JMET – Test

Answers and Explanations

1	b	**21**	b	**41**	d	**61**	d	**81**	b	**101**	b	**121**	c	**141**	d
2	c	**22**	d	**42**	c	**62**	b	**82**	d	**102**	b	**122**	b	**142**	d
3	c	**23**	c	**43**	a	**63**	b	**83**	c	**103**	d	**123**	d	**143**	c
4	d	**24**	b	**44**	d	**64**	a	**84**	c	**104**	a	**124**	a	**144**	c
5	b	**25**	b	**45**	d	**65**	b	**85**	a	**105**	d	**125**	b	**145**	c
6	d	**26**	d	**46**	d	**66**	b	**86**	d	**106**	a	**126**	b	**146**	d
7	b	**27**	a	**47**	c	**67**	b	**87**	c	**107**	d	**127**	b	**147**	b
8	b	**28**	b	**48**	c	**68**	b	**88**	c	**108**	d	**128**	a	**148**	c
9	d	**29**	a	**49**	d	**69**	c	**89**	b	**109**	c	**129**	a	**149**	c
10	c	**30**	d	**50**	a	**70**	d	**90**	b	**110**	b	**130**	c	**150**	b
11	c	**31**	c	**51**	d	**71**	a	**91**	c	**111**	b	**131**	d		
12	c	**32**	b	**52**	b	**72**	c	**92**	a	**112**	a	**132**	b		
13	b	**33**	c	**53**	a	**73**	a	**93**	b	**113**	c	**133**	c		
14	a	**34**	d	**54**	b	**74**	a	**94**	c	**114**	b	**134**	a		
15	d	**35**	b	**55**	a	**75**	a	**95**	d	**115**	d	**135**	d		
16	d	**36**	a	**56**	c	**76**	c	**96**	a	**116**	b	**136**	c		
17	c	**37**	d	**57**	c	**77**	a	**97**	c	**117**	a	**137**	d		
18	c	**38**	b	**58**	c	**78**	c	**98**	d	**118**	c	**138**	d		
19	d	**39**	a	**59**	c	**79**	b	**99**	a	**119**	d	**139**	d		
20	d	**40**	c	**60**	b	**80**	a	**100**	d	**120**	b	**140**	c		

Scoring table

Section	Question number	Total questions	Total attempted	Total correct	Total wrong	Net Score	Time Taken
R C	1 to 15	15					
D S + L R + E U	16 to 55	40					
Q A	56 to 95	40					
D I	96 to 135	40					
G A	136 to 150	15					
Total		150					

1. Refer to the word ‘prophetic’.

2. Refer to the second sentence.

3. The centre of the bell would have maximum frequency.

4. (a), (b) and (c) are mentioned in the passage.

5. Refer to the word ‘imagine’.

6. Refer to the words ‘just how accurate’.

7. The word *precious* here means *very little*.

8. Refer to the part ‘despite the fact’.

9. The passage does not specifically state (d).

10. Refer to the relevant part in the second paragraph.

11. The opening of the passage largely point towards (c).

12. Refer to the part ‘we hadn’t seen anything yet’.

13. Refer to the ‘alert’ part.

14. Refer to the second paragraph.

15. Refer to the word ‘judicious’.

16. From statement I, we get 1, 3, 5, 7, 9.
From statement II, all numbers which is multiple of 3.
Combining both, we get the numbers 3 and 9.
Hence, we cannot decide.

17. Both the statements are needed.

Apply $\dfrac{a}{\sin A} = \dfrac{b}{\sin B}$

18. Both the statements are needed.

First statement says $x > \dfrac{1}{2}$ or $x < -\dfrac{1}{2}$.

Second statement indicates x > 0.

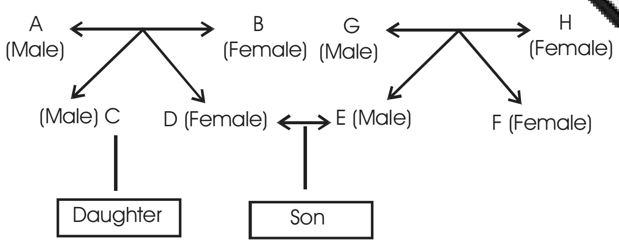
19. Cannot be determined. The second statement indicates that Raju can be a liar or can be truthful.

