ANSWER KEY - IIFT 2010-12

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

SOLUTION IIFT - 2010-12

1. D The automobile production in 2004, 2005, 2006, 2007 and 2008 are 1775, 1700, 2175, 2325 and 2200 respectively.
The production shows decrease only in the year 2005 and 2008
The percentage decrease in 2005

$$= \frac{1775 - 1700}{1775} = 4.22\%$$

Percentage decrease in 2008

$$= \frac{2325 - 2200}{2325} = 5.37\%$$

Hence, 2008 exhibited highest percentage decrease.

2. C In year 2004, exports of automobiles = Production – sales
= 1775 – 1450 = 325
In year 2005, export of automobiles = 1700 – 1525 = 175
In year 2006, export of automobiles = 2175 – 1925 = 250
In year 2007, export of automobiles = 2325 – 2025 = 300
In year 2008, export of automobiles = 2200 – 1875 = 325
So highest growth in export is in year 2006

i.e, $\frac{250 - 175}{175} \times 100 = 42.85\%$.

3. A Let 5x, 3x and 2x be the prices of a commercial vehicle, passenger vehicle and 3 wheeler respectively.
In the period 2004-08, earnings from domestic sales of :
Commercial vehicle = 2725 × 5x = 13625x
Passenger vehicle = 4300 × 3x = 12900x
3 wheeler = 1775 × 2x = 3550x
∴ Total sales = 30075x

$$\therefore \text{ Required percentage} = \frac{13625x}{30075x} \times 100 = 43.3\%$$

4. D Average domestic sales = 1760
Closest year with sales is 2008 i.e., 1875

5. B The percentage increase in:

$$2005 = \frac{1525 - 1450}{1450} \times 100 = 5.17\%$$

$$2006 = \frac{1925 - 1525}{1525} \times 100 = 26.22\%$$

$$2007 = \frac{2025 - 1925}{1925} \times 100 = 5.19\%$$

6. B Domestic sales have increased in 2005, 2006, 2007 only and average production has increased in 2006 and 2007 only. Hence, we can find the required ratio for 2006 and 2007 only.
Ratio for 2006 = 400 : 475 ≈ 0.84
Ratio for 2007 = 100 : 150 ≈ 0.66

For questions 7 to 9:

	Absolute Return		
	Alpha	**Beta**	**Gama**
Auto	0.0745	0.299	-
Chemicals	0.3612	0.2412	0.6
Communication	–0.3505	–0.25	–0.2
Construction	0.2265	-	0.9015
Diversified	0.8228	0.7689	1.045
Energy	2.0979	3.675	4.305
Engineering	0.7208	0.8792	1.24
Financial	1.5588	1.44	1.0206
FMCG	3.625	0.5	0.5
Health Care	1.0764	-	0.54
Metals	-	–0.8792	–0.7984
Services	0.45	0.704	0.4
Technology	–0.1102	–0.15	–0.07
Textiles	0.6851	-	-
Total	11.2383	7.2281	8.8537

7. A Refer to the above table.

8. D Refer to the above table.

9. B At the end of 1st year, 100 + 8.85 = 108.85%.
So investment of 10 lakhs in fund Gama will become $10,00,000 \times 1.088 \approx 10.9$ lakhs.

10. C Jowar yield for 2007 $= \frac{368}{673} = 0.546$

Soyabean yield for 2008 $= \frac{799}{650} = 1.229$

⇒ Required ratio = 0.546 : 1.229.
So the closest ratio is 0.89 : 2.09.

11. B The top 3 crops by yield in 2006 are:
Sunflower = 1.864
Groundnut = 1.5488
Rice = 1.4299

12. A The bottom 3 crops by yield in 2008 are:
Moth = 0.208
Seasmum = 0.25
Millets = 0.266

13. C Statement I is wrong as productivity of pulses has increased in 2007.
Statement II is correct as the productivity of Maize over the years are 1.097, 1.094 and 1.073 respectively.

14. A Statement I is correct as the productivity of Cereals over the years is 0.536, 0.757 and 0.756 respectively.
Statement III is also correct as the productivity over the years are 0.25, 0.297 and 0.3431 respectively.

For questions 15 to 19:
As per the data given in the question, following table can be derived.

	Total Oil used	Total Oil produced
1996	2608	3258
1997	2914	3646
1998	2870	3704
1999	2834	3936
2000	2920	3622
2001	3262	3754
2002	3658	4044
2003	3500	3944
2004	3822	4328
2005	3618	4650
2006	3826	4968
2007	4030	5484
2008	4152	5580

15. B Oil used for Household:

$$\text{In 1998} = \frac{22}{2870}\times 100 = 0.76655$$

$$\text{In 1999} = \frac{22}{2834}\times 100 = 0.776$$

$$\text{In 2000} = \frac{20}{2920}\times 100 = 0.684$$

$$\text{In 2001} = \frac{22}{3262}\times 100 = 0.6744.$$

16. A Loss as a proportion of Total production:

$$\text{in 2002} = \frac{386}{4044} = 0.095$$

$$\text{in 2003} = \frac{444}{3944} = 0.1125$$

$$\text{in 2004} = \frac{506}{4328} = 0.1169$$

$$\text{in 2006} = \frac{1142}{4968} = 0.2298$$

17. D 'Suburban' as a Proportion of 'Total Oil used' in 2005

$$= \frac{230}{3618} = 0.063$$

$$\text{In 2006} = \frac{210}{3826} = 0.054$$

$$\text{In 2007} = \frac{254}{4030} = 0.063$$

$$\text{In 2008} = \frac{266}{4152} = 0.064$$

18. B A total of 4 years are there for which the growth rate in 'Production of Oil' is more than the growth rate in 'Total oil used' viz., 1997, 2004, 2006 and 2007.

