th para, last line. Ramzi Ben is mentioned in 9th para, 1st line.
4. (c) (a) & (b) are clearly wrong. In the last few lines of the last para, the guerrilla tactics counter attack, sharp shooting from distance and free kicks are mentioned. Guerrilla means irregular fights against a strong opponent.
5. (a) (b) is correct, mentioned in 4th para, which says Wigan's earning as £ 50.5 million - half that of an average League team (so £ 101 million)
(c) is mentioned in 1st line of 4th para.
(d) is mentioned in last line of 11th para. "They scored..... free kicks".
6. (c) The 4th para clearly states that the judge's command over Hindi and Urdu was tenuous. So (c) is incorrect.
(a) is correct as is clear from the 7th para (5:30).
(b) is correct as it was the stenographer who was Brahmin. Refer para 1.
(d) is correct as mentioned in second half of the 3rd, "Nobody knew..... of repayment".
7. (b) The judge could never manage to hit a single bird. It is clear from the last line of 7th para— because he returned with - nothing!
(a), (c) & (d) are clearly mentioned in the 7th para.
8. (a) The 3rd para clearly tells the low production of the farms—less than 10 maunds per acre— and the price they got for it (2 per maund). This has forced the villagers to be under debt of the bania.
(b) is wrong as Piphit is related to the judge not the villagers. Refer 3rd para.
(c) & (d) are irrelevant.
9. (a) Lariat is a long, noosed rope to catch horses, cattle or other livestock. So it is the odd one out. Brood is a family of birds and so is flock and flight.
10. (d) The last 3rd para (12th para) clearly mentions that they were accompanied by 200 loyal soldiers.
(c) is wrong as a total of 87000 foreign soldiers (refer para 11) and not 80000.
(b) is wrong as it was not a Spanish flotilla but a Austrian flotilla.
(a) is not clear from the passage.
11. (c) (c) is correct as mentioned in the last para.
(a) is wrong as 'King Bomba' bombed Messina and not Milan (refer para 5).
(b) is wrong as Garibaldi was given control of 4000 soldiers to defend Janiculum Hill. Refer 7th para.
(d) is wrong as Mazzini was a leader of Republicans and not moderates. Refer para 1.
12. (a) Charles Albert— Piedmont; Ferdinand II— Naples; Louis Philippe — France; Grand Duke — Tuscany.
13. (b) The 13th para (last second) clearly tells that Garibaldi and his faithful companion Leggero escaped across Po towards Ravenna.
14. (a) The Pope had taken refuge with the King Bomba (Ferdinand II of Naples). Refer para 5. So (a) is incorrect one.
(b) is correct as mentioned in para 3.
(c) is correct as mentioned in para 9.
(d) is correct as mentioned in para 6.
15. (a) (a) is correct as is clear from the initial few paragraphs. First line of the 3rd para also states this clearly.
(b) is wrong as risk level of loans is indirectly proportional to credit ratings of a company. Refer 2nd sentence of the 8th para. (c) & (d) are wrong as BOB and PNB recorded a decline of 1.97% & not 1% in the 1st quarter. Refer 3rd para last sentence.
16. (c) (a) is referred in the 3rd para.
(b) is referred in the 8th para.
(d) is referred in the 6th para, 1st line.
(c) cannot be concluded as the 5th para last sentence quoted by SBI chief Arundhati clearly says that the bank has not received good fresh proposals in the first quarter.
17. (d) All the 3 options are outcomes of lending to highly rated customers.
NIM- is mentioned in the last 3rd para so (a) is a likely outcome.
(b) is mentioned in the initial half of the passage. Refer para 6 & 7.
(c) is mentioned in the 8th para which talks about capital adequacy.
18. (c) The clear link is III – II, as II refers to the \$ 10 billion to be considerably less than the \$ 15 billion valuation. Although the students can mark (c) as answer as no other choice gives this link, there is another link I –IV. The use of But Milner's enthusiasm is such' in IV is clearly linked to the ' Facebook's inability to be a business' mentioned in I.
So the correct order is III, II, I, IV

19. (d) IV – II is a clear link. 'Him' referred in II is definitely pointing to Schubert mentioned in IV. II is followed by I as I describe's the sound proof cell mentioned in II. So the correct order is IV, II, I, III.
20. (a) Only 'Decrepit' is the correctly spelled word. It means worn out or ruined because of age or neglect.
21. (b) Correct spellings – Receive, Deceive, Perceive and believe.
22. (c) Solicitude and Chivelry are no words (wrong spelling) Solicitude means care or concern for something. Chivalry means courteous, moral, religious etc. In the context of the statement solicitude is the perfect choice as a patient needs care.
23. (a) Prevarication means evasive language. Insinuation means an unpleasant hint or suggestion of something bad. Perambulation means to travel over. Abrogation means to cancel. In the context of the given statement prevarication is the most suitable option as the sentence is about a person evading somebody's question about how long will she live.
24. (d) For the exchanging is clearly wrong. (d) is the most concise and to the point statement of all as it rightly states 'new and interesting assignments.' Rest of the options unnecessary stretches the modifier and are redundant.
25. (d) The correct option would be one that makes right comparison and keeps the structure parallel while comparing the 3 things. Option (a) is wrong because the two parts 'their Face wash did' and 'their anti ageing cream sales' is not parallel; instead of sales it should have been 'did' or 'sales were'. Option (b) is wrong because of the same reason, as mentioned for option (a). Option (c) is wrong because it should have been '20% more than their face wash did'; 'did' is missing, that's why it leads to a wrong comparison. Option (d) makes right comparison and keeps the structure parallel. Use of 'did' and 'were' makes it appropriate.
26. (c) Mumble means not speaking clearly. Mumbling leads to unclear and indistinct conversation. The option that is closest in the relationship to this is option (c) as scribbling leads to illegible handwriting. Rest of the options is related in some different manner. Swagger means to walk or behave in a very confident and arrogant way whereas timid shows a lack of courage. So they are opposite to each other. Exacerbate means make something worse and cure is its opposite. Drizzle is light rain whereas downpour is heavy rainfall.
27. (b) Ruffle means disorder or disarrange. Equanimity means calm and composed. Ruffle and equanimity are almost antonyms. The only option that has this antonymous relationship is (b). Bewilderment means confusion. Flounce means an exaggerated action intended to express annoyance or impatience. Turmoil means a state of great disturbance, confusion or uncertainty. Interest and Astound are unrelated. Astound means shock or greatly surprise.
28. (d) One clear hint is (i) – 6, 'in less time than it takes to soft-boil an egg'. So (b) & (c) are incorrect. Further (iii) – (v) is also another clear connection as seed financing in (v) refers to the \$ 5.8 million in (iii).
29. (d) (i) – (iii) is a clear connection. 'Both' in (i) refers to 'suffer the crime' and 'difficulty of forgiving'. Use of 'and' in (iii) clearly helps us in identifying this. So (a) is wrong. Another connection is (iv) – (ii) as 'reinstated in the same position' is the perfect link.
30. (a) 'I forgot that they are coming today' is the grammatically correct sentence. Option (b) is wrong because parallelism between the two parts is not correct. Option (c) should have 'inspiring' instead of 'inspiration'. In option (d), confident should be followed by 'of' and it should have been 'she is confident of speaking English
31. (c) In option (a), the sentence structure is wrong; it should be 'to have fled the country' instead of 'to flee the country.' Option (b) is inconsistent in using the preposition. The preposition 'by' before 'plain' is redundant. Option (d) should be structured as '... but not for my neighbour.'
32. (a) Expiate means atone for (guilt or sin) or make amends for or make up for; Banish means to send (someone) away from a country or place as an official punishment which is synonymous with expatriate and exile.
33. (b) Brevity means concise and exact use of words in writing or speech which is synonymous with conciseness and succinctness; Circumlocution means the use of many words where fewer would do, especially in a deliberate attempt to be vague or evasive.
34. (b) 'The bigger they come, the harder they fall' is the correct idiom. The use of comparative degree and usage of hard with fall is appropriate in the context.
35. (d) You almost frightened the life out of me. Rest are not appropriate usage.
36. (b) The various words (4 or more letters) using at least one E from the alphabets "E, T, Y, T, E, L, A" are:
LATE, ELATE, TELE, TALE, YALE
37. (c) The various words using at least one A from the alphabets "A, H, N, E, T, E, H" are:
NEAT, HATE, HEAT, THAN, HEATHEN, EATEN, ENATE, TANH