20. Cannot be determined. The length of the race has to be known.

21. From (I), we get that the point (x, y) is on a circle whose centre is at the origin and radius is 4.
From (II) again, the distance from origin is 4.

22. Both the statements independently are insufficient. Also combining the two, we do not get any value.

For questions 23 to 27: The data can be represented

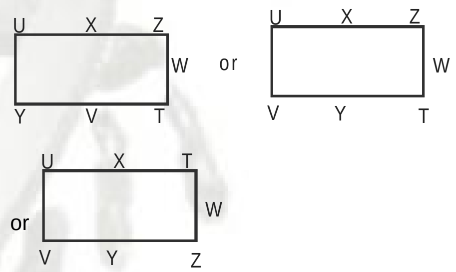


On the basis of this diagram we can clearly solve rest of the questions very easily.

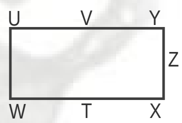
28. In alternative a, V and Z are not supposed to sit together.
Alternative b, is correct.
In alternative c, Y sits at the head of table.
In alternative d, X sits at the head of table.

29. Since V and Y sit together W and T sit near Z leaving X next to U.

30.



31.



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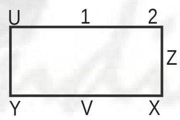


Questions 33 to 36:

Rank no.	Jockeys	Given numbers	Horses
1	Ganesh		Old Boy
2	Jon		Lucky
3	Farokh		Power
4	Ismail	405	Magic
5	Hariprasad	404	Naughty

37. He has at most 20 toys in G and P. Thus, at least 10Y toys. As he has not more than 7P toys, (I) is true. Also he may have 12G and 7P or 2G and 6P, etc. Thus, (II) is not necessarily true. It is possible that he has, say, 11G and 6P. Thus, 13Y . 13 is not > 15. Thus, (I) may be

false, but not necessarily as he may have 4G, 6P, 20Y. Thus, (I) can be true. Also it is possible 5P, 2G. Thus, (I) is true. Thus, neither is necessarily false.

38. Cohorts form a band of supporters and retinue is a collection of attendants.

39. Incendiary is about fire as kleptomania is about stealing.

40. A zealot takes an extreme position and a mediator takes a peaceful stance.

41. An accolade sounds resounding as a wail sounds mournful.

42. Option (a) is wrong as statement B cannot follow statement 1. Also statement A does not follow statement 1 because there is no explanation available for the pronoun ‘it’. Similarly, option (d) is eliminated because statement D cannot appear after B. Hence, the right answer is option (c).

43. One clue here is that statement C should precede statement 6 as explanation of a concept. Also it can be seen that statement D should follow B. For these reasons, the answer choice is option (a).

44. Go for the ‘B-D-Y’ link.

45. The mew set may intersect the dog set.

46. At least the dongs that are tims are bits.

47. The movie may be popular because it depicts graphic violence, that doesn’t mean that it’s a good movie.

48. If good word-of-mouth is an indicator of quality, then (c) is not necessarily wrong.

49. Bill Gates’ own academic background bears little relation to his suggestion, as per (d).

50. We can relate Bill Gates’ background to his suggestion and support (a).

51. (d) is the missing step in the argument.

52. The missing step is that the totalitarian regimes could not succeed in giving better service to the public.

53. (a) shows that the comparison is being made under very different circumstances.

54. (b) shows that if the measure failed in the totalitarian country, it stands little chance of success here.

55. (a) shows how the ad may have had little or no effect on tourism.

56. Work with choices.

57. Use $a+b+\frac{ab}{100}$

$$\Rightarrow 10-10-\frac{10\times10}{100}=-1\% = 1\% \text{ decrease}$$

58.

