ANSWER KEY - IIFT 2011-13

1	C	**2**	D	**3**	A	**4**	B	**5**	C	**6**	D	**7**	C	**8**	D	**9**	A	**10**	D
11	C	**12**	B	**13**	D	**14**	C	**15**	A	**16**	A	**17**	B	**18**	C	**19**	C	**20**	D
21	B	**22**	B	**23**	A	**24**	B	**25**	B	**26**	D	**27**	B	**28**	D	**29**	C	**30**	B
31	B	**32**	C	**33**	*B	**34**	B	**35**	B	**36**	A	**37**	B	**38**	D	**39**	A	**40**	B
41	*C	**42**	A	**43**	*A	**44**	C	**45**	C	**46**	B	**47**	A	**48**	D	**49**	D	**50**	B
51	D	**52**	C	**53**	C	**54**	C	**55**	C	**56**	B	**57**	A	**58**	B	**59**	A	**60**	C
61	D	**62**	D	**63**	C	**64**	C	**65**	C	**66**	C	**67**	D	**68**	D	**69**	D	**70**	D
71	C	**72**	D	**73**	D	**74**	A	**75**	C	**76**	D	**77**	B	**78**	D	**79**	C	**80**	*D
81	*C	**82**	B	**83**	A	**84**	D	**85**	A	**86**	A	**87**	D	**88**	C	**89**	B	**90**	C
91	*D	**92**	B	**93**	D	**94**	D	**95**	C	**96**	D	**97**	B	**98**	D	**99**	C	**100**	A
101	B	**102**	B	**103**	B	**104**	B	**105**	D	**106**	A	**107**	B	**108**	A	**109**	B	**110**	D
111	C	**112**	D	**113**	C	**114**	A	**115**	D	**116**	D	**117**	B	**118**	D	**119**	A	**120**	*
121	A	**122**	C	**123**	D	**124**	B	**125**	D	**126**	A	**127**	A	**128**	D	**129**	C	**130**	B
131	A	**132**	A	**133**	C	**134**	D	**135**	B										

SOLUTION IIFT - 2011-13

1. C	2. D	3. A	4. B	5. C	6. D	7. C
8. D	9. A	10. D	11. C	12. B	13. D	14. C
15. A	16. A	17. B	18. C	19. C	20. D	21. B
22. B	23. A	24. B	25. B	26. D	27. B	28. D
29. C	30. B					

31. B Let $S = \frac{2}{1!} + \frac{3}{2!} + \frac{6}{3!} + \frac{11}{4!} + \frac{18}{5!} + ...$

Also, $e = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + ...$

Let T_n be the n^{th} term of S.

$$T_n = \frac{n^2 - 2n + 3}{n!} = \frac{n^2}{n!} - \frac{2n}{n!} + \frac{3}{n!}$$

$$S = \sum_{n=1} T_n = \sum_{n=1} \frac{n^2}{n!} - \sum_{n=1} \frac{2n}{n!} + \sum_{n=1} \frac{3}{n!}$$

Now, $\sum_{n=1} \frac{n^2}{n!} = \sum_{n=1} \frac{n}{(n-1)!} = \sum_{n=1} \frac{n-1+1}{(n-1)!}$

$$= \sum_{n=1} \frac{n-1}{(n-1)!} + \sum_{n=1} \frac{1}{(n-1)!}$$

$$= \sum_{n=2} \frac{1}{(n-2)!} + \sum_{n=1} \frac{1}{(n-1)!} = e + e = 2e$$

Also, $\sum_{n=1} \frac{2n}{n!} = 2\sum_{n=1} \frac{1}{(n-1)!} = 2e$

and, $\sum_{n=1} \frac{3}{n!} = 3e - 3$

$\Rightarrow S = 2e - 2e + 3e - 3 = 3(e-1)$

32. C The number of numbers between 6000000 and 6999999 that can be formed from the given digits is

$\underline{6}\_\_\_\_\_ \rightarrow \frac{6!}{2!} = 360$

The number of numbers greater than 7000000 that can be formed from the given digits is

$\underline{7}\_\_\_\_\_ \rightarrow \frac{6!}{2!2!} = 180$

So the total number of numbers greater than 6000000 that can be formed from the given digits is 540.

33.*B **Language of the question is very ambiguous.** So, the likely solution is as follows:

$$\left.\begin{array}{l}\text{Manufacturing cost} = \text{Rs.}42000 \\ \text{Establishment charges} = \text{Rs.}12000\end{array}\right] \text{Total charges} = \text{Rs.}54{,}000$$

Annual output = Rs.70,000

$\Rightarrow$ Profit = 70000 – 54000 = Rs.16,000

Now, 1 out of 14 machines is not working

$$\left.\begin{array}{l}\text{Manufacturing cost} = \text{Rs.}42000 \times \frac{13}{14} = \text{Rs.}39000 \\ \text{Establishment charges} = \text{Rs.}12000\end{array}\right] = \text{Rs.}51{,}000$$

and annual output $= \frac{70000}{14} \times 13 = \text{Rs.}65{,}000$

Profit = Rs.14,000

Percentage decrease in profit $= \frac{2000}{16000} \times 100 = 12.5\%$

34. B

Standard	Preferred	Ultra – preferred
50%	30%	20%

Probability			
P(dying)	0.01 / 0.5%	0.008 / 0.24%	0.007 / 0.14%

Required probability $= \frac{\text{P(preferred)}}{\text{P(dying)}} = \frac{0.24}{0.88} = \frac{3}{11} = 0.2727.$

35. B Revenue, $g(x) = x\left(54 - \frac{x}{32}\right)^2$

$$= x\left[54^2 - 2 \times 54 \times \frac{x}{32} + \left(\frac{x}{32}\right)^2\right]$$

$$\therefore g'(x) = 54^2 - \frac{4 \times 54x}{32} + \frac{3x^2}{(32)^2}$$

For zero marginal revenue, g'(x) = 0

$\Rightarrow 3x^2 - 4 \times 32 \times 54x + (54 \times 32)^2 = 0$

On solving, we get

x = 576, 1728

Since x < 900, 573 is the required number of people per trip.