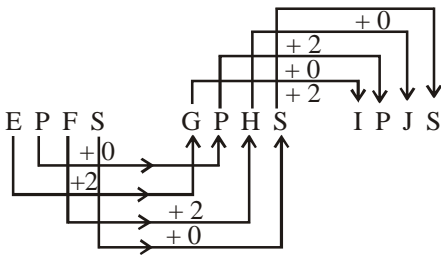
Sol. for (38-41):

	I	II/II(b)	III/ III (c)	IV	V/V (G)	Result
38	Not followed	II followed	III followed	Followed	V followed	Not selected
39	Followed	II followed	III followed	Not followed	Not followed	Not selected
40	Followed	II (b) followed	III followed	Followed	Followed	Reffered to chairman
41	Followed	II followed	III followed	Followed	Not followed	Selected

- 38. (b)
- 39. (b)
- 40. (c)
- 41. (a)
- 42. (d)



EPFS, GPHS, IPJS, _____, MPNS



Sol. for (43-46):

Name	Actevity	Hostel	Discipline	City
Ravi	Mess	Satpura	Comp sc	Jodhpur
Sanjay	Sports	Aravali	Mech. Engg	Nagpur
Hardeep	Cultural	Aravali	Metallurgy	Patna
Abhishek	Student Body	Vindhya	Civil Engg	Kochi
Hemant	Placement	Vindhya	Chemical Engg	Allahabad

- 43. (b)
- 44. (c)
- 45. (d)
- 46. (c)

Similarly

Sol. for (47-49):

	W ₁	W ₂	W ₃	W ₄	W ₅
Monday	9:30 AM to 2:30 AM	12:30 PM to 2:30 PM	3:30 PM to 5:30 PM	8:00 AM to 10:00 AM	2:00 PM to 4:00 PM
Tuesday	8:00AM to 11:30AM	-	-	11:30AM to 3:00 PM	3:30 PM to 5:30PM
Wednesda y	9:30 AM to 2:30 PM	8:30AM to 11:30 AM	10:00 AM to 12:30 PM	3:30 PM to 5:30 PM	8:00 AM to
Thursday	8:00 AM to 11:30 PM	8:30 AM to 11:30	3:30PM to 5:30PM	12:30PM to 3:00 PM	10:30 A M to 12:30
Friday	3:00 PM to 5:00 PM	8:00 A M to 10:00	10:00 A M to 12:30 PM	12:30 PM to 3:00 PM	3:30 PM to 5:30PM
Saturday	-	12:30 PM to 2:30 PM	10:00 AM to 12:30 PM	8:00 AM to 10:00 AM	-

Office : Timings — 8:00 AM to 5 : 30 PM from Monday to Friday and 8 : 00 AM to 2 : 30 PM on Saturday.

- 47. (b) Windows which are opent at 9 : 45AM on Monday W₁ and W₄
Wednesday W₁, W₂ and W₅
Thursday W₁, W₂
Friday W₂
So maxmum 3 windows are open on Wednesday. So option (b) is correct
- 48. (d) Only on Saturday one window is open during office hours
- 49. (a) During the time interval 2:30 PM to 3:30 PM all windows on Wednesday are closed.

Sol. for (50-51):

Name of companies:

Klentech Industries, Andromeda Infotech, Zoomerng Technology, Spearhead unlimited.

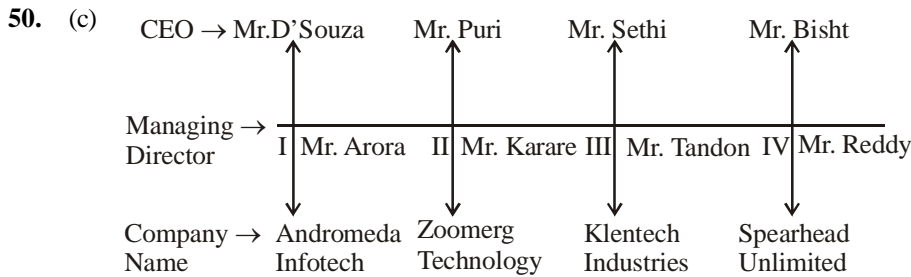
The CEO, of companies:

Mr. Sethi, Mr. D'souza, Mr. Puri and Mr. Bisht.

The Managing Directors :

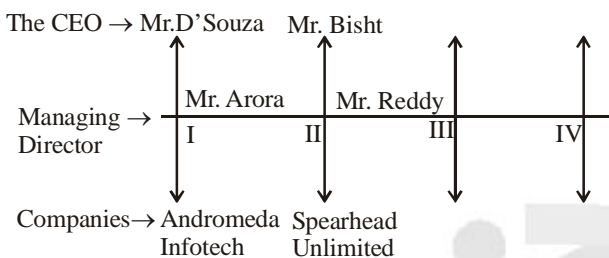
Mr. Tandon, Mr. Arora, Mr. Kamare and Mr. Reddy

All are respectively in order.