Time	Relative speed	Distance between A and B
1 p.m.	0 km/hr	8 km
2 p.m.	–3 km/hr	11 km
3 p.m.	–2 km/hr	13 km
4 p.m.	–1 km/hr	14 km
5 p.m.	0 km/hr	14 km
6 p.m.	+1 km/hr	13 km
7 p.m.	+2 km/hr	11 km
8 p.m.	+3 km/hr	8 km
9 p.m.	+4 km/hr	4 km

Hence, between 9 p.m. and 10 p.m. the relative speed is 5 km/hr. As distance between them is 4 km, the time required is $\frac{4}{5}\times60$ = 48 min

59. Let radius of the circle be $R_1 = r$.

$\therefore$ Area of circle $A_1=\pi r^2$

Radius is increased by 100%.

$\therefore R_2=2r$

$A_2=\pi\times(2r)^2$

Percentage increase in area of the circle

$$=\frac{A_2-A_1}{A_1}\times100$$

$$=\frac{4\pi r^2-\pi r^2}{\pi r^2}\times100$$

= 300%

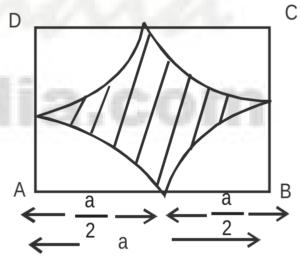
60. Circumference of wheel = πd

Distance travelled by wheel in n revolutions = $n\pi d$

$= 100 \times \frac{22}{7} \times 63$

= 19,800 cm = 198 m

61. Area grazed by one horse = $\frac{\pi r^2}{4}$



Area grazed by four horses = πr^2

Here $r = \frac{63}{2}$

When a is side of square ABCD.

$\therefore$ Area left ungrazed = $a^2 - \pi r^2$

$= 63^2 - \pi \times \left(\frac{63}{2}\right)^2$

$= 63^2 \times \left(1 - \frac{22}{7} \times \frac{1}{4}\right)$

$= 63^2 \times \left(\frac{28-22}{28}\right) = 63^2 \times \frac{6}{28}$

$= 63^2 \times \frac{3}{14}$

$= \frac{63 \times 9 \times 3}{2} = 850.5 \, m^2$

62. $2x + 3y + 4z = 27$ ... (i)
and $3x + 2y + z = 33$ ... (ii)
Adding (i) and (ii), we get $5(x + y + z) = 60$
$\Rightarrow (x + y + z) = 12$

$\therefore$ Average = $\frac{(x+y+z)}{3} = \frac{12}{3} = 4$

63. $1 + \frac{x}{12} = \sqrt{\frac{169}{144}} = \frac{13}{12}$

$\Rightarrow \frac{x}{12} = \frac{13}{12} - 1$

$\Rightarrow \frac{x}{12} = \frac{1}{12}$

$\Rightarrow x = 1$

64. $g(x) = x^3 + 2 \Rightarrow g(2) = 2^3 + 2 = 10$
$f(x, y) = xy \Rightarrow f(3, 10) = 3 \times 10 = 30$

65. $\frac{2^x}{2} + 2^x \cdot 2 = 1280$

$\Rightarrow 2^x \left[\frac{5}{2}\right] = 1280$

$\Rightarrow 2^x = \frac{1280 \times 2}{5} = 512$

$\Rightarrow 2^x = 512 \Rightarrow 2^x = 2^9$

$\Rightarrow x = 9$

66. $-25\left(x^2 - 2\sqrt{2}x + 2\right) \geq 0$

$\Rightarrow x^2 - 2\sqrt{2}x + 2 \leq 0$

$\Rightarrow \left(x - \sqrt{2}\right)^2 = 0$

As square of real number cannot be –ve.

$\therefore (x - \sqrt{2}) = 0 \Rightarrow x = \sqrt{2}$

67. x and y both have to be integers.

$y = \frac{63}{3} - \frac{4x}{3}$

$y = 21 - \frac{4}{3}x$

Clearly, feasible integral values of (x, y) are (3, 17); (6, 13); (9, 9); (12, 5); (15, 1). So number of integral solutions will be 5.