36. A $\sin(\alpha + \beta - \gamma) = \frac{1}{\sqrt{2}} \Rightarrow \alpha + \beta - \gamma = 45°$

$\text{cosec}(\beta + \gamma - \alpha) = \frac{2}{\sqrt{3}} \Rightarrow \beta + \gamma - \alpha = 60°$

$\tan(\gamma + \alpha - \beta) = \frac{1}{\sqrt{3}} \Rightarrow \gamma + \alpha - \beta = 30°$

$\Rightarrow \alpha = 37\frac{1}{2}°,\ \beta = 52\frac{1}{2}°,\ \gamma = 45°$

37. B Let total profit be x.

Shyam gets 0.2x for managing the business

Remaining 0.8x is divided among Shyam, Gopal and Madhur in the ratio 2 : 4 : 3 respectively.

Out of this, share of Shyam $= \frac{2}{9} \times 0.8x = \frac{1.6}{9}x$

and share of Gopal $= \frac{4}{9} \times 0.8x = \frac{3.2x}{9}$

and share of Madhur $= \frac{3}{9} \times 0.8x = \frac{2.4x}{9}$

Share of Shyam from total profit $= 0.2x + \frac{1.6}{9}x = \frac{3.4}{9}x$

And shares of Gopal and Madhur

$= \frac{3.2x}{9} + \frac{2.4x}{9} = \frac{5.6x}{9}$

$\therefore \frac{5.6x}{9} - \frac{3.4x}{9} = 2200 \Rightarrow x = 9000$

$\therefore$ Share of Madhur $= \frac{2.4}{9} \times 9000 = \text{Rs.}2400.$

38. D We have, $S \to 2,\ E \to 2,\ R \to 1,\ I \to 1$

Case I: All alphabet are different
Number of ways = 4! = 24
Case II: 2 alike and remaining 2 diff.

Number of ways = $^2C_1 \times {}^3C_2 \times \frac{4!}{2!} = 72$

Case III: 2 alike and 2 alike. SSEE

Number of ways = $\frac{4!}{2!2!} = 6$

Total number of ways = 24 + 72 + 6 = 102

39. A Let the third vertix be $(x_1, x_1 + 5)$

$$\text{Area of triangle} = 6 = \frac{1}{2}\left|\begin{vmatrix} 1 & 1 & 1 \\ 4 & -1 & 1 \\ x_1 & x_1+5 & 1 \end{vmatrix}\right| = \frac{1}{2}$$

$\Rightarrow \frac{1}{2}|5x_1 + 10| = 6$

$\Rightarrow |5x_1 + 10| = 6 \times 2 \Rightarrow 5x_1 + 10 = \pm 12$

$\Rightarrow 5x_1 = +2, -22$

$\Rightarrow x_1 = \frac{+2}{5},\ \frac{-22}{5}$

$\therefore y = x_1 + 5 = \frac{27}{5},\ \frac{3}{5}$

$\therefore$ The coordinates of the point could be

$\left(\frac{2}{5}, \frac{27}{5}\right), \left(\frac{-22}{5}, \frac{3}{5}\right)$

40. B Let the number of pastries of pineapple, mango and black forest be p, m and b respectively. Then,
$p^2 + m^2 + b^2 = 211$,
where p, m, b are natural numbers.
Now, p + m + b = 23.
Using options, since 11 + 9 + 3 = 23
and $11^2 + 9^2 + 3^2 = 211$,
(B) is the correct option.

41.*C $x = \frac{2a \pm \sqrt{4a^2 - 4ab}}{2b} = \frac{a \pm \sqrt{a^2 - ab}}{b}$

$= \frac{\sqrt{a}\left(\sqrt{a} \pm \sqrt{a-b}\right)}{b} \times \frac{\left(\sqrt{a} \mp \sqrt{a-b}\right)}{\left(\sqrt{a} \mp \sqrt{a-b}\right)} = \frac{\sqrt{a}}{\sqrt{a} \pm \sqrt{a-b}}$

***Answer (C) answer is not printed correctly.**

42. A Let efficiency of Gupta, Sharma and Singh are x, y, z respectively and the time taken by them be t_g, t_s and t_h respectively.
x = 1.4y, y = 1.2z

$t_s - t_g = 10 \Rightarrow \frac{W}{y} - \frac{W}{1.4y} = 10 \Rightarrow \frac{W}{y} = 35 = t_s.$

$\Rightarrow t_g = 35 - 10 = 25$ days

and $t_h = 35 \times 1.2 = 42$ days

$\frac{W}{25} \times 10 + \frac{W}{35} \times 15 + \frac{W}{42} \times t'_h = W$

$\frac{t'_h}{42} = 1 - \left(\frac{2}{5} + \frac{3}{7}\right) = 1 - \left(\frac{14+15}{35}\right) = \frac{6}{35}$

$\Rightarrow t'_h = \frac{6}{35} \times 42 = 7.2$ days

43.*A $\left[\sqrt{1}\right] + \left[\sqrt{2}\right] + \left[\sqrt{3}\right] = 1 \times 3.$

$\left[\sqrt{4}\right] + \left[\sqrt{5}\right] + \left[\sqrt{6}\right] + \left[\sqrt{7}\right] + \left[\sqrt{8}\right] = 2 \times 5$

$\left[\sqrt{9}\right] + \left[\sqrt{10}\right] + \cdots \left[\sqrt{15}\right] = 3 \times 7$

n^{th} term is $n \times (2n + 1) = 2n^2 + n$

and $S_n = 2\sum n^2 + \sum n = \frac{n(n+1)(4n+5)}{6}$

Put n = 18
$S_{18} = 4389$
$\left[\sqrt{361}\right] = 19$
Total sum = 4389 + 19 = 4408.
***Not available in answer options.**