19. D As evident from the table, statement in option (D) is correct.

For question 20 to 22:
Following is the table relating the persons with their corresponding salary and colour of their houses.

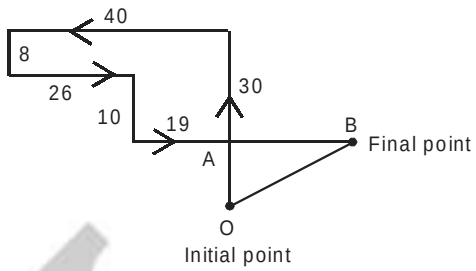
Houses	Blue	Green	Red	Yellow
Persons	Som	Paul	Krishna	Laxman
Salary	80K	30K	110K	50K

20. B Krishna

21. C Red

22. A Rs.30,000

23. C



Hence, AB = (26 + 19) – 40 = 5
AO = 30 – (8 + 10) = 12

Hence, OB = $\sqrt{5^2 + 12^2} = 13$ kms, North-east of starting point.

24. A The number of members going for the picnic along with Mr. Raju are:
Car 1: His father's mother, his mother's father, their two children i.e. his father and mother
Car 2: His father's son (his brother), his sister's husband, his brother's wife
Car 3: Raju, his wife, wife's sister, wife's brother, son's wife + kid
Therefore, total of 13 members are going for the picnic.
The members who are left behind:
Raju's sister, his wife's sister's husband, his wife's brother's wife and Raju's son.
Therefore, a total of 4 members are left behind.

25. * Let a, b, c, d and e be the number of cards A, B, C, D and E respectively. According to the information provided in the question;
a + 5 = e; b + 5 = d.
So a + b + 10 = d + e, which means that A and B has less number of cards than D and E put together.
But, it is given that the number of cards with A and B put together is 20 more than the number of cards with D and E put together.
*** So the data provided in the question is inconsistent.**

26. C

	Dance	Music	Painting
Monday		12 – 4	
Tuesday	10 – 2		9 – 12
Wednesday	10 – 2		2 – 4
Thursday	10 – 2	12 – 4	9 – 12
Friday			9 – 12
Saturday			2 – 4
Sunday	10 – 2	12 – 4	2 – 4

It is clear from the above table that the dance and painting sessions were simultaneously held on Tuesday and Thursday.
Hence, option (C) is the correct answer.

27. **Data inconsistent**

28. **Data inconsistent**

29. **Data inconsistent**

30. **Data inconsistent**

For questions 31 to 33

The whole arrangement upto step 14 is depicted in the table given below.

Input	Smile	Nile	Style	Mile	Shine	Wine	Mine	Swine	Bovine	Feline
Step 1	Smile	Nile	Style	Mile	Shine	Wine	Bovine	Feline	Mine	Swine
Step 2	Style	Mile	Smile	Nile	Shine	Wine	Bovine	Feline	Mine	Swine
Step 3	Style	Mile	Smile	Nile	Wine	Shine	Bovine	Feline	Mine	Swine
Step 4	Mile	Style	Nile	Smile	Wine	Shine	Feline	Bovine	Swine	Mine
Step 5	Nile	Smile	Mile	Style	Wine	Shine	Swine	Mine	Feline	Bovine
Step 6	Nile	Smile	Mile	Style	Wine	Shine	Feline	Bovine	Swine	Mine
Step 7	Mile	Style	Nile	Smile	Wine	Shine	Feline	Bovine	Swine	Mine
Step 8	Mile	Style	Nile	Smile	Shine	Wine	Feline	Bovine	Swine	Mine
Step 9	Style	Mile	Smile	Nile	Shine	Wine	Bovine	Feline	Mine	Swine
Step 10	Smile	Nile	Style	Mile	Shine	Wine	Mine	Swine	Bovine	Feline
Step 11	Smile	Nile	Style	Mile	Shine	Wine	Bovine	Feline	Mine	Swine
Step 12	Style	Mile	Smile	Nile	Shine	Wine	Bovine	Feline	Mine	Swine
Step 13	Style	Mile	Smile	Nile	Wine	Shine	Bovine	Feline	Mine	Swine
Step 14	Mile	Style	Nile	Smile	Wine	Shine	Feline	Bovine	Swine	Mine

31. * All the options provided in the question is wrong. It can easily be seen that the final series comes out to be as follows:
Mile Style Nile Smile Wine Shine Feline Bovine Swine Mine

Hence, none of the options is correct.