68. $a + a^2 = a + b + c \Rightarrow a(a+1) = a + b + c$

$\Rightarrow a + 1 = \frac{a+b+c}{a}$

$b + b^2 = a + b + c \Rightarrow b(b+1) = a + b + c$

$\Rightarrow b + 1 = \frac{a+b+c}{b}$

$c + c^2 = a + b + c \Rightarrow c(c+1) = a + b + c$

$\Rightarrow c + 1 = \frac{a+b+c}{c}$

$\therefore (a+1)^{-1} + (b+1)^{-1} + (c+1)^{-1}$

$= \frac{a}{a+b+c} + \frac{b}{a+b+c} + \frac{c}{a+b+c}$

$= \frac{a+b+c}{a+b+c} = 1$

69. If any number p is even, $\frac{p}{2}$ is integer.

Thus, $\frac{K}{2}$ is even, implies $\frac{\frac{K}{2}}{2} = \frac{K}{4}$ is also an integer.

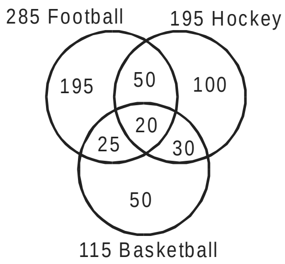
Thus, as $\frac{K}{4}$ is odd, $\frac{K}{4} + 1$ is even.

Then $\frac{1}{2}\left(\frac{K}{4} + 1\right)$ is an integer.

70. Let $x + \frac{8}{x} = c$ and condition for real roots is that the discriminant should be greater than or equal to zero.

Solution for questions 71 to 72:

From the given information, we can draw the following Venn diagram.



$$n(F \cup H \cup B) = n(F) + n(H) + n(B) - n(F \cap H) - n(H \cap B) - n(F \cap B) + n(F \cap H \cap B)$$

$$\Rightarrow 450 = 285 + 195 + 115 - 70 - 50 - 45 + n(F \cap H \cap B)$$

$$\Rightarrow n(F \cap H \cap B) = 450 - 430 = 20$$

72. Only football viewers = 285 – 70 – 45 + 20 = 190

73. 50% of CP = Rs. 3. Thus, CP= Rs. 6.

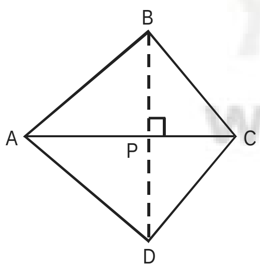
So profit percentage $= \frac{0.60}{6} \times 100 = 10\%$

74. First 1,000 copies cost Rs. 10,000. So Rs. 62,300 is the cost for the rest 7,000 copies.
Now 7000x = 62300

$$\Rightarrow x = \frac{62300}{7000} = \text{Rs. } 8.90$$

75. Since (x + 1) and (x + 2) are factors of the polynomial, if we put x = –1 and x = –2 in the expression, the value would come to be zero.
Hence, if $P(x) = x^3 + ax^2 - bx + 10$, then
P(–1) = 0 = –1 +a + b + 10
$\Rightarrow$ a + b = –9 ... (i)
and P(–2) = 0 = –8 + 4a + 2b + 10
$\Rightarrow$ 2a + b = –1 ... (ii)
Now solving (i) and (ii), a = 8 and b = –17.

76.



Area of ABCD = 2 × Area of ΔABC

$$= 2\sqrt{9 \times 2 \times 3 \times 4}$$

$$= 12\sqrt{6} \text{ m}^2$$

[Using Hero's formula, $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$]