44. C $\log_4 \log_4 4^{a-b} = \log_4 \left(\sqrt{a} - \sqrt{b}\right)^2 + \log_4 4.$

$\Rightarrow (a - b) = 4\left(a + b - 2\sqrt{ab}\right) = 4a + 4b - 8\sqrt{ab}$

$\Rightarrow 3a + 5b - 8\sqrt{ab} = 0$

$\Rightarrow 3\left(\sqrt{\frac{a}{b}}\right)^2 - 8\sqrt{\frac{a}{b}} + 5 = 0$

Let $\sqrt{\frac{a}{b}} = x.$

Then, $3x^2 - 8x + 5 = 0.$

$\Rightarrow x = 1,\ \frac{5}{3}$

But $a - b \neq 0 \Rightarrow x = \sqrt{\frac{a}{b}} = \frac{5}{3}$

45. C Let the work done by 3 pipes per hour be T_A, T_B and T_C.

$T_A = \frac{1}{5},\ T_B = \frac{1}{10},\ T_C = \frac{1}{15}$

For 1st hour,

$= \frac{3}{4}\left[\frac{1}{5} + \frac{1}{10}\right] + \frac{2}{3} \times \frac{1}{15} = \frac{3}{4} \times \frac{3}{10} + \frac{2}{45} = \frac{9}{40} + \frac{2}{45} = \frac{97}{360}$

For 2nd hour $= \frac{1}{5} + \frac{1}{10} + \frac{2}{3} \times \frac{1}{15} = \frac{3}{10} + \frac{2}{45} = \frac{31}{90}$

For 3rd hour $= \frac{1}{5} + \frac{1}{10} + \frac{1}{15} = \frac{11}{30}$

$\therefore$ Work left $= 1 - \left(\frac{97}{360} + \frac{31}{90} + \frac{11}{30}\right) = \frac{7}{360}$

It can be completed in another $\frac{\frac{7}{360}}{\frac{11}{30}} = 0.05$ hours

$\therefore$ Total time = 3 + 0.05 = 3.05 hours.

46. B We know A.M. $\geq$ G.M.

$$\Rightarrow \frac{3^{\sin x} + 3^{\cos x}}{2} \geq \sqrt{3^{\sin x}.3^{\cos x}}$$

$$\Rightarrow 3^{\sin x} + 3^{\cos x} \geq 2\sqrt{3^{\sin x + \cos x}}$$

Now minimum value of six x + cos x is at

$$x = \frac{5\pi}{4} \Rightarrow \sin x + \cos x = -\sqrt{2}$$

$$\therefore 3^{\sin x} + 3^{\cos x} \geq 2\sqrt{3^{-\sqrt{2}}} = 2.3^{\frac{-\sqrt{2}}{2}} = 2\left(3^{\frac{-1}{\sqrt{2}}}\right)$$

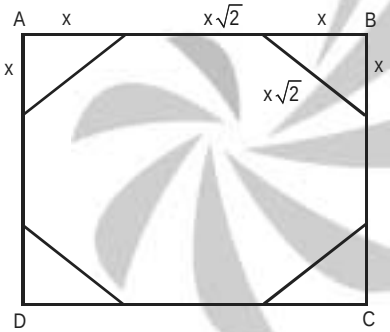
47. A Let the number of Professors, Associate Professors and Assistant Professors be a, b and c respectively. Let their average ages be x, y and z years respectively.
Given, ax + by + cz = 2160 = 36(a + b + c)

$$\frac{ax + by}{a + b} = 39;\ \frac{by + cz}{b + c} = \frac{360}{11};\ \frac{cz + ax}{c + a} = \frac{110}{3}$$

Also, a(x + 1) + b(y + 6) + c(z + 7) = 41(a + b + c) = 2460
Solving these equations, we get
a = 16, b = 24, c = 20 and x = 45, y = 35, z = 30.
Alternate Method:
The best way to do this question is by using the options. Option B and C doesnot give the sum of the ages of all faculty positions as 2160. Option A satisfies all other conditions.

48. D Let $\log_5 2 = p \Rightarrow 2 = 5^p$
This is possible only if p is irrational.

49. D



Let the equal sides of the isosceles triangles be x metres each. Hence, each side of the regular octagon is $x\sqrt{2}$ metres.

$$x + x\sqrt{2} + x = 2$$

$$\Rightarrow x = \frac{2}{2 + \sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2} + 1} = 2 - \sqrt{2}$$

Perimeter of the octagon

$$= 8 \times x\sqrt{2} = 8\sqrt{2}\left(2 - \sqrt{2}\right) = 16\sqrt{2} - 16$$

$$= \frac{16}{\sqrt{2} + 1} \text{metres}$$

Area of the octagon = (Area of square ABCD) – 4 (Area of each triangle)

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

$= 8\sqrt{2} - 8$ square metres.

50. B $\lfloor 7 = 1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7$

$$= 2^4 \times 3^2 \times 5^1 \times 7^1$$

The smallest perfect square divisible by $\lfloor 7$ is

$$2^4 \times 3^2 \times 5^2 \times 7^2 = 176400.$$

51. D Let A, B and C are the number of people who watched exactly one, exactly two and exactly three movies respectively.
A + B + C = 97% (i.e. 100%-3%)
A + 2B + 3C = 136%
Here B = 25%,
$\therefore$ A + C = 72%
and A + 3C = 86%
On solving, we get, C = 7%.

52. C Let $AC = 2^x$, where x is any natural number.

$\therefore AB = \frac{1}{2} AC = 2^{x-1}$; but AB is a perfect square

$\Rightarrow$ x – 1 is even $\Rightarrow$ x is odd.

Sum of two sides of a Δ is greater than the third side
$\Rightarrow$ AB + AC > BC $\Rightarrow$ 3AB > 295 $\Rightarrow$ AB > 98.33
$\Rightarrow 2^{x-1} > 98.33$ … (i)
Also, AC – AB < BC
$\Rightarrow 2^x - 2^{x-1} < 295$
$\Rightarrow 2^{x-1} < 295$ … (ii)
The only satisfying value for equations (i) and (ii) is x = 9
$\therefore$ AB = 2^8 = 256 and AC = 2^9 = 512
$\therefore$ Perimeter = 256 + 512 + 295 = 1063.