32. D Option (D) does not fall between step number 12 and 14.

33. C It can be seen from the above table that the input repeats itself in the 10th step. So, it will continue to repeat its original self after steps that are multiples of 10. Hence, option (C) is the correct choice.

34. C

Person	Likes	Dislikes
C_1	Travelling , Sightseeing	River rafting
C_2	Sightseeing , Squash	Travelling
C_3	River rafting	Sightseeing
C_4	Trekking	Squash
C_5	Squash	Sightseeing, Trekking
C_6	Travelling	Sightseeing, Trekking
C_7	River rafting, Trekking	Travelling
C_8	Sightseeing, River rafting	Trekking

Of the given combinations, the feasible team of 4 persons is: C_1, C_2, C_4 and C_7.
Option (C) matches with the conditions given in the question.

35. C 36. A 37. D 38. B 39. A

40. C 41. A 42. B 43. C 44. C

45. C 46. B 47. B 48. C 49. D

50. D 51. C 52. B 53. C 54. A

55. A Given that the diesel consumption is at the rate

$= \frac{1}{400}\left\{\left(\frac{1000}{x}\right)+x\right\}$ litres per km

Cost of diesel = Rs.35 per litre
Payment to the driver = Rs.125 per hour
Also given that the SUV is driven at the speed of x km per hour

Total cost (C)

$= \frac{1}{400}\left\{\left(\frac{1000}{x}\right)+x\right\}\times 800\times 35+\frac{800\times 125}{x}$

$\Rightarrow C=\frac{70000}{x}+70x+\frac{100000}{x}$

Now, differentiating both sides of the above equation with respect to x, we get

$\frac{dC}{dx}=\frac{-70000}{x^2}+70-\frac{100000}{x^2}$

For minimum total cost, $\frac{dC}{dx}=0$. Therefore, we have

$\frac{-70000}{x^2}+70-\frac{100000}{x^2}=0$

$\Rightarrow \frac{170000}{x^2}=70$

$\Rightarrow x \simeq$ 49 km per hour
Hence, option (A) is the correct choice.

56. C According to the question, Sunil's time to cover a round is 2 min and the speed keeps getting halved after completion of each round while Anil maintains his initial speed and the time taken by him 1 min.
Till 6th round, Sunil's time to cover a round = 2^6
During 7th and 8th round, time taken by Sunil will be 2^7 and 2^8 minutes
Since Anil maintains his speed and time as 1 minute, so they will meet (128 + 256) – 2 = 382 times between the 6th round and 9th round.
Note: Subtraction of 2 indicates the exclusion of 6th and 9th round.
Hence, option (C) is the correct choice.

57. D $S=\frac{1}{1.2.3}+\frac{1}{3.45}+\frac{1}{5.6.7}+...$

Here $T_n=\frac{1}{(2n-1).2n.(2n+1)}$

$=\frac{1}{2}\left[\frac{1}{2n-1}-\frac{2}{2n}+\frac{1}{2n+1}\right]$

$\therefore T_1=\frac{1}{2}\left[\frac{1}{1}-\frac{2}{2}+\frac{1}{3}\right]$

$T_2=\frac{1}{2}\left[\frac{1}{3}-\frac{2}{4}+\frac{1}{5}\right]$

$T_3=\frac{1}{2}\left[\frac{1}{5}-\frac{2}{6}+\frac{1}{7}\right]$

$\therefore$ Required sum,

$S=\frac{1}{2}\left[\left(\frac{1}{1}-\frac{2}{2}+\frac{1}{3}\right)+\left(\frac{1}{3}-\frac{2}{4}+\frac{1}{5}\right)+\left(\frac{1}{5}-\frac{2}{6}+\frac{1}{7}\right)+...\right]$

$\Rightarrow 2S=\left(\frac{1}{1}-\frac{2}{2}+\frac{1}{3}\right)+\left(\frac{1}{3}-\frac{2}{4}+\frac{1}{5}\right)+\left(\frac{1}{5}-\frac{2}{6}+\frac{1}{7}\right)+...$

$=\frac{2}{3}-\frac{2}{4}+\frac{2}{5}-\frac{2}{6}+\frac{2}{7}-\frac{2}{8}+...$

$=2\left[\frac{1}{3}-\frac{1}{4}+\frac{1}{5}-\frac{1}{6}+\frac{1}{7}-\frac{1}{8}+...\right]$

$\Rightarrow 1+2S=2\left[1-\frac{1}{2}+\frac{1}{3}-\frac{1}{4}+\frac{1}{5}-\frac{1}{6}+\frac{1}{7}-\frac{1}{8}+...\right]$

$= 2\log_e(1+1) = 2\log_e 2$

$[\because$ Here x = 1 and $\log_{(1+x)} = \frac{x - x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots]$

$\therefore S = \frac{2\log_e 2 - 1}{2} = \left(\log_e 2 - \frac{1}{2}\right)$

Hence, option (D) is the correct choice.