Since ΔABC and ΔACD are concurrent,

$$\Delta ABC = \frac{1}{2} \times ABCD = 6\sqrt{6} \text{ cm}^2$$

$$\Delta ABC = 6\sqrt{6} = \frac{1}{2} AC \times BP \text{ [if } BP \perp AC \text{]}$$

$$\Rightarrow \frac{1}{2} \times 6 \times BP = 6\sqrt{6}$$

$$\Rightarrow BP = 2\sqrt{6}$$

Similarly, we can find that DP [if $DP \perp AC$] = $2\sqrt{6}$

$$\therefore BD = BP + DP = 2\sqrt{6} + 2\sqrt{6} = 4\sqrt{6} \text{ m}$$

77. The ratio of their daily wages is $\frac{1}{2} : \frac{1}{3} : \frac{1}{5}$.

So the ratio of their wages for the full work is $\frac{10}{2} : \frac{12}{3} : \frac{15}{5}$, i.e. 5 : 4 : 3.

Hence, A's amount = $\frac{5}{12} \times 144 = \text{Rs. } 60$

78. Let's assume that Pratima joined x months after the start. So while Rashmi has invested for 12 months, Pratima invests for (12 – x) months.

Hence, $\frac{4500 \times 12}{3000 \times (12 - x)} = \frac{2}{1}$

$\Rightarrow$ 3000x = 9000
$\Rightarrow$ x = 3

79. 5% of 800 = 40 25-paisa denomination coins were removed and 25% of 1200 = 300 50-paisa denomination coins were removed.
So the value of money removed
= (40 × 25-paisa) + (300 × 50-paisa)
= Rs. 10 + Rs. 150
= Rs. 160
Original value of money
= (800 × 25-paisa) + (1200 × 50-paisa)
= Rs. 200 + Rs. 600 = Rs. 800

$\therefore$ Percentage of money removed = $\frac{160}{800} = \frac{1}{5} = 20\%$

80. In one unit of X, there are 2 units of material B. So in 25 units of X, there would be 50 units of B.
Similarly, in 25 units of Y, there would be 125 units of B.
$\therefore$ Total requirement of material B = 50 + 125 = 175

81. In the morning-noon session, he sells 0.4p. So he is left with p – 0.4p = 0.6p. He sells 60% of it in the afternoon session, i.e. 0.6p × 0.6 = 0.36p
Now had he sold twice of 0.36p, i.e. 0.72p, he would

have to borrow 12 papers extra.

$\therefore$ p + 12 = 0.4p + 0.72p

$\Rightarrow$ 12 = 1.12p – p = 0.12p

$\Rightarrow$ p = 100

82. a% of b = c $\Rightarrow$ ab = 100 c ... (i)

b% of c = a $\Rightarrow$ bc = 100 a ... (ii)

and c% of a = 1 $\Rightarrow$ ca = 100 ... (iii)

Multiplying (i), (ii) and (iii), $a^2b^2c^2 = 100^3$ ac

$\Rightarrow ab^2c = 100^3$ ... (iv)

Dividing (iv) by (iii), $\frac{ab^2c}{ac} = \frac{100^3}{100} \Rightarrow b = 100$

Now from (i), 100a = 100c $\Rightarrow$ a = c ... (v)

Again from (iii) and (v), $a^2 = 100$

$\Rightarrow$ a = c = 10

Hence, only answer choice (d) is not true.

83. $x^a = y$, $y^b = z$, $z^c = x$

$\Rightarrow x^a = y$

$\Rightarrow x^{ab} = y^b = z$

$\Rightarrow x^{abc} = x$

$\Rightarrow$ abc = 1

$\Rightarrow \frac{1}{abc} = 1$

84. $\text{Time} = \frac{\text{Distance}}{\text{Speed}}$

v_1 = 4 km/hr

v_2 = 4.5 km/hr

Let in time t, the distance travelled by the first bullock cart be x. Then the distance travelled by the second bullock cart is x + 8.5 km.