53. C Sum of the house numbers of the houses preceding

$$x = \frac{(x-1)x}{2}.$$

Also sum of the house numbers of the houses following

$$x = \frac{49.50}{2} - \frac{x(x+1)}{2}$$

According to the question, $\frac{(x-1)x}{2} = \frac{49.50}{2} - \frac{x(x+1)}{2}$

$\Rightarrow 2x^2 = 49 \times 50$
$\Rightarrow x^2 = 49 \times 25$
Hence, x = 35.

54. C Let the interest rates charged by the first money lender and the second money lender (r + 10)% and r% respectively.
According to the question,

$$30000\left(1 + \frac{r+10}{100}\right)^2 = 30000\left(1 + \frac{r}{100}\right)^2 + 7500$$

On solving the above equation, we get r = 20%
Also, let Rs. x be the amount borrowed from the first lender.
Therefore,

$$x\left(1 + \frac{30}{100}\right)^2 = (60000 - x)\left(1 + \frac{20}{100}\right)^2 + 38800$$

On solving, we get, x = Rs.40,000.

55. C $\left(1-x^6\right)^4 = 1-4.x^6+6x^{12}-4x^{18}+x^{24}$

$(1-x)^{-4} = 1-4(-x)+\frac{-4\times-5}{2\times1}(-x)^2+\cdots\infty$

x^{12} will come in 3 cases:

Case I: x^o from $(1-x^6)^4$ and x^{12} from $(1-x)^{-4}$.
In the case the coefficient will be

$(1)\left(\frac{-4\times-5\times-6\times\cdots-13\times-14\times-15}{12\times11\times10\cdots\times2\times1}\right)$

$=1\times{}^{15}C_3 = 455$

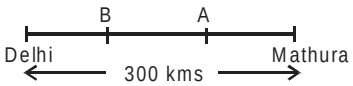
Case II: x^6 from $(1-x^6)^4$ and x^6 from $(1-x)^{-4}$
In the case the coefficient will be

$(-4)\left(\frac{-4\times-5\times-6.....\times-9}{6\times5\times4\times.....1}\right)$

$= -4\times{}^9C_3 = -336$

Case III: x^{12} from $(1-x^6)^4$ and x^o from $(1-x)^{-4}$
In the case the coefficient will be $6\times1=6$
Hence, required coefficient = 455 – 336 + 6 = 125.

56. B



To minimize the distance they will follow the following strategy.

Two of them (let's say Mukesh and Suresh) will start on bike and Dinesh will start walking. Suresh will get down at point A and start walking towards Mathura, whereas the other person will come back on bike to pick Dinesh from B and will turn back so that they all reach Mathura at same time.
Dinesh travelled 300 kms, partly on bike and partly walking, whereas Suresh also did the same, both of them taking the same time. Hence, their walking stretches should be of equal length i.e. Delhi to B = A to Mathura = x (say)
∴ Delhi To A + AB = 4x
(speed of bike is 4 times walking speed)

$\therefore\ AB = \frac{4\times x}{2} = 1.5x$

$x + 1.5x + x = 300$

$\Rightarrow\ 3.5x = 300$ kms

$\therefore$ Total time taken $= \frac{x}{15}+\frac{2.5x}{60}$

$= \frac{300}{3.5\times15}+\frac{2.5\times300}{3.5\times60} = 9\frac{2}{7}$ hours.

57. A Let the height of cylinder and cone be 5h and 3h respectively.

Volume of the metal solid $= \pi.8^2.5h+\frac{1}{3}.\pi.8^2.3h$

$= 384\pi h$

Height of the drilled cylinder $= \frac{8}{3}h$

Let radius of the drilled cylinder = r cm

So, $\pi.r^2\times\frac{8}{3}h = \frac{1}{2}\left[384\pi h-\pi r^2\times\frac{8}{3}h\right]$

Solving, we get $r = 4\sqrt{3}$ cm.

58. B Let the production cost be Rs.100
Contribution of A = Rs.10
Contribution of B = Rs.20
Selling price = Rs.120
Now, cost of A = Rs.12
and cost of B = Rs.28
Hence, the new production cost = Rs.110 (since cost of other components are fixed)
New selling price = 1.15 × 120 = Rs.138

$\therefore$ Profit percentage $= \frac{28}{110}\times100 \approx 25.5\%$.

59. A Using Cosine rule,

$\cos\theta = \frac{a^2+b^2-c^2}{2ab}$

Hence, $c^2 = a^2 + b^2 - 2ab\cos\theta$

60. C Total number of subsets = 2^{11}
Total number of subsets having no even element 2^6 (i.e. using (1, 3, 5, 7, 11, 13)
Hence, answer = $2^{11} - 2^6 = 1984$

For questions 61 to 65: The competitions will be held as follows.

DATE	DAY	COMPETITION
19th October	Wednesday	Rock Band
20th October	Thursday	No Competition
21st October	Friday	Fash-P
22nd October	Saturday	Debate
23rd October	Sunday	No Competition
24th October	Monday	Street Play
25th October	Tuesday	Group Song
26th October	Wednesday	Folk Dance

61. D The cultural week started with Rock Band Competition.

62. D Rock Band competition was held on 19th October whereas the Group Song competition was held on 25th October. Therefore, there is a gap of 5 days between the two competitions.

63. C Both Rock Band competition and Folk Dance competition were held on a Wednesday. While Rock Band competition was held on 19th October, the Folk Dance competition was held exactly after one week on 26th October.

64. C Street Play was preceded by the Debate competition.

65. C Fash-P follows Rock Band competition.

For questions 66 to 68: The arrangement according to the given conditions is as follows.