58. B Given that $\log_2 x . \log_{\frac{x}{64}} 2 = \log_{\frac{x}{16}} 2$

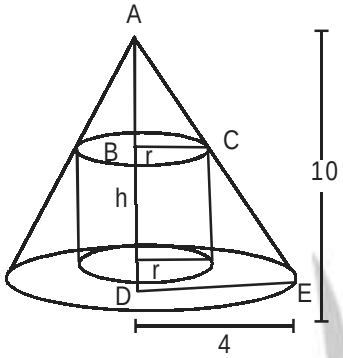
Putting x = 4 in LHS we have

$(2\log_2 2)\left(\log_{\frac{1}{16}} 2\right) = \frac{2\log_2 2}{(-4)\log_2 2} = \frac{-1}{2}$

Similarly, in RHS = $\log_{\frac{1}{4}} 2 = -\frac{1}{2}$

Hence, option (B) is the correct choice.

59. B Let DE and AD be the radius and height of the right circular cone and 'h' and 'r' be the height and radius of the cylinder.



Applying similarity in ΔABC and ΔADE, we have

$\frac{10 - h}{r} = \frac{10}{4} = \frac{5}{2}$

$\Rightarrow 20 - 2h = 5r$

$\Rightarrow h = \frac{20 - 5r}{2}$

Now, Curved surface area of cylinder of radius r

$= 2\pi rh = 2\pi r\left(\frac{20 - 5r}{2}\right) = 5\pi r(4 - r)$

Hence, option (B) is the correct choice.

60. B The curved surface area of sphere = $4\pi r^2$

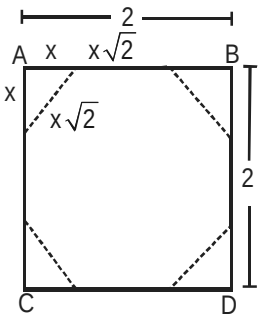
It is given that $\frac{dr}{dt}$ = 2 cm per second and r = 30 cm.

Now we have $s = 4\pi r^2$

$\Rightarrow \frac{ds}{dt} = 4\pi \cdot 2r \cdot \frac{dr}{dt} = 8\pi r \frac{dr}{dt} = 8\pi(30) \times (2) = 480\,\pi$

Hence, option (B) is the correct choice.

61. D



Now, for the side of the square, we can write $x\sqrt{2} + 2x = 2$

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

Reduced area = Area (ABCD) – (Area of sum of four right triangles at the corner)

$= 4 - \left(4 \times \frac{1}{2} \times \frac{4}{(2 + \sqrt{2})^2}\right) = \frac{4 - 8}{(2 + \sqrt{2})^2}$

Solving and rationalizing the above expression, we get

$= \frac{8}{\sqrt{2} + 1}$ sq.units

62. D As per the question, we can write here
S = 2000 + 2500 + … + n

or $S = \frac{n}{2}\left[4000 + (n - 1)500\right]$

For n = 12, S = 57000.
Therefore, 13 month onwards, Rashid would start borrowing.
Hence, option (D) is the correct choice.

63. B The given expression is $(x + y + z + w)^{30}$.
Now, the number of distinct terms in the expansion of above expression is equivalent to finding the number of whole number solution for the equation
a + b + c + d = 30 …(i)

The required number of whole number solutions

$= {}^{30+4-1}C_{4-1} = {}^{33}C_3 = 5456.$

(Here, n = 30 and r = 4).

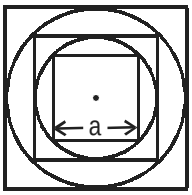
64. C We have, $P(X) = \frac{26 + 2}{52} = \frac{28}{52}$

$P(Y) = \frac{13 + 13 + 2}{52} = \frac{28}{52}$

$P(Z) = \frac{3 + 13 + 3}{52} = \frac{19}{52}$

$\therefore P(X) = P(Y) > P(Z)$

65. C



From the above figure,

Radius of the circle, $C_1 = \frac{a}{\sqrt{2}}$ metres

$D_1 = \frac{\pi a^2}{2} - a^2$ …(i)

For A_2 and C_2

$A_2 = \pi a^2$ and $c_2 = 2a^2$

$D_2 = \pi a^2 - 2a^2 = 2\left(\frac{\pi}{2}a^2\right) = 2D_1$

Also, $D_3 = 4D_1$ and so on.
Therefore, $D_N = 2^{N-1}D_1$

Required ratio $= \frac{D_1 + D_2 + D_3 + \ldots + D_N}{D_1}$

$$= \frac{D_1 + 2D_1 + 4D_1 + ... + 2^{N-1}D_1}{D_1}$$

$$= (1 + 2 + 4 + \ldots + 2^{N-1}) = 1 \cdot \frac{2^N - 1}{2 - 1} = 2^N - 1$$

$$\to \infty \text{ as } N \to \infty$$

Hence, option (C) is the correct choice.