$\therefore$ x = t × 4 ... (i)

and x + 8.5 = t × 4.5 ... (ii)

(ii) – (i) $\Rightarrow$ 8.5 = t(4.5 – 4), i.e. $(d_1 - d_2) = t(v_1 - v_2)$

$t = \frac{8.5}{.5} = 17$ hr

85. Let the distance between Meerut and Delhi is one unit and they meet at

$MD = \frac{x}{4}$

$DM = \frac{x}{7/2}$

Using the formula, distance = Speed × Time

$1 = \frac{1}{4}(t-7) + \frac{2}{7}(t-9)$

$1 = \frac{7t - 49 + 8t - 72}{28}$

$\Rightarrow$ t = 9.56 a.m

86. Here number of men, number of hours and number of days are inputs, and work is output.

$\frac{\text{Input}}{\text{Output}} = \frac{\text{Input}}{\text{Output}}$

$\frac{x.x.x}{x} = \frac{y.y.y}{n}$

$\Rightarrow n = \frac{y^3}{x^2}$

87. $f(x) = 1 + x + \frac{1}{x}$

$f\left(\frac{1}{x}\right) = 1 + \frac{1}{x} + x = f(x)$

$f\left(\frac{1}{x}\right) + f(x) = 2f(x)$

$= 2f\left(\frac{1}{x}\right)$

88. $\int 4^x \cdot 3^x \cdot e^x \, dx = \int (12 \cdot e)^x \, dx$

$= \frac{(12e)^x}{\log_e(12e)} + C$

$= \frac{4^x \cdot 3^x \cdot e^x}{2\log_e 2 + \log_e 3 + 1} + C$

89. We have $I = \int \frac{(x^2 + x^5)}{(1 + x^6)} dx$

$= \int \frac{x^2(1 + x^3)}{1 + (x^3)^2} dx$

Put $x^3 = t \Rightarrow 3x^2 dx = dt$

$I = \frac{1}{3}\int \frac{1 + t}{1 + t^2} dt$

$= \frac{1}{3}\left[\left(\frac{1}{2}\log_e\left|t^2 + 1\right|\right) + \tan^{-1} t\right] + C$

$= \frac{1}{3}\left[\left(\frac{1}{2}\log_e\left|t^6 + 1\right|\right) + \tan^{-1} x^3\right] + C$

90. Assume a and b be the number of male and female employees respectively and $\bar{x}$ and $\bar{y}$ be the average salary of male and female repectively. Assume $\bar{n}$ be the average salary of all the employees in the company. Then

$\bar{n} = \frac{a\bar{x} + b\bar{y}}{a + b}$

$\Rightarrow 5700 = \frac{a \times 6000 + b \times 5000}{a + b}$

$\Rightarrow 57 \;\; (a + b) = a \times 60 + b \times 50$

$\Rightarrow 3a = 7b$

$\Rightarrow \frac{a}{b} = \frac{7}{3}$

So percentage of male employees in the company

$= \frac{7}{10} \times 100 = 70\%$ and female $= \frac{3}{10} \times 100 = 30\%$

91. We have

$$17 = \frac{2+x+5+x+6+x+8+x+9+x+11+x+12+x+14+x+15+24}{10}$$

$\Rightarrow 170 = 8x + 106$

$\Rightarrow 8x = 64$

$\Rightarrow x = 8$

92. Assume one root of the quadratic equation be α. Then the other root is α^4.

$\therefore \alpha + \alpha^4 = -\frac{q}{p}$ ... (i)

and $\alpha \cdot \alpha^4 = \frac{r}{p}$

$\Rightarrow \alpha = \left(\frac{r}{p}\right)^{\frac{1}{5}}$ ... (ii)

Substituting the value of α from (ii) in (i), we get

$$\left(\frac{r}{p}\right)^{\frac{1}{5}} + \left(\frac{r}{p}\right)^{\frac{4}{5}} = -\frac{q}{p}$$

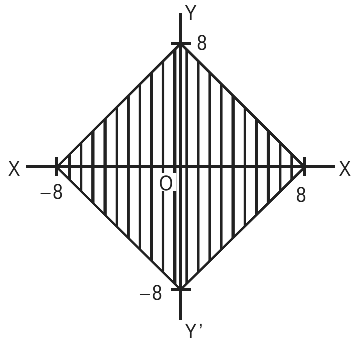
$$\Rightarrow p\left(\frac{r}{p}\right)^{\frac{1}{5}} + p\left(\frac{r}{p}\right)^{\frac{4}{5}} = -q$$

$$\Rightarrow p^{1-\frac{1}{5}} \cdot r^{\frac{1}{5}} + p^{1-\frac{4}{5}}\ r^{\frac{4}{5}} - q = 0$$

$$\Rightarrow p^{\frac{4}{5}}\ r^{\frac{1}{5}} + p^{\frac{1}{5}}\ r^{\frac{4}{5}} + q = 0$$