Here only option (c) is correct.

51. (d)



Here the order of addressing CEO and managing director at 3rd and 4th position can not be determined.

52. (d) **Assumption 1st** is not correct because it is clearly stated that GDP Growth rate of 7% in India, which is very much attainable.
Assumption 2nd is true because it is obviously stated that the gross fixed capital formation in the country must increase to 30 per cent of GDP.
Assumption 3rd is not correct. Paragraph has no information about this.

53. (a) Courses of action I can not be true, because market may provide. Opportunities for both private and government players.
 Action II, this can not be true that the city council is not obligated to provide for the losses of any private player, action III cannot be true as have no information in paragraph.

Sol. for (54-55):

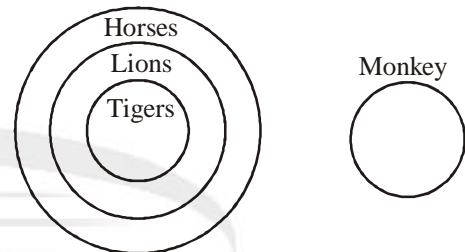
Input be the change you wish to see in this world
 Step I- The be you change to wish in see world this
 Step II- You be the change to world in see wish
 Step III- you see the this to world in be wish change
 Step IV- See you this the world to be in chang wish

54. (c) Given Input
 I. don't cry because it's over smile since it actually happend.
 I. cry don't it's because smile over. It since happened actually.
 II. It's don't cry because smile happened it since over actually.
 III. It's since cry actually smile happened it don't over because.
 IV. Since it's actually cry happened smile don't it because over.

55. (a) As compared with the given input for question 54, in which 1st word 'see' for step 4 is at the 4th positon in the given input from the right side.

Similarly, The word 'dog' in the step 4 was at 4th position from the right side in the given input. Here only option (a) is correct choice.

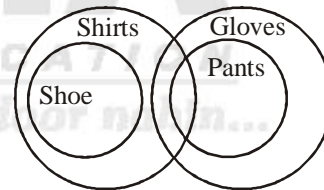
56. (a)



Conclusion

- (i) True (ii) True
 (iii) True (iv) True

57. (a)



- (i) False (ii) True
 (iii) False (iv) False

58. (a) Time for Mumbai to Kanyakumari

$$= \frac{\text{total distance}}{\text{speed}} = \frac{950}{40} = 23.75\text{h}$$

Time for Bhubaneshwar to Chennai.

$$= \frac{950}{30} = 31.66 \text{ hours}$$

Time for Chennai to Kochi

$$= \frac{901}{30} \approx 30 \text{ hours}$$

Time for Mumbai to Chennai

$$= \frac{1000}{30} = 33.33 \text{ hours}$$

So least travel time is for Mumbai to Kanyakumari.

59. (b) **Option (a) :**

Mumbai to Bhubaneshwar by Bus, and Bhubaneshwar to Kochi by Airplane

$$\text{total cost} = 701 \times 2 + 798 \times 5 = 1402 + 3990 = \text{` } 5392$$

Option (b) : Mumbai to Chennai by ship and Chennai to Kochi by ship

$$\begin{aligned} \text{Total cost} &= 1000 \times 1.5 + 901 \times 1.5 \\ &= 1.5 \times (1901) = \text{` } 2851.5 \end{aligned}$$

Option (c) : Mumbai to Kanyakumari by bus and Kanyakumari to Kochi by train

$$\text{Total cost} = 950 \times 2 + 1100 \times 2.5 = \text{` } 4650.$$

Option (d) : Mumbai to Vizag by airplane and Vizag to Kochi also by airplane

$$\text{So, total cost} = 500 \times 5 + 600 \times 5 = 5 (1100) = \text{` } 5500$$

Option (b) is least cost route.

60. (a) For minimum travelling, school should plan to travel by ship or train route.

So possible routes for Kanyakumari, Vizag and Bhubaneswar.

$$\text{Chennai} \xrightarrow[950]{\text{Ship}} \text{Bhubaneswar} \xrightarrow[700]{\text{ship}} \text{Kanyakumari}$$

$$\text{Kanyakumari} \xrightarrow[250]{\text{ship}} \text{Vizag} \xrightarrow[300]{\text{Train}} \text{Chennai}$$

$$\begin{aligned} \text{Total cost} &= 950 \times 1.5 + 700 \times 2.5 + 250 \times 1.5 + 300 \times 2.5 \\ &= 1425 + 1750 + 375 + 750 = \text{` } 4300. \end{aligned}$$

Ind possible route.

$$\text{Chennai} \xrightarrow[300]{\text{Train}} \text{Vizag} \xrightarrow[250]{\text{ship}} \text{Kanyakumari}$$

$$\xrightarrow[700]{\text{Train}} \text{Bhubaneswar} \xrightarrow[950]{\text{Ship}} \text{Chennai}$$

64. (a)

S.No	Sectors	Total number of Mergers & Acquisitions	Total number of acquisitions	% age of mergers to mergers & acquisitions
1.	Food & Beverage	465	97	$\frac{97}{465} \times 100 = 20.87\%$
2.	Textile	371	77	$\frac{77}{371} \times 100 = 20.76\%$
3.	Chemicals	584	116	$\frac{116}{584} \times 100 = 19.86\%$
4.	Drugs & Pharma	350	74	$\frac{74}{350} \times 100 = 21.14\%$
5.	Cement	48	6	$\frac{6}{48} \times 100 = 12.5\%$
6.	IT & Telecom	643	96	$\frac{96}{643} \times 100 = 14.9\%$
7.	Diversified	52	2	$\frac{2}{52} \times 100 = 3.85\%$

$$\begin{aligned} \text{Total cost} &= 300 \times 2.5 + 250 \times 1.5 + 700 \times 2.5 + 950 \times 1.5 \\ &= 750 + 375 + 1750 + 1425 \\ &= \text{` } 4300 \end{aligned}$$

So, minimum travel cost collect by school ` 4300.

61. (c) Here less distance take less time so that distance between Kanyakumari to Bhubaneswar = 700 km and distance between Mumbai to Bhubaneswar = 701 km

$$\text{Time for Bhubaneswar to Kanyakumari} = \frac{700}{25} = 28 \text{ h}$$

$$\text{Time for Bhubaneswar to Mumbai} = \frac{701}{40} = 17.525 \text{ h}$$

So, less time from Bhubaneswar to Mumbai

62. (b) For least cost distance must be travelled by ship or train.