Esteem	Swift	i10
Punto	Alto	SX4

66. C If SX4 and Esteem exchange their positions mutually then following will be the arrangement of cars:

SX4	Swift	i10
Punto	Alto	Esteem

Therefore only Alto will be adjacent to Esteem.

67. D After the changes mentioned in the question the arrangement will be as follows

Swift	Beatle	Alto
SX4	i10	Punto

Therefore the cars parked adjacent to Beatle are Alto and Swift.

68. D Under the given conditions, the arrangement is:

WagonR	Swift	Jazz
Zen	Alto	Beat

The cars that moved out are Esteem, Punto, i10 and SX4.

For questions 69 to 73: The arrangement according to the given conditions is as follows.

PERSON	COMPANY	PLACE OF WORK	E-MAIL ACCOUNT
Rahul	Telco	Pune	Rediffmail
Kabeer	Usha Martin	Kolkata	Yahoo
Anup	Tisco	Jamshedpur	Indiatimes
Raghu	Mecon	Ranchi	Gmail
Amit	HCL	Noida	Sancharnet
Alok	Wipro	Bangalore	Hotmail

69. D Alok works in Wipro and he has an e-mail account with Hotmail.

70. D Among the given options only Raghu-Ranchi-Gmail is the correct combination.

71. C Among the given statements the only true statement is that Kabeer has an e-mail id with Yahoo.

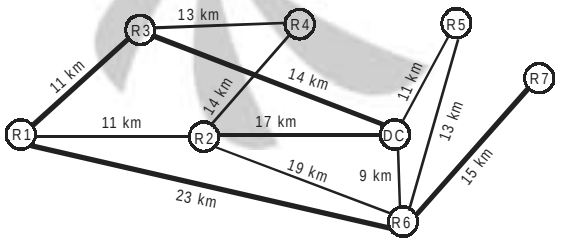
72. D As evident from the table above none of the given sequences of locations is correct.

73. D As shown in the table above the correct match of e-mail account and Company is:

Tisco	Indiatimes
HCL	Sancharnet
Usha Martin	Yahoo

74. A 709007089070203004570390 7
There is only one such zero.

75. C



The shortest path is
$DC \rightarrow R3 \rightarrow R1 \rightarrow R6 \rightarrow R7$
and the shortest distance = 14 + 11 + 23 + 15 = 63 km.

76. D Percentage decline in cost per square feet for Westside in

$$2005 = \frac{687}{2411} \times 100 = 28.49\%$$

Percentage decline in cost per square feet for Pantaloon

$$2008 = \frac{388}{2044} \times 100 = 18.98\%$$

Percentage decline in cost per square feet for S.Stop

$$= \frac{222}{2419} \times 100 = 9.17\%$$

Percentage decline in cost per square feet for Vishal

$$2010 = \frac{595}{1659} 100 = 35.86\%$$

Hence, Vishal in 2010 shows sharpest decline.

77. B Increase in cost per square feet for S Stop in 2006
= 2135 – 1889 = 246
Increase in cost per square feet for S Stop 2007
= 2464 – 2135 = 329
Increase in cost per square feet for Pantaloon 2006
= 1996 – 1729 = 267
Increase in cost per square feet for Vishal 2006
= 1802 – 1832 = – 30
Hence, S Stop in 2007 shows maximum increase in cost per square feet.

78. D Average of rate of cost per square feet in 2007

$$= \frac{2044 + 2464 + 1751 + 1525}{4} = \frac{7784}{4} = 1946$$

Average of rate of cost per square feet in 2010

$$= \frac{1396 + 2230 + 1064 + 1051}{4} = \frac{5741}{4} = 1435.25$$

$$\text{Percentage change} = \frac{-510.75}{1946} \times 100 = -26.24\%$$

$$\therefore \text{Required rate of change} = \frac{-26.24\%}{3} = 8.75\%.$$

79. C Rate of change for U.P.(E) = $\frac{5.85}{39.68} \times 100 = 14.74\%$

Rate of change for Bihar = $\frac{5.19}{33.17} \times 100 = 15.65\%$

Rate of change for Orissa = $\frac{2.32}{13.57} \times 100 = 17.09\%$

Rate of change for Haryana = $\frac{1.37}{13.59} \times 100 = 10.08\%$

Hence, Orissa shows the maximum rate of change.

80.*D ***There is a slight ambiguity in the question regarding the distribution of states across the eastern and southern telecom circle.** So avoid finding the exact figures in the region. A simple observation is that the subscribers of Idea and Airtel in south bears the ration 48 : 52 = 0.92. Going by options, only option (D) exactly matches this ratio. Note: Though not advisable in exams, the figures can be calculated exactly if we consider Bihar, West Bengal, Orissa, Kolkata and Assam in the eastern circle and Tamil Nadu, Karnataka, Andhra Pradesh and Kerala in southern circle.

81.*C ***There is again ambiguity regarding the distribution of states in the eastern circle.** Moreover, no instruction has been given to use the data from previous question, without which the question is not likely to be answerable.
Considering the data from the above question holds true, we get the following solution:
R-com subscribers in the eastern circle was 28% of the total subscribers whereas it is the same 28% in UP and Madhya Pradesh.
∴ R-com subscribers in new eastern circle = 28%.
There was no Idea subscriber in eastern region whereas 32% in UP and Madhya Pradesh
∴ Idea subscribers in new eastern region = 32% of (UP + Madhya Pradesh)

$$= \frac{32}{100} \times 111.05 = 35.536 \text{ million}$$

Total subscribers in new eastern circle = 30.03 + 77.22 + 111.05 = 218.3 million
∴ Percentage of Idea subscribers

$$= \frac{35.536}{218.3} \times 100 = 16.27\%.$$

∴ Remaining subscribers in new eastern circle using Vodafone
= 100% – 28% – 16.27% = 55.73%.