93. When P and N are together, taking both as one letter, we have 5 letters, and P and N can be arranged in 2! ways.
Hence, total number of words
= 5! × 2!
= 5 × 4 × 3 × 2 × 1 × 2 = 240

94.



We have |x| + |y| = 8,
when y = 0, x = 8 or –8
and when x = 0, y = 8 or –8.

Area $= 4 \times \frac{1}{2} \times 8 \times 8 = 128$ sq. unit

95. There are only two possiblities:
either black ball goes in green or yellow jar.

Hence, probability = $\frac{1}{2}$

Alternative method:
In yellow jar, 9 red balls and 1 black ball can be chosen by ${}^{19}C_9 \times {}^{1}C_1$ ways.

In yellow jar, total number of ways $= {}^{20}C_9$

Probability $= \frac{{}^{19}C_9}{{}^{20}C_9} = \frac{\frac{19!}{10!\ 9!}}{\frac{20!}{10!\ 10!}} = \frac{10}{20} = \frac{1}{2}$

96. Average production over 4 years = 4 + 2.6 + 1.6 + 3.5

97. 26% of 4 lakhs = 1.04 lakhs = 2.95 lakhs

98. 28% of 3.5 lakhs = 98000

99. Required percentage = 2.6 – 1.6 × 100 = 38%

100. West zone registred the greatest percentage change in production. Production in west zone (in 1990) = 28% of 4 lakh = 1.2 lakh
Production in west zone (in 1993) = 25% of 3.5 lakh = 0.875 lakh

Percentage change = $\frac{1.12 - 0.875}{1.12} \times 10 = 21.8\%$

101. Average dividend amount $= \frac{68.59}{2509} = \text{Rs. } 2734$

102. In TIGF scheme, average redemption amount per warrant

$= \text{Rs. } \frac{83,000}{7} = \text{Rs. } 11857.14$

In FIBF scheme, average $= \text{Rs. } \frac{13,000}{1} = \text{Rs. } 13,000$

Ratio = 11857.14 : 13000 = 91 : 100 $\approx$ 9 : 10

103. (I) TIGF and TIIF $= \text{Rs. } (3.26 + 42.18 + 0.83 + 2.30)$ lakh

= Rs. 48.57 lakh

(II) Total number of warrants in TIIF scheme
= 1601 + 48 = 1649 out of total 2,578 claims.
Hence, it is more than 60%.

104. Required percentage $= \frac{5.39}{68.59} \approx 7.8\%$

105. The data on unclaimed dividend amounts for FIIF, FIBF and FIGF are not given.

106. Percentage fall $= \frac{10-8}{10} \times 100 = \frac{2}{10} \times 100 = 20\%$

107. Sales in 2000 = 8000
Production in 2000 = 4000

Required percentage $= \frac{8000}{4000} \times 100 = 200\%$

108. It is clear from the graph that there is a big gap between production and sales in both 1996 and 2000 (sales was twice the production). Hence, the ratio will be maximum.

109. $\frac{\text{Production in 1996}}{\text{Production in 2000}} = \frac{5}{4} = 1.25$

110. Total production of sugar in 1997 and 1999
= 5000 + 4000 = 9000
Total sales in 1997 and 1999 = 6000 + 5000 = 11000
Required difference = 11000 – 9000 = 2000

111. Market value of C in May = 70
Market value of C in February = 50

Required percentage $= \frac{70}{50} \times 100 = 140\%$

112. Market value of A in February = 30
Market value of A in March = 60
Maximum percentage increase

$= \frac{60-30}{30} \times 100 = 100\%$

Alternative method:
It can also be determined by looking at the slope of the graph.