So, option (b) and (c) travelled by ship or train.

$$\begin{aligned} \text{Option (b) cost} &= 901 \times 1.5 + 300 \times 2.5 \\ &= 1351.5 + 750 = \text{` } 2101.5 \end{aligned}$$

$$\begin{aligned} \text{Option (c) cost} &= 1100 \times 2.5 + 250 \times 1.5 \\ &= 2750 + 375 = \text{` } 3125 \end{aligned}$$

So option (b) is correct.

63. (b) Total no of merger for entire period = 1499

Total no of merger and acquisition = 5646

No of acquisition = 5646 – 1499 = 4147.

Percentage of mager to acquisition

$$= \frac{1499}{4147} \times 100 = 36.15\%$$

8.	Financial services	1041	452	$\frac{452}{1041} \times 100 = 43.4\%$
9.	Other services	1709	512	$\frac{512}{1709} \times 100 = 29.96\%$
10.	Misc. manufacturing	192	34	$\frac{34}{192} \times 100 = 17.7\%$
11.	Non-metallic mineral products	191	33	$\frac{33}{191} \times 100 = 17.3\%$

So 5 sectors are more than 20% in proportion of mergers to mergers and acquisitions.

65. (d) It is clear from the table given on previous question, 5 sectors i.e. food & Beverage, IT & Telecom, Diversified, Financial services and other services have more mergers in first 3 years as compared to the last 3 years.
66. (d) Turbulence = sum of differences (in absolute terms)

Sectors	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	Total
Financial services	103 - 91 = 12	107 - 94 = 13	87 - 73 = 14	75 - 41 = 34	118 - 75 = 43	126 - 51 = 75	191
IT & Telecom	134 - 19 = 115	95 - 19 = 76	71 - 13 = 58	64 - 16 = 48	92 - 17 = 75	91 - 12 = 79	451
Food & Beverage	96 - 17 = 79	54 - 23 = 31	67 - 10 = 57	55 - 19 = 36	43 - 20 = 23	53 - 8 = 45	271
Other services	207 - 90 = 117	188 - 92 = 96	182 - 105 = 77	200 - 81 = 119	210 - 61 = 149	210 - 83 = 127	685

So from the table it is clear that 'other services' can be considered as the most turbulent for the entire period.

67. (c) The table given below shows sector which exhibited higher number of acquisitions as compared to previous years.

S.No	Sectors	2002-03	2003-04	2004-05	2005-06	2006-07
1	Food & Beverage	54	67	55	43	53
2	Textiles	52	51	53	56	32
3	Chemicals	83	100	76	55	47
4	Drugs & Pharma	43	30	40	45	60
5	Cement	5	7	19	0	0
6	IT & Telecom	95	71	64	92	91
7	Diversified	8	12	4	7	5
8	Financial services	94	73	75	118	126
9	Other services	188	182	200	210	210
10	Misc. Manufacturing	23	31	31	24	21
11	Non-metallic mineral products	19	26	22	39	23
12	Higher number of acquisitions	-	6	5	7	3

So in the year 2005-06 maximum acquisition were there.

68. (c) In 2009, the consumption of various sources of energy was as follows

$$\text{Coal} = 1000 \times \frac{54}{100} = 540 \text{ MTOE}$$

$$\text{Crude oil} = 1000 \times \frac{29}{100} = 290 \text{ MTOE}$$

$$\text{Natural gas} = 1000 \times \frac{8}{100} = 80 \text{ MTOE}$$

$$\text{Nuclear energy} = 1000 \times \frac{2}{100} = 20 \text{ MTOE}$$

$$\text{Hydroelectricity} = 1000 \times \frac{5}{100} = 50 \text{ MTOE}$$

Others = $1000 \times \frac{2}{100} = 20$ MTOE

Total consumption of coal in

2010 = $540 \times \frac{115}{100} = 621$

Total consumption of crude oil

$290 \times \frac{110}{100} = 319$ MTOE

Total consumption of natural gas

= $80 \times \frac{105}{100} = 84$ MTOE

Total consumption of nuclear energy in 2010

= $20 \times \frac{120}{100} = 24$ MTOE

Total consumption of hydroelectricity = $50 \times \frac{110}{100} = 55$

Total consumption of others = $20 \times \frac{115}{100} = 23$

Import of coal = 25% of 621 = 155.25 MTOE

Import of crude oil = 50% of 319 = 159.5 MTOE

Import of natural gas = 50% of 84 = 42 MTOE

Import of nuclear energy = Nil

Import of hydroelectricity = 5% of 55 = 2.75 MTOE

So total import = 155.25 + 159.5 + 42 + 2.75 = 359.5 MTOE.

69. (b) In 2010, the import of natural gas was 42 MTOE

Consumption of natural gas in 2012 = $84 \times \frac{110}{100} \times \frac{105}{100} = 97.02$

Import of natural gas in 2012 = 30% of 97 = 29.1 MTOE

So import of natural gas reduced in 2012 by 42 - 29 = 13 MTOE

70. (b) Consumption of crude oil in 2011

= $290 \times \frac{110}{100} \times \frac{110}{100} = 351$ MTOE

Import of crude oil on 2011 is 45%

So production of crude oil = 55% of 351 = 193 MTOE

71. (d)

Year	Crude oil	Natural gas	Coal	Nuclear energy	Hydro-electricity	Others
2009	290	80	540	20	50	20
2010	$290 \times \frac{110}{100} = 319$	$80 \times \frac{105}{100} = 84$	$540 \times \frac{115}{100} = 621$	$20 \times \frac{120}{100} = 24$	$50 \times \frac{110}{100} = 55$	$20 \times \frac{115}{100} = 23$
2011	$319 \times \frac{110}{100} = 351$	$84 \times \frac{110}{100} = 92.4$	$621 \times \frac{110}{100} = 683$	$24 \times \frac{115}{100} = 27.6$	$55 \times \frac{105}{100} = 57.75$	$23 \times \frac{115}{100} = 26.45$
2012	$351 \times \frac{115}{100} = 403.5$	$92.4 \times \frac{105}{100} = 97$	$683 \times \frac{115}{100} = 785.5$	$27.6 \times \frac{110}{100} = 30.4$	$57.75 \times \frac{110}{100} = 63.5$	$26.45 \times \frac{110}{100} = 29$

Domestic consumption of energy = $403.5 + 97 + 785.5 + 30.4 + 63.5 + 29 = 1408.9$

So Proportion of coal in 2012

= $\frac{785.5}{1408.9} \times 100 = 55.7\%$

So (d) option is correct.

= 27.6 + 54.86 = 82.46 MTOE.

So option (b) is correct.