82. B Number of subscribers in December 2009 = 562.18 million
Number of subscribers in March 2010 = 621.3 million

$$\text{Percentage change} = \frac{621.3 - 562.18}{562.18} \times 100$$

$$= \frac{59.12}{562.18} \times 100 = 10.51\%$$

83. A Brand Building score for Maheshwari & Co
= 10 + 20 + 2.5 + 5 + 0 = 37.50
Points scored for the sales = 15 + 0.25 × 6241
= 15 + 1560.25 = 1575.25
Therefore, total points = 1612.75
Hence, Maheswari & Co can redeem 2 Tupperware sets.

84. D Brand Building score for Bhowmik brothers
= –20 + 2.5 + 2.5 + 10 = –5
Points scored for the sales = 12
Total points = –5 + 12 = 7
Hence, 33 more points are required to be eligible for minimum redemption.

85. A Brand Building points of Saha H/W = 85
Points scored for sales in this quarter = 512 × 0.25
= 128 + 15
Brand building points of Saha H/W in next quarter = 85
Total points till now = 313
Points required to redeem the Kanjivaram Saree = 4000
Hence points required from sale in next quarter = 3687
Points for achieving 100% sale in next quarter = 15
Points required from extra units of sale = 3672
Hence, extra units required to be sold = 4 × 3672 = 14688

86. A Points scored for sales by Malling Enterprise = 15 + 250 = 265
Points required to redeem three Nike Caps and an Umbrella = 300 + 40 = 340
Hence, its brand building points = 340 – 265 = 75

87. D Brand building score of Srikrishna Trader = 80
Points scored for sales by Srikrishna Trader
= 0.25 × 2000 = 500 + 15 = 515
Hence, total points scored by Srikrishna Trader
= 80 + 515 = 595
Hence, it can redeem only first 3 items.
So from given options it can redeem only Nike Cap and T-Shirt.

88. C CO_2 emission to per capita income ratio for US after two years $= \frac{1200 \times 0.875 \times 0.875}{300 \times 1.02 \times 1.02} = 2.9$

CO_2 emission to per capita income ratio for China after two years $= \frac{1180 \times 0.875 \times 0.875}{270 \times 1.04 \times 1.04} = 3.1$

CO_2 emission to per capita income ratio for Japan after two years $= \frac{1125 \times 0.875 \times 0.875}{240 \times 1.03 \times 1.03} = 3.4$

89. B Standard benchmark ratio = 0.75
So CO_2 emission for USA must be 225
Hence, it has to buy 975 × 2.5 = 2437.5 carbon credit units.
Similarly CO_2 emission for China must be 202.5
Hence, it has to buy 977.5 × 2.5 = 2443.75 carbon credit units
In one year a country can buy 15 + 20 + 30 = 65 carbon credit units
Time taken by USA to achieve standard benchmark

$$= \frac{2437.5}{65} = 37.5 \text{ years}$$

Time taken by China to achieve standard benchmark

$$= \frac{2443.75}{65} = 37.59 \text{ years}$$

Hence, required number of years is 38 .

90. C The combined per capita income of all five countries in 2010 is 845.
So, per capita income in 2011 = 861.9
2012 = 883.44
2013 = 914.37
The ratio of CO_2 emission to per capita income in 2010

$$= \frac{2050}{845} = 2.426$$

The ratio for next three years = 0.5 × 2.426 = 1.213
⇒ CO_2 emission of 2011 = 861.9 × 1.213 = 1045.48
⇒ CO_2 emission of 2012 = 883.44 × 1.213 = 1071.61
⇒ CO_2 emission of 2013 = 914.37 × 1.213 = 1109.13
The benchmark emission of CO_2 = 350 × 5 = 1750 million tonne
Savings for 2011 = 704.52
Savings for 2012 = 678.39
Savings for 2013 = 640.87
Hence, total carbon credits earned

$$= \frac{(704.52 + 678.39 + 640.87)}{0.5} \times 1.25$$

= 5059.45 = 5060 (approx.)

91.*D If the countries are arranged according to the condition given in option (A), the order is as follows:

	Country	CO_2 emission / per capita income
1	AUSTRALIA	1.627906977
2	POLAND	1.632653061
3	UKRAINE	1.70212766
4	SPAIN	1.818181818
5	INDIA	2
6	FRANCE	2.142857143
7	ITALY	2.272727273
8	SOUTH AFRICA	2.368421053
9	CANADA	2.5
10	GERMANY	2.903225806
11	US	3.428571429
12	RUSSIA	3.451612903
13	UNITED KINGDOM	3.47826087
14	CHINA	3.6875
15	JAPAN	3.879310345

Therefore, option (A) is correct.
If the countries are arranged according to the condition given in option (B), the order is as follows:

	Country	CO_2 emission / per capita income
1	POLAND	2.051282051
2	AUSTRALIA	2.121212121
3	UKRAINE	2.162162162
4	SPAIN	2.222222222
5	INDIA	2.5
6	FRANCE	2.8125
7	ITALY	2.941176471
8	CANADA	3.157894737
9	SOUTH AFRICA	3.214285714
10	GERMANY	3.461538462
11	US	4
12	RUSSIA	4.115384615
13	CHINA	4.37037037
14	UNITED KINGDOM	4.444444444
15	JAPAN	4.6875

Therefore, option (B) is correct.