66.*B Let the probability of investigation be 'p'.
Given that the probability of Gamma Ltd. being able to complete the import of technology before the award date = 0.8
There are four possible cases:

Case I: Gamma is able to import the technology and there is no investigation by the government. Probability of occurrence of Case I = 0.8(1 – p)

Case II: Gamma is unable to import the technology and there is investigation by the government. Probability of occurrence of Case II = 0.2p

Case III: Gamma is able to import the technology and there is investigation by the government. Probability of occurrence of Case III = 0.8p

Case IV: Gamma is unable to import the technology and there is no investigation by the government. Probability of occurrence of Case II = 0.2(1 – p)

Probability of contract being awarded to Alpha Ltd.
= 0.67 × 0.8(1 – p) + 0.72 × 0.2p + 0.58 × 0.8p + 0.85 × 0.2(1 – p)
= 0.706 – 0.098p.
For the probability of contract being awarded to Alpha Ltd. to be at least 0.65:
$0.706 - 0.098p \geq 0.65$
$\Rightarrow 0.056 \geq 0.098p$
$\Rightarrow p \leq 0.57$

For $p \leq 0.57$, the probability of contract being awarded to Alpha is at least 0.65.
***There is ambiguity in the question. Going by the options, the question should have been:**
"How high must the probability of investigation be, so that the probability of the contract being award to Alpha Ltd. is attest 0.65?".
Hence, the correct option is (B).

67. A Aditya, Vedus and Yuvraj alone can do a job in 6 weeks, 9 weeks and 12 weeks respectively.

Work done for 2 weeks = $\frac{2}{6} + \frac{2}{9} + \frac{2}{12} = \frac{13}{18}$

Now, Work left = $\frac{5}{18}$

Let y weeks more is required to complete the job.

So we can write, $\frac{y-1}{9} + \frac{y}{12} = \frac{5}{18}$

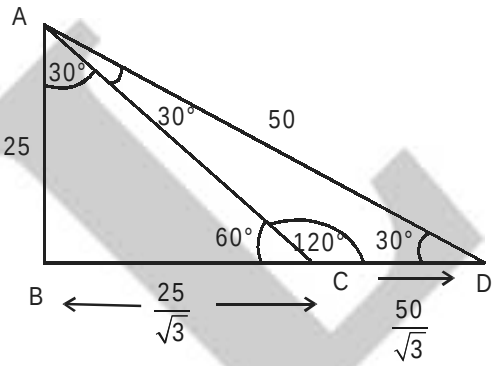
$\Rightarrow$ y = 2 weeks
$\therefore$ Required weeks = 2 + 2 = 4 weeks.
Therefore, the job would be completed in 4 weeks.
Hence, option (A) is the correct choice.

68. D Raveendra was allotted 650 shares with face value of Rs.10 per share. So, the value of investment = Rs.6500.
In year 2007, since the bonus is at the rate of 3:13. So for 650 shares, the bonus shares will be 150, making the total number of share equal to 800.
Similarly, for the year 2008, the total number of shares become 1200.

$\therefore$ Dividend in 2007 = $\frac{1}{8} \times 10 \times 1200$

$\therefore$ Required percentage $= \frac{\frac{1}{8} \times 10 \times 1200}{6500} = \frac{3}{13} \approx 23\%$

69. A Let A be the initial point of observation of the captain of warship and D and C be the initial and final positions of the submarine.



In ΔACD, applying the sine rule, we have

$$\frac{CD}{\sin 30^\circ} = \frac{50}{\sin 120^\circ}$$

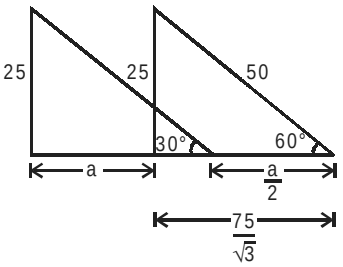
$$\therefore CD = \frac{50}{\sqrt{3}}$$

Now since $\angle ADC = \angle CAD$,

$$AC = CD = \frac{50}{\sqrt{3}} \text{km.}$$

Hence, option (A) is the correct choice.

70. D As per the condition given in the question, we can draw the following figure.



Here, $25\cot 60^\circ = \frac{75}{\sqrt{3}} - \frac{a}{2}$

$$\frac{25}{\sqrt{3}} = \frac{75}{\sqrt{3}} - \frac{a}{2} \Rightarrow a = \frac{100}{\sqrt{3}}$$

$\therefore$ Required speed of the warship $= \frac{200}{\sqrt{3}}$ km/hr.

71. D Let the initial number of 1 Rupee, 2 Rupee and 5 Rupee coins be a, b and c.
At the grocery shop,

The number of 5 Rupee coin left $= \frac{c}{2}$

New count of 1 Rupee coin $= a + \frac{c}{2}$

At the dairy shop,

New count of 5 Rupee coins $= \frac{c}{2} + 30$

Also, according to the condition,

$\frac{c}{2} + 30 = 1.75c$ ...(i)

$a + \frac{c}{2} = 50$ ...(ii)

From (i), c = 24 and putting this value in equation (ii), we get, a = 38.

Therefore, original count of 1 Rupee and 5 Rupee coins is 38 and 24 respectively.

Hence, option (D) is the correct choice.