72. (b)

Year	Nuclear Energy	Hydro-electricity
2009	20	50
2010	24	55
2011	27.6	57.75

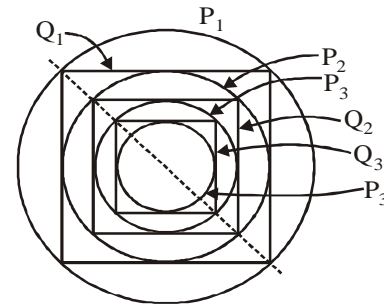
So domestic production of nuclear energy on 2011 = $27.6 \times 1 = 27.6$ MTOE

Domestic production of hydro-electricity on 2011

= $57.75 \times 0.95 = 54.86$

Sum of domestic production of nuclear energy & hydro-electricity in 2011

73. (a)



Here P₁ is the circle whose radius = r

Side of Q₁ = $\sqrt{2} r$

Area of Q₁ = $(\sqrt{2} r)^2 = 2 r^2$

Area of P₂ circle = $\pi r^2 \left(\text{radius } P_2 = \frac{r}{\sqrt{2}} \right)$

$$= \pi \times \left(\frac{r}{\sqrt{2}} \right)^2 = \frac{\pi r^2}{2}$$

Area S_1 = Area of square Q_1 – Area of circle P_2

$$= \left(2r^2 - \frac{\pi r^2}{2} \right) = r^2 \left(\frac{4 - \pi}{2} \right)$$

Again area of Q_2 square = $(r)^2 = r^2$

Area of P_3 circle = πr^2 (\because Radius = $r/2$)

$$= \frac{\pi r^2}{4}$$

$S_2 = Q_2 - P_3$

$$= r^2 - \frac{\pi r^2}{4} = r^2 \left(\frac{4 - \pi}{4} \right)$$

Similarly

$$S_3 = r^2 \left(\frac{4 - \pi}{8} \right)$$

$$S_4 = r^2 \left(\frac{4 - \pi}{16} \right)$$

Required sum

$$S_n = S_1 + S_2 + S_3 + S_4 + \dots$$

$$S_n = r^2 \left(\frac{4 - \pi}{2} \right) + r^2 \left(\frac{4 - \pi}{4} \right) + r^2 \left(\frac{4 - \pi}{8} \right) + \dots$$

$$\text{Common ratio} = \frac{1}{2}$$

$$\text{1st term} = r^2 \left(\frac{4 - \pi}{2} \right)$$

$$S_n = \frac{r^2 \left(\frac{4 - \pi}{2} \right)}{1 - \frac{1}{2}} = \frac{r^2 (4 - \pi)}{2} \times 2 = r^2 (4 - \pi)$$

$$\text{Required ratio} = \frac{S_n}{Q_1}$$

$$= \frac{r^2 (4 - \pi)}{2r^2} = \frac{4 - \pi}{2}$$

74. (b) Roll no. 1 got 1 boxes 2 got 2 boxes and so on

\therefore Roll no. 1 to n should have $\frac{n(n+1)}{2}$ boxes

Let 'm' the roll number of the student

$$\therefore \frac{n(n+1)}{2} + m = 1200$$

$$n(n+1) + 2m = 2400$$

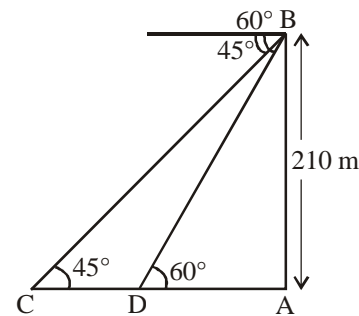
By hit and trial $48(49) = 2352$

While $49(50) > 2400$

$$\therefore 48(49) + 2m = 2400$$

$$\text{or } m = 24$$

75. (d)



Now, in $\triangle ABD$

$$\tan 60^\circ = \frac{AB}{AD}$$

$$\Rightarrow \sqrt{3} = \frac{210}{AD}$$

$$\therefore AD = \frac{210}{\sqrt{3}} \text{ m}$$

In $\triangle ABC$

$$\tan 45^\circ = \frac{AB}{AC}$$

$$\Rightarrow 1 = \frac{210}{AC}$$

$$\therefore AC = 210 \text{ m}$$

Distance travelled between point D to C

$$= 210 - \frac{210}{\sqrt{3}}$$

$$= 210 \left(\frac{\sqrt{3} - 1}{\sqrt{3}} \right) \times \frac{\sqrt{3}}{\sqrt{3}}$$

$$= \frac{210(3 - \sqrt{3})}{3} = 70(3 - \sqrt{3}) \text{ m}$$

Speed of boat = 3 km/h

$$= 3 \times \frac{1000}{60}$$

$$= 50 \text{ m/min}$$

Time taken to boat change from 60 days to 45 days

$$= \frac{70 - (3 - \sqrt{3})}{50}$$

$$= 1.77 \text{ min} \approx 2 \text{ min}$$

76. (b) Here X and Y are two alloys which is made of zinc and copper.

$$X \longrightarrow \begin{array}{l} \text{Zinc : Copper} \\ 6 \quad \quad 9 \end{array}$$

Quantity of zinc in 40 g of alloy X

$$= \frac{6}{15} \times 40 = 16 \text{ g}$$

Quantity of copper in 40 g of alloy X

$$= 40 \text{ g} - 16 \text{ g} = 24 \text{ g}$$

Now, in alloy Y

$$Y \longrightarrow \begin{matrix} \text{Zinc} : \text{Copper} \\ 7 \quad \quad 11 \end{matrix}$$

Quantity of zinc in 60 g of alloy Y

$$= \frac{7}{18} \times 60 = \frac{70}{3} \text{ g}$$

Quantity of copper in 60 g of alloy Y

$$= \left(60 - \frac{70}{3} \right) \text{ g} = \frac{110}{3} \text{ g}$$

Now, in alloy Z

Quantity of zinc = 16g of X + $\frac{70}{3}$ of Y

$$= \frac{48 + 70}{3} = \frac{118}{3} \text{ g}$$

Quantity of copper in alloy Z

$$= 24 \text{ g} + \frac{110}{3} \text{ g}$$

$$= \frac{3 \times 24 \text{ g} + 110 \text{ g}}{3}$$

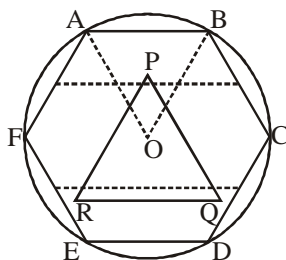
$$= \frac{182}{3} \text{ g}$$

Required ratio = $\frac{\text{Quantity of zinc}}{\text{Quantity of copper}}$

$$= \frac{118}{3} \times \frac{3}{182}$$

$$= \frac{59}{91} = 59 : 91$$

77. (a)