113. Market value of B in May = 100
And market value of B in February = 70

Percentage increase $= \frac{100-70}{70} \times 100 = 43\%$

114. Average value of product C

$= \frac{50+50+30+50+70+70}{6} = 53.33$

Number of months showing above average market value is 2, i.e. May and June.

115. Market values of B and C in March are 90 and 30 respectively.
Total value = 120
Market value of A in March = 60
Market value of A × 2 = 120 = 2 times

116. Required growth rate $= \frac{4.69-4.46}{4.46} = 5.2\%$

117. It is 0.3 million tonnes for half year ended September 30, 2002
and 0.2 million tonnes for the quarter ended September 30, 2002.
Hence, export for the first quarter = (0.3 – 0.2) = 0.1 million tonnes.

118. Required percentage

$= \frac{(8.77-4.50)}{8.77} \times 100\% \approx 48.7\%$

119. Percentage change $= \frac{4.18-4.50}{4.50} \approx 7.1\%$ decrease

120. The ratio is
8.77 : 19.15
$\approx$ 1 : 2.2 = 5 : 11

121. Chinese language is spoken by 120 crore
World population = 543 crore
Therefore, required percentage

$\frac{120}{543} \times 100\% = 22\%$ (approximately)

122. French and German, represented at serial numbers 9 and 10 respectively, are spoken by an equal number of people (12 crore each).

123. Required ratio

$= \frac{\text{Number of people speaking Spanish}}{\text{Number of people speaking Arabic}}$

$= \frac{36 \text{ crore}}{21 \text{ crore}} = \frac{12}{7} \rightarrow 12:7$

124. The number of people speaking English and the number of people speaking Hindi are 46 crore and 38 crore respectively.
Therefore, the required percentage

$= \frac{46-38}{38} \times 100\% = 21\%$

125. Total population speaking Japanese and German put together = 13 + 12 = 25 crore ... (i)
Total population speaking Russian and Arabic put together = 29 + 21 = 50 crore ... (ii)

Therefore, the required ratio = $\frac{(i)}{(ii)} = \frac{25}{50} = \frac{1}{2} \rightarrow 1 : 2$

126. Percentage contribution = $\frac{3567}{3567+3213+4466}$

$= \frac{3567}{11246}$ = 31% approximately.

Approximation: If the north region were also in the region of south and west, each region would be approximately 33%. However, since north is slightly higher, it brings down south's contribution to about 31%.

127. By looking at the graph, we can see that the difference in magnitude is greatest for south in 1995 and the denominator, viz. 1994 production is the lowest as compared to all other fractions.

128. Total south production
= 2450 + 3567 + 3720 + 3422 + 3875 = 17034
Total north production
= 3540 + 4466 + 4620 + 3890 + 4230 = 20736
Therefore, ratio = 1 : 1.2
Approximation: By observation, one can see that in each year the north production is roughly $\frac{1}{4}$ times larger. From the options given, (b) is the best choice.

129. Average production = $\frac{\text{Total of each year}}{5}$

$= \frac{56363}{5}$ = 11,272 tonnes

Approximation: By observation, the total in each year has to be roughly around option (a).

130. Maximum magnitude of change is in west in 1995, however the denominator is high.
South in 1995 has a large increase and a small denominator, due to which the percentage change is the highest.

131. $\frac{(5.32 \times 100)}{(5.32+116.78)} = 4.4\%$

132. $\left(\frac{67.68 \times 100}{2+237.49}\right) = 28\%$

133. $\left(\frac{15.15 \times 10}{20.25}\right) = 7.5$

134. Since March 2000 is just a projection, we cannot consider it for our analysis of actual growth. Therefore, we calculate only for years ending in March 1998 and March 1999. It is maximum for March 1998 at 64% over March 1997. For March 1999 over March 1998, it is 59.07%.

135. $\frac{(90.99-15.15) \times 100}{15.15} = 500.5\%$