72. B Speed of Sukriti $= \frac{1000}{350}$ m/sec

Distance to be covered = 5000 m

Time taken by Sukriti $= \frac{5000 \times 350}{1000} = 1750$ sec

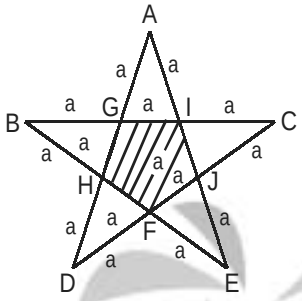
Distance covered by Saloni in the same time $= \frac{1000}{364} \times 1750$

$\therefore$ The distance by which Sukriti will win

$5000 - \frac{1000}{364} \times 1750 \approx 200$ m

Hence, the correct option is (B).

73.* The given diagram is



In the above diagram, please note that $\angle AIG = 60°$ which makes $\angle GIJ = 120°$.

This is not possible since GIJFH is a regular pentagon whose internal angle is always 108°. Hence, **the question is inconsistent.**

74. C P1 $\rightarrow$ 8 hr; P2 $\rightarrow$ + 12 hrs; P3 = –8 hrs

P1 and P2 can fill the tank in

$\frac{8-12}{8+12} = \frac{24}{5} = 4.8$ hr.

So timer is to start after 2.4 hrs.

When P3 is opened then P1 and P2 together become ineffective.

P2 can fill the whole tank in 12 hr, so half will be fixed in 6 hr.

He was supposed to comes after 2.4 + 6 = 8.4 hr.

But the P3 opens when the tank was $\frac{1}{3}$rd full. i.e., in the 1.6 hr. Now P2 is supposed to fill $\frac{2}{3}$rd of tank in 8 hrs. But the supervisor will come after 8.4 – 1. 6 = 6.8 hr. So 1.2 hr of work remains incomplete. Therefore, 10% of the tank is empty if the supervisor comes back as per the plan.

75. B Total distance traveled by the ball

$= 45 + 2\left[(45)\frac{3}{5} + 45\left(\frac{3}{5}\right)^2 + 45\left(\frac{3}{5}\right)^3 + ...\right]$

$= 45 + 2 \times 45\left(\frac{\frac{3}{5}}{1-\frac{3}{5}}\right) = 45 + 45 \times 3 = 180$ m

76. B Let 'x' be the initial volume which is 400 litres and 'a' be the volume replaced.

After sixth operation, we have

$= \left(\frac{x-a}{x}\right)^6 = \left(\frac{400-40}{400}\right)^6$

$\therefore$ The quantity of pure petrol received by seventh customer

$= \left(\frac{400-40}{400}\right)^6 40 = \left(\frac{9}{10}\right)^6 40 = 21.25$

77. A Probability of a person getting a heart attack,

$P(H) = \frac{80}{100} = 0.8$

Here, $P(D1) = \frac{50}{200} = \frac{1}{4}$, $P(D2) = \frac{50}{200} = \frac{1}{4}$ and $P(D1 \cap D2) = \frac{100}{200} = \frac{1}{2}$

Probability of a person getting a heart attack, if drug D1 is given,

$P(H / D1) = (1 - 0.35) \times 0.8 = \frac{65}{100} \times \frac{80}{100} = \frac{52}{100}$

Probability of a person getting a heart attack, if drug D2 is given,

$P(H / D2) = (1 - 0.20) \times 0.8 = \frac{80}{100} \times \frac{80}{100} = \frac{64}{100}$

Probability of a person getting a heart attack, if both D1 and D2 are given,

$P(H / D1 \cap D2) = (1 - 0.35) \times (1 - 0.20) \times 0.8$

$= \frac{65}{100} \times \frac{80}{100} \times \frac{80}{100} \approx \frac{42}{100}$

Applying Baye's Theorem,

$P(D1 \cap D2 / H) = \frac{P(H / D1 \cap D2)\, P(D1 \cap D2)}{P(H / D1 \cap D2)\, P(D1 \cap D2) + P(H / D1)\, P(D1) + P(H / D2) P(D2)}$

$= \frac{\frac{42}{100} \times \frac{1}{2}}{\frac{42}{100} \times \frac{1}{2} + \frac{52}{100} \times \frac{1}{4} + \frac{64}{100} \times \frac{1}{4}} = \frac{42}{100} = 0.42$

78. A For zone I, Rs.193.8 lakh is expected to achieve a sales growth of 7.25%.

Similarly, for zone II and zone III, expected sales growth are 8.2% and 7.15%.