Here, side of equilateral triangle = a

and O is the centre of circle and side of Hexagonal = $2a$

$$\text{Area of Hexagonal (ABCDEF)} = \frac{n(2a)^2}{4} \times \cot\left(\frac{180^\circ}{n}\right)$$

Here $n = 6$

$$= \frac{6(2a)^2}{4} \cot\left(\frac{180^\circ}{6}\right)$$

$$= \frac{6(2a)^2}{4} (\sqrt{3}) = 6\left(\frac{\sqrt{3}}{4}(2a)^2\right)$$

Now, Area of equilateral triangle PQR

$$= \frac{\sqrt{3}}{4} a^2$$

So, area of shaded region of hexagonal

$$= 6\left(\frac{\sqrt{3}}{4}(2a)^2\right) - \frac{\sqrt{3}}{4}(a^2)$$

$$= \frac{\sqrt{3}}{4} a^2 (24 - 1) = 23 \cdot \frac{\sqrt{3}}{4} a^2$$

This is equal to X

$$\text{Hence, } 23 \cdot \frac{\sqrt{3}}{4} a^2 = X$$

$$a^2 = \frac{4X}{23\sqrt{3}}$$

Here, radius of circle OA = $2a$

$$= 2 \cdot \sqrt{\frac{4X}{23\sqrt{3}}}$$

$$\text{Area of circle} = \pi r^2 = \pi \cdot 4 \cdot \frac{4X}{23\sqrt{3}}$$

$$= \frac{16\pi}{23\sqrt{3}} X$$

78. (d) Let present age of Ravindra = $5x$ years
 present age of Rekha = $4x$ years
 10 years before their ages are
 $(5x + 10)$ and $(4x + 10)$
 According to questions,

$$\text{Ravindra age} = \frac{1}{6}(4x + 10) + (4x + 10)$$

$$\Rightarrow 5x + 10 = \frac{7}{6}(4x + 10)$$

$$\Rightarrow 6(5x + 10) = 7(4x + 10)$$

$$\Rightarrow 30x + 60 = 28x + 70$$

$$\Rightarrow 2x = 10$$

$$x = 5$$

Present age of Ravindra = $5 \times 5 + 10 = 25 + 10$
 $= 35$ years

Present age of Rekha = $4 \times 5 + 10 = 20 + 10$
 $= 30$ years

Present age of total family
 $= 35 + 30 + 3\alpha + 2\beta + \gamma$

(Because ratio of ages of children is $3 : 2 : 1$
 $2 \times 6 = 12$

Age of each triplet son = $3 \times 9 = 27$

Age of each two son = $3 \times 2 = 6$ years

Age of single son = $1 \times 3 = 3$ years

So, total present family age = $30 + 35 + 27 + 12 + 3$
 $= 107$ years

79. (d) Selecting a girl from section A

and section B is $\frac{1}{4}$ and $\frac{4}{9}$ respectively

Selecting a boy from section A and section B is $\frac{3}{4}$

and $\frac{5}{9}$ respectively

Case 1 — A girl from section A and a boy from section B

$$P_1 = \frac{1}{4} \times \frac{5}{9} = \frac{5}{36}$$

Case 2 — A boy from section A and a girl from section B

$$P_2 = \frac{3}{4} \times \frac{4}{9} = \frac{12}{36}$$

$$\text{Required probability} = P_1 + P_2 = \frac{17}{36}$$

80. (d) Final concentration of milk after I customer = $40 \times \frac{10}{40}$

Final concentration of milk after II customer

$$= 40 \times \frac{1}{4} \times \left(1 - \frac{1}{4}\right)$$

Final concentration of milk after III customer

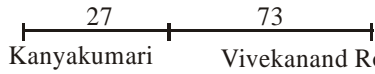
$$= 40 \times \frac{1}{4} \times \left(1 - \frac{1}{4}\right)^2$$

Final concentration of milk after IV customer

$$= 40 \times \frac{1}{4} \times \left(1 - \frac{1}{4}\right)^3$$

Final concentration of milk after V customer

$$= 40 \times \frac{1}{4} \times \left(1 - \frac{1}{4}\right)^4 = 40 \times \frac{1}{4} \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} = \frac{405}{128}$$

81. (c) 

speed of ferry in upstream = $20 - 2 = 18$ km/h

Time after which hole was detected = 90 min

$$\text{So distance covered} = 18 \times \frac{90}{60} = 27 \text{ km}$$

Distance yet to be covered = $100 - 27 = 73$ km

Now the boat has to travel 73 km towards Vivekanand

rock and then 100 km back to Kanyakumari is $4\frac{1}{2}$ hours

Let x_1 be the speed of boat towards

Vivekanand rock and x_2 be the speed of boat towards Kanyakumari

$$\therefore \frac{73}{x_1 - 2} + \frac{100}{x_2 + 2} = \frac{9}{2}$$

In this equation if we substitute

$$x_1 = 42 \text{ km/hr}$$

$$x_2 = 36 \text{ km/hr}$$

$$\frac{73}{42 - 2} + \frac{100}{36 + 2} = \frac{9}{2}$$

which is true

So option (c) is correct

82. (d) $1 - \frac{1}{6} + \frac{1}{6} \times \frac{1}{4} - \frac{1}{6} \times \frac{1}{4} \times \frac{5}{18} + \dots$

$$= \left(1 - \frac{1}{6}\right) + \left(\frac{1}{6} \times \frac{1}{4} - \frac{1}{6} \times \frac{1}{4} \times \frac{5}{18}\right) + \dots$$

$$= \frac{5}{6} + \frac{1}{24} \left(1 - \frac{5}{18}\right) + \dots$$

$$= \frac{5}{6} + \frac{1}{24} \times \frac{13}{18}$$

$$= 0.833 + 0.03 = 0.869$$

Further terms can be neglected as value is very small

$$\frac{\sqrt{3}}{2} = 0.866$$

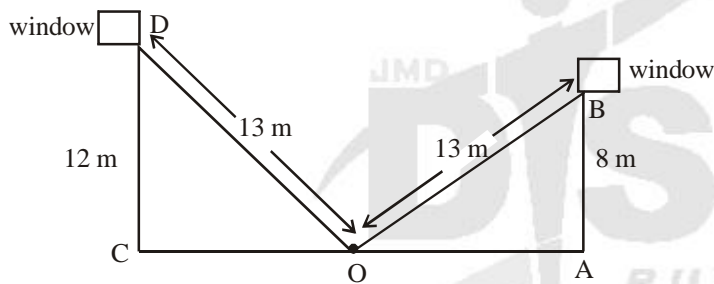
So (d) is correct option.