If the countries are arranged according to the condition given in option (C), the order is as follows:

	Country	CO_2 emission / per capita income
1	AUSTRALIA	0.909090909
2	POLAND	1.025641026
3	UKRAINE	1.081081081
4	SPAIN	1.333333333
5	INDIA	1.5
6	FRANCE	1.5625
7	ITALY	1.764705882
8	SOUTH AFRICA	1.785714286
9	CANADA	2.105263158
10	GERMANY	2.692307692
11	US	3.333333333
12	UNITED KINGDOM	3.333333333
13	RUSSIA	3.346153846
14	CHINA	3.62962963
15	JAPAN	3.854166667

Therefore, option (C) is correct.
If the countries are arranged according to the condition given in option (D), the order is as follows:

	Country	CO_2 emission / per capita income
1	AUSTRALIA	0.697674419
2	POLAND	0.816326531
3	UKRAINE	0.85106383
4	SPAIN	1.090909091
5	FRANCE	1.19047619
6	INDIA	1.2
7	SOUTH AFRICA	1.315789474
8	ITALY	1.363636364
9	CANADA	1.666666667
10	GERMANY	2.258064516
11	UNITED KINGDOM	2.608695652
12	RUSSIA	2.806451613
13	US	2.857142857
14	CHINA	3.0625
15	JAPAN	3.189655172

Therefore, option (D) is incorrect.
*** NOTE: It is advisable not to attempt this question.**

92. B Units produced in Bihar exceed the number of units produced in Madhya Pradesh by

$$\frac{45-32.4}{360}\times 72000$$

$= 12.6 \times 200 = 2520$ units

93. D Number of females in 1995 = 300 million
Number of females in 1996 = 330 million
Percentage increase in number of females

$$=\frac{30}{300}\times 100 = 10\%$$

Number of females in 1998 = 320 million
Number of females in 1999 = 350 million
Percentage increase in number of females

$$=\frac{30}{320}\times 100 = 9.375\%$$

Number of females in 2003 = 350 million
Number of females in 2004 = 370 million
Percentage increase in number of females

$$= \frac{20}{350} \times 100 = 5.71\%$$

Number of females in 2004 = 370 million
Number of females in 2005 = 420 million
Percentage increase in number of females

$$= \frac{50}{370} \times 100 = 13.51\%$$

94. D Number of educated people in 2002 = 545 million
Number of educated female in 2002

$$= \frac{4}{9} \times 545 \text{ million} = 242.22 \text{ million}$$

Number of uneducated female in 2002 = 107.78 million
Number of educated male in 2002

$$= \frac{5}{9} \times 545 \text{ million} = 302.78 \text{ million}$$

Number of educated male in 2003 = 378.475 million
Number of educated female in 2003 = 181.525 million
Number of uneducated female in 2003 = 168.475 million
Hence, required percentage change

$$= \frac{60.695}{107.78} \times 100 = 56.313 = +56\%$$

95. C Population living in urban area in 2005 = 0.68 × 600
= 408 million
Population living in rural area in 2005 = 492 million

$$\text{Rural population in 2010} = \frac{12}{55} \times 1100 = 240 \text{ million}$$

$$\text{Hence, required ratio} = \frac{492}{240} = 2.05.$$

96. D Option A is incorrect as Moore predicted that the cost of a unit of computing power would fall by 50%, not 25%, every 18 to 24 months. Option B is incorrect as "high demand for computers" is not mentioned. Popularity of removable media and internet lead to easy and cost effective ways to print and transfer photographs. Option C is also incorrect. Hence, option D is the correct answer.

97. B Statement I and IV are correct. Refer to the line "Kodak had decided it was really a chemicals business..." given in the first paragraph.
Statement II & III are incorrect. Refer to lines "Well, chemically treated … original purchase price." given in the first paragraph. It clearly states that customers and delivery channels are different for the two businesses. Hence, correct answer is option B.

98. D The second part of statement I is incorrect as the passage is silent on number of years that Carp had spent in the company. Statement II is correct according to the passage but is not a reason for Kodak loosing its market share. Hence, correct option is D.

99. C Statement II – 1988 (1st paragraph)
Statement III – 2005 (3rd paragraph)
Statement I – 2002 (3rd paragraph)
Statement IV – 1993 (2nd paragraph)
Correct option is C.

100. A Intel–Price of technology products reduces to half every year or two (1st paragraph). Fisher–Preview cameras that helped users to immediately see the pictures taken (1st paragraph). AOL–Photo processing, developing and posting online photos (2nd paragraph). Correct option is A.

101. B Statement IV hasn't been discussed anywhere in the passage. All the other statements reflect ideas author uses in order to explain how, why and which errors are committed by investors.

102. B Statement IV hasn't been discussed anywhere in the passage. Passage clearly states that investors follow popular trends and don't consider probabilities while deciding how to invest.

103. B Author implies that the investors must not be swayed by the advice of so called experts as their judgements have only slim chance of being able to predict market trends. Hence, option B is the correct answer.

104. B Statement II is incorrect as the passage clearly states that public opinion polls have large not diminutive samples. Statement III is correct as per the passage.

105. D Option A can be negated because of the 'only if' condition present in the option. Option C is incorrect only option B is close but can be negated because "Single experiences influence post experience loyalty but certainly do not over whelm the relationship between pre-experience and post experience loyalty".
Hence option D is the correct option.

106. A 'Institutional prediction' has not been mentioned in the passage. So, option D is negated. Only the instrumental prediction deals with the tangible outcomes. Hence, option A is the correct option.

107. B Option A deals only with legal authorities and can be negated. Option D is out of the scope of the passage. Option C does not provide an adequate summary. Option B is the best possible summary amongst the given options.

108. A "Dernier cri" means newest fashion. Passage States that Buffett outperformed the stock market in all kinds of economic periods. Saddle shoes represent fashion and Vietnam refers to war and politics. Hence, option A is the correct answer.

109. B Refer to lines "Unlike the modern … such as J.P. Morgan Sr." given in 1st paragraph. It clearly states that Buffet resembled magnates of a previous age. Such as J.P. Morgan. Hence, sequence III is the correct sequence. Option II is incorrect as Buffet was in Omaha in 1956. He went to California later. Hence, option B is the correct answer.

110. D Refer to 2nd paragraph, It states that Buffet is a private person and did not show emotions easily. It also states he lived a very simple life. Hence, option D is the correct answer.

111. C According to the tone of the passage, only 'opportunity' fits well in the second blank 'Curare' means a dried aqueous extract especially of a vine; 'plutocracy' refers to government by the wealthy and 'serendipity' means the faculty or phenomenon of finding valuable or agreeable things not sought for. Hence, option C is the correct answer.

112. D The sentence states that growth has been unaffected inspite of the global economic crisis. Hence, 'sustainedly' fits appropriately in the first blank of the sentence and 'resilient' appropriately fits the second blank. Hence, option D is the correct answer.