Hence, Bennett's expected sales growth will be

$= \frac{(193.8 \times 7.25) + (79.3 \times 8.2) + (57.5 \times 7.15)}{193.8 + 79.3 + 57.5} = 7.46\%$

79.*C Four monthly consignments received by Philips DVD player are at the purchase price of Rs. 2750, Rs. 2500, Rs. 2400 and Rs. 2250. The corresponding rate of decrease in purchase are 8.33%, 9.09%, 4% and 6.25%.
Now, the required average rate of decrease

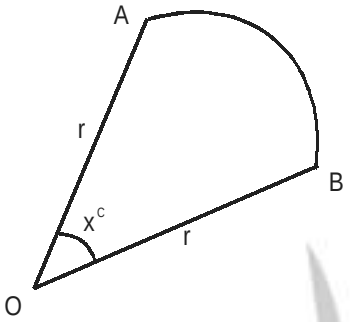
$$= \frac{8.33 + 9.09 + 4 + 6.25}{4} = 6.94\%$$

***There is ambiguity in the language of the question. The options suggest that the question should be: "The average of rates of decrease in the purchase price of DVD player during these four months is".**

80. B Given expression is $(1 - x^2 + x^3)(1 + x)^{10}$
$= (1 - x^2 + x^3)(1 + {}^{10}C_1x + {}^{10}C_2x^2 + {}^{10}C_3x^3 + {}^{10}C_4x^4 + \ldots + {}^{10}C_7x^7 + \ldots + x^{10})$
$\therefore$ Coefficient of $x^7 = {}^{10}C_7 - {}^{10}C_5 + {}^{10}C_4$

$$= \frac{10.9.8}{3.2.1} - \frac{10.9.8.7.6}{5.4.3.2.1} + \frac{10.9.8.7}{4.3.2.1} = 78.$$

81. A Let the radius of the circle be 'r'.



$\therefore$ Area of the sector = (Angle in radius) πr^2

$$= \frac{x}{2\pi} \times \pi r^2 = \frac{\pi r^2}{2}$$

and length of the arc = rx

Square of the length of arc = x^2r^2
According to the given condition,

$$\frac{xr^2}{2} = x^2r^2 \Rightarrow x = \frac{1}{2} = 0.5$$

82. D Area of a cyclic quadrilateral is given as

$$A = \sqrt{(s-a)(s-b)(s-c)(s-d)},$$

where 's' is the semi-perimeter and a, b, c and d are the sides of a quadrilateral. Now if there is threefold increase in all the sides, we have A' = 9A.
$\therefore$ Percentage increase = 800%.
Hence, option (D) is the correct choice.

83. D Statements I, II and IV have been mentioned in the first two paragraphs of the passage. III is not a part of the passage.

***Option C in the given question is incorrect because of the repetition of statement II.**

84. B Except for option (B) the rest of the options have an impact on effective corporate governance according to the passage.

85. C Only statements I and III would improve the quality and reliability of the information reported in the financial statement. II is distorted as it mentions that internal auditors should oversee the functioning of the external auditors whereas the passage mentions that an independent body should monitor the functioning of auditors. Statement IV is contradictory to the facts mentioned in the passage. The passage clearly states that "accounting-standards setting body should include members drawn from the industry, the profession and regulatory bodies. This body should be independently funded".

86. C The passage mentions that an increase in the variable component in tandem with the achievement of the long-term objectives of the firm would enhance accountability of the directors. This makes option (C) correct.

87. D Except for option (D) all the other options are mentioned in the passage.

88. B Options A, C and D describe the features of cyclical movement. Refer to the lines, "By a cyclical movement…ultimately reversed". Option (B) is contrary to what is mentioned in the passage.

89. D Refer to the first five lines of the third paragraph. Marginal efficiency of capital depends upon all the factors except for option (D).

90. B Statements I, II and III are mentioned as an explanation of the phenomenon of crisis in the third paragraph. Option IV is contrary to what is mentioned in the passage.

91. D Statement III is mentioned in the first paragraph. Refer to the line, "The broad…tools and animals". Statement IV is mentioned in the eight paragraph. Refer to the lines, "in fact…global emissions". The second part of statement I is distorted. According to the passage methane is more dangerous than carbon di-oxide. This negates statements I and II.

92. D Option D is contrary to what is mentioned in the passage. The third last paragraph clearly mentions, " global average temperatures, notes the Pew study," have experienced natural shifts throughout human history...that natural variability cannot account for what is happening now.""

93. D The passage clearly mentions II, III and IV as reasons for warming of the earth. I has not been mentioned as a reason for the same. Hence, option (D) is the correct answer.

94. D Refer to the fourth paragraph, I and IV are clearly mentioned as the characteristics of " fuels from heaven".

95. D D is not mentioned in the last paragraph, which gives the essential criteria for setting up sugar refining plants.

96. A In the ninth paragraph, the author describes the sequence of sugar preparation process as given in option (A). Hence, option (A) is the correct answer.

97. D Option (D) is not mentioned anywhere in the passage. Options (A), (B) and (C) are mentioned in the first, ninth and tenth paragraphs of the passage respectively.

98. B In the given sentence, 'however' is incorrectly placed. The key to solving this question lies in the semantics of the sentence. The sentence shows a dichotomy that exists between the timing of promotion of the product and the actual timing of shipment. Therefore, the underlined part should start with 'However'. Thus, options A and D can be eliminated. Out of options B and C, option C is incorrect as 'stubbornly' and 'monthly' in option C have been incorrectly placed. The correct option should read 'However, our monthly data stubbornly suggested that…'.

99. D In the given question, the phrase ' for maintaining their growth rates' is incorrectly placed. The correct sentence should read as ' These companies are looking at the emerging markets in Asia and Latin America for maintaining their growth rates and margins.' Only option (D) gives the correct structure to the sentence.