83. (d) $\log_7 \log_7 \sqrt{7(\sqrt{7\sqrt{7}})}$

$$= \log_7 \log_7 \sqrt{7\sqrt{7(7)^{1/2}}}$$

$$\begin{aligned}
 &= \log_7 \log_7 \sqrt{7 \{7(7)^{1/2}\}^{1/2}} \\
 &= \log_7 \log_7 \left\{7 \left[7(7)^{1/2}\right]^{1/2}\right\}^{1/2} \\
 &= \log_7 \log_7 \left(7^{1/2} \cdot 7^{1/2 \times 1/2} \cdot 7^{1/2 \times 1/2 \times 1/2}\right) \\
 &= \log_7 \log_7 (7)^{7/8} \\
 &= \log_7 (\log_7 7 - \log 7^8) \\
 &= \log_7 (1 - \log 7^8) \\
 &= \log (1 - \log 7^{2^3}) \\
 &= \log (1 - 3 \log 7^2)
 \end{aligned}$$

84. (c)



Let OB be the ladder whose length is 13 m
So, $OD = OB = 13$ m
width of street = AC
 $= OC + OA$

$$\begin{aligned}
 OC &= \sqrt{(13)^2 - (12)^2} \\
 &= \sqrt{169 - 144} \\
 &= \sqrt{25} = 5 \text{ m}
 \end{aligned}$$

Similarly

$$\begin{aligned}
 OA &= \sqrt{(13)^2 - (8)^2} = \sqrt{169 - 64} \\
 &= \sqrt{105} = 10.2 \text{ m}
 \end{aligned}$$

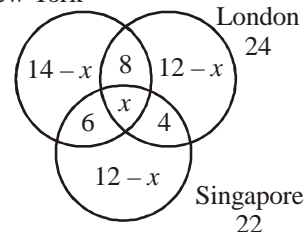
Now, width of street = $OC + OA$
 $= 5 \text{ cm} + 10.2 \text{ cm}$
 $= 15.2 \text{ cm}$.

85. (a) The total number of 8-digit landline telephone number that can be formed having at least one of their digits related
The total number of 8-digit landline number = $10^8 = 10,00,00,000$
The no of 8-digit landline number in which no digit

is repeated = $\frac{10}{2} = 18,14,400$

\therefore Number of required landline number
 $= 10000000 - 1814400 = 98185600$
So option (a) is correct.

86. (d) New York



No. of analysts covering New York alone

$$= 28 - (8 + 6 + 7) = 7$$

Let the number of analysts covering all three locations be x

$$\therefore 28 + (12 - x + 4) + (12 - x) = 42$$

$$\Rightarrow 56 - 2x = 42$$

$$\Rightarrow x = 7$$

The number of analysts covering

New York alone is $14 - x = 7$

$$x = 7$$

So choice (d) is correct.

87. (c) Here rate of interest is compounded annually

The investment amount is double

$$\text{In year} = \frac{72}{6} = 12 \text{ years}$$

$$A = P \left(1 + \frac{r}{100}\right)^t$$

$$\Rightarrow 2 \times 30,00,000 = 30,00,000 \left(1 + \frac{r}{100}\right)^{12}$$

$$\Rightarrow 2 = \left(1 + \frac{r}{100}\right)^{12} \quad \dots (i)$$

Now, amount after 48 years

$$\Rightarrow A = P \left(1 + \frac{r}{100}\right)^{48}$$

$$\Rightarrow A = 30,00,000 \left(1 + \frac{r}{100}\right)^{12 \times 4}$$

From eqn. (i), we put value

$$A = ` 30,00,000(2)^4$$

$$= ` 480,00,000$$

88. (c) Given, $r = 6$, Height = 24

$$\begin{aligned} \text{Volume of circular cylinder} &= \pi r^2 h \\ &= \pi (6)^2 \times 24 \\ &= 864 \pi \end{aligned}$$

$$\begin{aligned} \text{Side of rectangular solid} &= \sqrt{(6)^2 + (6)^2} \\ &= \sqrt{72} \\ &= 6\sqrt{2} \end{aligned}$$

$$\begin{aligned} \text{Volume of rectangular solid} &= (6\sqrt{2})^2 \times 20 \\ &= 1440 \end{aligned}$$

Water into the cylinder

$$\begin{aligned} &= \text{Volume of cylinder} - \text{volume of solid} \\ &= (864 \pi - 1440) \\ &= 288(3\pi - 5) \end{aligned}$$

89. (a) no. of days No. of student

Here, 1st day raising fund = 1

2nd day raising fund by = 1 + 2

3rd day raising fund by = 1 + 2 + 3

4th day raising fund by = 1 + 2 + 3 + 4

5th day raising fund by = 1 + 2 + 3 + 4 + 5

∴ ∴ ∴ ∴
∴ ∴ ∴ ∴
∴ ∴ ∴ ∴
∴ ∴ ∴ ∴

20th day raising fund is completed
= 1 + 2 + 3 + 4 + 5 + + 20

So, sequence is

$$= 1 + (1 + 2) + (1 + 2 + 3) + (1 + 2 + 3 + 4 + 5) + \dots + \dots + (1 + 2 + 3 + 4 + 5 + \dots + 20)$$

$$\text{This can be written as} = \sum_{n=1}^{20} \frac{n(n+1)}{2}$$

$$= \sum_{n=1}^{20} \frac{n(n+1)}{2}$$

$$= \sum_{n=1}^{20} \frac{n^2}{2} + \sum_{n=1}^{20} n$$

We know that sum of square of natural number

$$= \frac{n(n+1)(2n+1)}{6}$$

$$= \frac{1}{2} \left(\frac{n(n+1)(2n+1)}{6} \right) + \frac{1}{2} \left(\frac{n(n+1)}{2} \right)$$

Here $n = 20$

$$= \frac{1}{2} \left(\frac{20 \times 21 \times 41}{6} \right) + \frac{1}{2} \left(\frac{20 \times 21}{2} \right)$$

= 1540

So, total no of students = 1540

Now, Efficiency of MBA student is double as compared to B.Tech student

$$\text{no. of total days} = \frac{1540}{2 \times 11} = 70 \text{ days}$$

90. (c) After 600 strips of free medicines,
no of strips remains = 6000 – 600 = 5400.