113. C The versions of the happenings in the city are mentioned as different; 'conflicting' fits appropriately in the first blank. Unequivocally' refers to clearly or undoubtedly and fits well in the second blank because the cowardly act should be condemned. Hence, option C is the correct answer.

114. A 'Swivel' is a device joining two parts so that one or both can pivot freely (as on a bolt or pin). Thus, 'swiveled' fits well in the first blank of the sentence. Hence, option A is correct.

115. D 'Arbitrarily' refers to depending on individual discretion (as of a judge) not fixed by the law. Thus, the sentence states that Cairn cannot bring into picture an unrelated person on his own discretion. Hence, option D is correct.

116. D 'Dirigisme' refers to economic planning and control by the state. Thus, it fits well in the first blank of the sentence. The statement talks about the economic growth remaining unaffected by either dirigisme or serious policy reform.

117. B The two objects of comparison should be placed one after the other in the sentence i.e. 'large and experienced firms' and 'large and inexperienced firms' are compared in the sentence on the basis of efficiency at acquiring smaller and distressed firms. Hence, option B is the correct answer.

118. D In the underlined part of the sentence, 'more than doubled that of' is not an idiomatic expression. A mistake of similar kind is repeated in option A. In options B and C, the usage of comma between 'quarter' and 'that' is inappropriate. Hence, option D is the correct answer.

119. A In the question statement, 'not only' should be followed by 'but also'. A mistake of similar kind is there in option D. Usage of 'ignoring' and 'warning' in the same modifier is incorrect. Thereby making options B and C incorrect.
Hence, A is correct. In option B not only 'should be followed by 'but also' not 'and also'.

120.* 'The given question is incorrect. In option (A), 'decrepit' is related to 'impuissance' as both the words mean 'weak'. However, 'desolate' is not related to 'desecrate' (to damage or to treat with disrespect). In option (B), both the words are related to the given pair. In option (C), 'ornery' which means bad tempered is not related to impuissance while 'contort' is related to 'desecrate'. In option (D), 'bedraggled', which means to become wet, dirty or untidy by rain etc., is unrelated to impuissance while 'profanity' is related to 'desecrate'.

121. A 'Insouciant' refers to someone who is indifferent or nonchalant. 'Perfunctory', 'pococurante', and 'nonchalant' are synonyms of 'insouciant'. 'Gossamer' refers to something delicate, light, or insubstantial. 'Diaphanous', 'pellucid' and 'tiffany' are synonyms of 'gossamer', Nymphs and Gehenna are unrelated to insouciant and gossamer respectively. Hence, option A is the correct answer.

122. C In option C, the spelling of 'dilettante' is incorrect. The word refers to an admirer or lover of the arts; a person having a superficial interest in an art or a branch of knowledge; dabbler. In option C, the spelling of 'reminiscence' is incorrect. 'Reminiscence' refers to recall to mind a long-forgotten experience or fact.

123. D In option D, the correct spellings of words are 'munificent' and pusillanimous'. 'Munificent' means very liberal in giving or bestowing. 'Pusillanimous' means lacking courage and resolution.

124. B The term 'the stack' is introduced in statement (II) and is discussed in statement (IV). 'Of course' in statement (I) makes it a concluding sentence. Moreover, 'it' in statement (I) refers to the concept discussed in statement (III). So, statements (II)-(IV) and (III)-(I) are mandatory pairs. Hence, option B is the correct answer.

125. D (I) reasons out why the speaker does not 'want to be the turkey'. So (I) and (II) are a mandatory pair. 'To focus' in (IV) connects to 'solely on specific organs' in (V). So, (IV) and (V) are also a mandatory pair. There two mandatory pairs make option D correct.

126. A The subject of the sentence in statement (V) is 'knowledge' in statement (I). So statement (I) and statement (V) form a mandatory pair. Statement (II) and statement (IV) also form a mandatory pair as verb 'tend' in statement (II) has two objects 'to forget' in statement (I) and 'forget' in statement (IV). Statement (III) connects with the context discussed in statement (II) and statement (IV). Hence, option A is the correct answer.

127. A 'Statisticians, it has been shown, tend to leave their brains in the classroom' is the correct and logical sequence. Statements (V) and (I) form a mandatory pair because statement (I) tells where the statisticians leave their brain (in the classroom). Statements (III), (V) and (I) are in sequence. Hence, option A is the correct answer.

128. D Statements (II) and (I) form a mandatory pair as the conjuction 'and' in statement (II) connects and completes the thought mentioned in statement (I). Statements (IV) and (III) also form a mandatory pair. Hence, option D is the correct answer.

129. C 'Cared the least about them' in statements (II) and (IV) is logically consistent. Statements (III) and (VI) are a mandatory pair as statement (VI) indicates what people talked about. Statements (I) and (III) also from a mandatory pair because the idea of getting excited in talking about the figures is connected in these two statements. Hence, option C is the correct answer.

130. B 'Omniscient' has unlimited knowledge. 'Boundless' has unlimited expanse. Hence, they are related to each other.

131. A 'Disquietude' is the state of being anxious. 'Nonplus' is the state of being confused. So, there is a relation between these two.

132. A One 'deviates' during a 'lecture' and one 'meanders' during a 'drive'. Hence, they are related to each other.

133. C 'Nebulous' lacks form. 'Insipid' lacks taste. Hence, there is a relation between these two.

134. D In option A 'mistake' is redundant because 'blunder' and 'mistake' mean the same and are unnecessarily repeated. One does not learn word by word but reads word by word. Option C is wrong because it should be 'she does not know how to swim'. Hence, option D is the correct answer.

135. B Option A is incorrect; 'they' has been wrongly used for an investor. Option B is correct as it draws a parallel comparison. Option C is incorrect as it uses 'are' for 'the number'. 'The number' is always singular. Option D is incorrect as in this context the CEO must consult the employees not consider the employees.