100. B In the question 'good work to the corporation' is incorrect. It should either be 'good work for the corporation' or simply 'good work'. Option (B) structures the sentence correctly. All the other options have a problem of modifier placements.

101. B Option (B) appropriately relates the trade and the person who does it. The correct sentence would have been "Painters draw their inspiration? What would move poets to write their sonnets, composers to craft their symphonies and philosophers to contemplate the meaning of God". Also, the preposition 'to' has to follow the noun 'poets'. Hence, option (B) is the correct answer.

102. A The given sentence is grammatically correct. Option (D) is incorrect because it changes the meaning and the structure of the sentence by saying that the car sales rose because of " bringing back the borrowing costs". Similar error is encountered in option (C) as it states "spate in borrowing costs". Option (B) is incorrect as it uses "luring of new models incorrectly".

103. C 'Esoteric' which means designed for or understood by the specially initiated alone or requiring or exhibiting knowledge that is restricted to a small group, would give the right synonym for 'pedantic' as used in the sentence. The style of writing in the book being 'esoteric' would be the reason for the book not getting much acclaim. 'Dogmatic' which means characterized by or given to the expression of opinions very strongly or positively as if they were facts, does not fit the context.

104. D 'Chagrin' which means disquietude or distress of mind caused by humiliation, disappointment, or failure would be appropriately replaced by 'mortification' (a sense of humiliation and shame caused by something that wounds one's pride or self-respect **or** the cause of such humiliation or shame). Rest of the given words have a positive connotation.

105. A 'Genuflect' means lower one's body briefly by bending one knee to the ground. 'Grovel', which means to lie or creep with the body prostrate in token of subservience or abasement is synonyms to 'genuflect'.

106. C 'Stentorian' means extremely loud. 'Blaring' (to sound loud and strident) is the correct option.

107. B 'Bemused' (to be confused) would be appropriately replaced by 'bewildered', which means to be perplexed or confused as these two are synonyms.

108. B The correct antonym for 'specious' (having a false look of truth or genuineness) is 'unfeigned' (genuine).

109. A 'Exacting' which means tryingly or unremittingly severe in making demands would be an antonym for insouciant (lighthearted unconcern).

110. A 'Levitate' which means to rise or float in or as if in the air especially in seeming defiance of gravitation. So, gravitating is an antonym for levitating.

111. D 'Ensnared' means to catch. 'Released' is an antonym for 'ensnared'. Hence option (D) is the correct answer.

112. C 'Quagmire' means a difficult, precarious, or entrapping position. 'Tranquility' which means the state of being calm or stable is an antonym for 'quagmire'.

113. C The key to solving this question lies in fitting the first blank, on the basis of this we can eliminate options (A) and (B) as ' serendipity or predilection' do not match with the sentence structure. Option (D) can be eliminated as 'conformity' does not fit the second blank.

114. B The structure of the sentence is in the format that two events are contrasted. On the basis of this we can eliminate options (A), (C) and (D). The sentence highlights the role of the Himalayas in creating wealth thereby attracting barbarian invaders. Hence option (B) is the correct answer.

115. A The key to solve this question lies in filling the second blank. 'Alleviate', 'annihilate' and 'exasperate' do not fit in the context.

116. A As the sentence talks about an inherent phenomena. Options (C), (B) and (D) can be eliminated as it would require an external factor for the petition to be 'acceded', 'repudiated' and 'decimated. Since the sentence has a positive tone only option (A) fits both the blanks appropriately.

117. C* Statement II is an obvious opener as it introduces the topic. Statement I logically follows statement II as it talks about the strategy used by the company to counter the head hunting by other companies. IV carries forward the idea mentioned in statement I. (Statement III could also have been an opener followed by statements II, I and IV necessarily in the same order. Since there was no option starting with statement III option (C) is the best answer among the given options).

In the given paper options (C) and (D) are incomplete.

118. C Statement II and I option a mandatory pair because 'frequency' mentioned in statement II is referred to by 'it' in statement I. Only option (C) has the required pair. Hence, option (C) is the correct answer.

119. A Statement IV is the oblivious opener as it introduces the subject. Statement II and IV form a mandatory pair. Statement I carries forward the discussion in statement II. Statement III gives the details of the "alternative sources of growth" mentioned in statement I. Hence option (A) is the correct answer.

120. C Statement IV and III form a mandatory pair as the words 'latter' and 'former' in III refer to 'individual rights' and 'social consensus' respectively. This mandatory pair only exists in option (C). Hence, option (C) is the correct answer.

121. B* IV opens the discussion as it introduces the two schools of medicine. I throws more light on the allopathic treatment whereas II highlights the importance of ayurvedic school of medicine thus, I and II would appear in the same sequence. III concludes the discussion.

In the given paper option C and D are incomplete.

122. D Option (D) is the correct answer as it presents the information in a chronological manner. Statement IV opens the paragraph because it mentioned the beginning of the track. Statement IV and III form a mandatory pair because statement III follows the event mentioned in statement IV. Hence option (D) is the correct answer.