$$\left(\frac{4}{5} \right)^{\text{th}} \text{ of strips} = \frac{4}{5} \times 5400$$

$$= 4320$$

After 25% discount on printed price

Total amount earned by selling $\left(\frac{4}{5} \right)^{\text{th}}$ strips

$$= 4320 \times \frac{75}{100} \times 250$$

$$= ₹ 810000$$

Remaining strips after $\left(\frac{4}{5} \right)^{\text{th}}$ selling

$$= 5400 - 4320$$

$$= 1080$$

Selling price of 1080 strips

$$= 1080 \times 250$$

$$= ₹ 270000$$

Total revenue earned by selling 5400 strips

$$= 810000 + 270000$$

$$= ₹ 1080000$$

Now, vendor discount 30% at total revenue

$$= \frac{1080000 \times 70}{100}$$

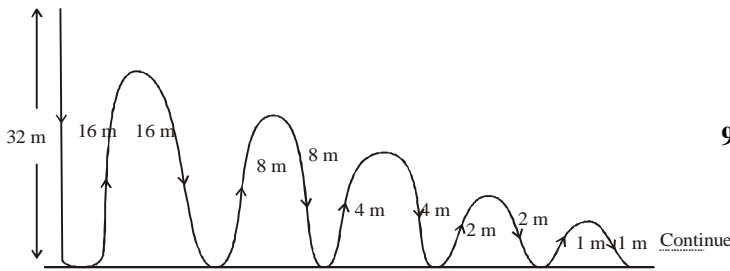
$$= ₹ 756000$$

$$\text{Loss percent} = \frac{800000 - 756000}{80,0000}$$

$$= \frac{44000}{80,0000} \times 100$$

$$= \frac{44}{8} = 5.5\% \text{ (loss)}$$

91. (b)



Here A ball rebounds for half of its previous. height and ball continue for hit the ground upto 11th time.
 Distance travelled for 1st time hit ground = 32 m.
 Distance travelled for 2nd time hit ground = 16 + 16 = 32 m
 Distance travelled for 3rd time hit ground = 8 + 8 = 16 m
 Distance travelled for 4th time hit the ground = 4 + 4 = 8 m
 So continue upto 11th time then sequence
 Required distance

$$= 32 + 32 + 16 + 8 + 4 + 2 + 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16}$$

$$= 32 + \underbrace{\left(32 + 16 + 8 + 4 + 2 + 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} \right)}_{\text{G.P. series}}$$

Here 1st term $a = 32$, $r = \frac{16}{32} = \frac{1}{2}$

$$= 32 + \frac{a(1-r^n)}{(1-r)}$$

$$= 32 + \frac{32(1-(1/2)^{10})}{(1-1/2)}$$

$$= 32 + 32 \times 2$$

$$= 32 + 64 = 96\text{m}$$

92. (c) Here, 8 male and 7 females. Out of them 3 males and 4 female to be selected
 no. of ways in which total committee formed

$$= {}^8C_3 \times {}^7C_4$$

$$= \frac{8 \times 7 \times 6}{3 \times 2} \times \frac{7 \times 6 \times 5}{3 \times 2}$$

$$= 56 \times 35 = 1960$$

Now, committee formed without Raj and Rani
 Selection of both Raj and Rani can happen in

$${}^7C_2 \times {}^6C_3 = 21 \times 20 = 420 \text{ ways}$$

∴ Required number of ways = 1960 – 420 = 1540

So option (c) is correct

93. (c) The correct match is as follows:
 A. Joshna Chinappa - squash player
 B. Vinesh Phogat - wrestling
 C. Vikas Gowda - discus throw
 D. Sathish Sivalingam - weightlifting
94. (b) According to the economic survey 2013-14, India has the second fastest growing services sector with its compound annual growth rate at nine per cent, just below China's 10.9 per cent, during the last 11-year period from 2001 to 2012.
95. (c) Belgium did not qualify the FIFA 2014 semi final.
96. (d) Lifebuoy is a brand of soap marketed by Unilever.
97. (a) According to Human Development Report India and Afghanistan hold highest and second rank respectively.
98. (b) Rakesh Khurana, professor of sociology and organizational behavior at Harvard University, and co-master of Cabot House, became dean of Harvard College on July 1, 2014.
99. (b) The Ebola River a tributary of the Congo River which is located in northern Democratic Republic of the Congo.
100. (b) Bengal Warriors is owned by the Kishore Biyani of Future Group & Head coach of the team is Raj Narain Sharma whereas Nilesh Shinde is leading the team as a captain.
101. (a) The Goldman Sachs Group, Inc. is an American multinational investment banking firm. Its headquarters are at New York City in USA.
102. (c) The punchline of the following banks is as follows:
 1. ICICI Bank- Khayaal Aapka
 2. Bank of Baroda- India's International Bank
 3. HDFC standard life - Jiyo Sar Utha ke
 4. LIC- Zindgi ke saath bhi Zindgi ke baad bhi
103. (a) "Deendayal Upadhyaya Gram Jyoti Yojana" for feeder separation will be launched to augment power supply to the rural areas and for strengthening sub-transmission and distribution systems. A sum of ₹ 500 crores has been set aside for this scheme.
104. (c) Veteran lyricist Gulzar received the Dadasaheb Phalke Award, the highest honour in cinema given annually by the Government of India for lifetime contribution to Indian cinema.
105. (a) Indian tennis star Sania Mirza was appointed 'Brand Ambassador' of Telangana.
106. (a) According to WTO rules, Yemen will become a full-fledged member on 26 June 2014.

- 107.** (c) Pranab Mukherjee is the 13th and current President of India. He has been in office since July 2012.
- 108.** (d) Tata group's oldest brand is Taj Hotel.
- 109.** (c) Arundhati Bhattacharya is an Indian banker. She is the first woman to be the Chairperson of State Bank of India.
- 110.** (a) Chitra Banerjee Divakaruni is an Indian-American author, poet and the Betty and Gene McDavid Professor of Writing at the University of Houston. She is the recipient of American Book Awards, Crawford Award but not got Man Booker Prize.
- 111.** (d) The correct match is given below:
1. Japan- Shinzo Abe
 2. China - Xi Jinping
 3. North Korea- Kim Jong Un
 4. Philippines - Benigno Aquino
- 112.** (d) Jabong is headquartered in Gurgaon, Haryana.
- 113.** (d) Singapore-based management consultant Mittu Chandilya is the first chief executive officer (CEO) of AirAsia India.
- 114.** (c) Justice HL Dattu is the 42nd Chief Justice of India and will be at the helms of the Indian judiciary till December 2, 2015.
- 115.** (d) Novak Djokovic has won his second men's singles title at Wimbledon defeating Roger Federer.
- 116.** (b) According to primary census abstract 2011 Bihar has the highest population density which is 1,106 people per sq km.
- 117.** (a) Prime Minister Narendra Modi has laid the foundation stone for the ₹ 4,000-crore port-based multi-product special economic zone at Jawaharlal Nehru Port Trust at Sheva, Navi Mumbai, on August 16.
- 118.** (d) Pradhan Mantri Jan Dhan Yojana has been launched on 28 August 2014.

