

**JMET 2008 ACTUAL PAPER (held on 9<sup>th</sup> Dec-2007)  
[SET C]**

**VERBAL COMMUNICATION**

1. B Refer to the 9<sup>th</sup> line of the passage where the author states that “For philosophers, I take it.....circumstances would permit”. Hence the author emphasizes that philosophers should at all times promote an unbiased perspective towards their specific theory.
2. A Since the author is discussing about not promoting one’s own individual philosophy while the reality in a war is different, the most appropriate title would be option (A).
3. D The writer is speaking about abiding by the truth at the time of war rather than promoting one’s own personal theory. But that does not mean that the writer is a pacifist that is somebody who does not believe in the existence of war. Hence, option (D) cannot be directly inferred from the passage.
4. D None of the available options are most concise and appropriate in meaning as compared to the sentence given in the question.
5. D Note the usage of the word “but” after the semicolon. It indicates that both the blanks should have two contradictory options that would best fit the meaning of the sentence and hence the answer has to be option (D) as it is more related with facts as compared to option (B).
6. C In all the other options, the words given for the second blank do not match with the meaning of the sentence.
7. A Options (B), (C), (D) are grammatically correct.
8. A The entire sentence has to be in complete past tense as it uses the verb “asked” in the beginning.
9. B The spelling of “sacreligeous” is wrong. The correct spelling is “sacrilegious”.
10. A “Restless” and “Restive” are synonyms of each other. Hence the answer option which shares a similar synonymous relationship is option (A) as “flammable” and “inflammable” both carry the same meaning that is easily set on fire or combustible.
11. A The correct answer is option (A) as the pair of words given share the same antonymous relationship as the words given in the question because “Objurgate” means to give up something by one’s own will and “Obsecrate” means abolish or ban something officially because it is necessary.
12. C Refer to second last sentence of 3<sup>rd</sup> paragraph of the passage.

13. C The concept of “money and fame” has not been discussed at all in the passage.
14. C Clearly the entire passage talks about what are the ethics and responsibilities of a writer. Hence the most appropriate title would be “The Writer’s Duty”.
15. B Nowhere in the original sentence has it been indicated that students create intelligent messages only to cope with listener’s demands.
16. A Refer to last sentence of the second paragraph of the passage.
17. B Only option (B) has the same relation as that of the words given in capital letters.
18. C Refer to 3<sup>rd</sup> and 4<sup>th</sup> paragraph of the passage where it is mentioned that advertorials encourage advertising of complex products but it is done in a controlled way which is suitable for an editorial format.
19. D The influence of latest technology on creating advertorials has not been discussed anywhere in the passage.
20. A In option (A) there is a distinct difference in time frame between both the actions that have taken place. Hence, the combination of the past form of “put” and the present form of “cannot” is grammatically correct.
21. B Option(B) is grammatically correct because there is appropriate use of the present tense in the entire sentence and the usage of the prepositions is also correct.
22. C Option (C) is grammatically correct because it is referring to a specific time period in the past and so the past perfect tense has been used here in the form of “had to depend”.
23. C Option (A) and Option (D) have complete incorrect punctuation usage. Between option (B) and option (C), option(B) is incorrect as a colon should have been used instead of the semicolon. Hence the correct answer is option (C) because the sentence is correct with or without a comma after the phrase “In April Seventeen EightyNine”.
24. C “Fiducial” means relating to faith or trust and hence the appropriate synonym would be “Trustworthy”.
25. A “Mirific” means doing wonders or wonderful. Hence the appropriate synonym would be “Marvellous”.
26. A “Plebeian” means commonplace or vulgar. Hence the appropriate synonym would be “Vulgar”.
27. C Only option c matches with the relation given in the question.
28. B Only option (B) has the same relation as the relation given in the question.
29. A Only option (A) is the correct passive form of the active sentence given in the question.

30. D The meaning of the sentence given in the question is that the person resembles or looks similar to that of a Greek goddess. However in options(a),(b),(c) the meaning of the sentences given is just the opposite that is the Greek goddess resembles the person which is incorrect. Hence the answer would be “none of the specified options”.
31. D Option (D) is most closest in meaning to the sentence given in the question.
32. A Refer to the last two paragraphs of the passage where it is clearly indicated that sins of commission can be very hazardous and life-threatening as compared to the sins of omission which is merely related with loss of memory for a particular period of time.
33. C “Transience” in the passage means temporary or impermanence. Hence the word in the option which refers to this meaning is “ephemeral” which also means short-lived or temporary.
34. C The relationship between the seven memory sins and the seven deadly sins is not discussed in the passage.
35. C “Anathema” means a person or thing that is cursed. Hence the opposite would be “Benediction” which means divine blessing.
36. A “Fecund” means fruitful or productive. Hence the opposite would be “Barren”.
37. B “Concinnity” means harmony or arrangement of parts with respect to the whole. Hence the opposite would be “mismatch”.
38. B Only option (B) has the grammatically correct answer.
39. D The passage does not discuss the role of the public sector in contributing to India’s reforms.
40. B Option (B) is incorrect as seen in the last sentence of the third paragraph of the passage.

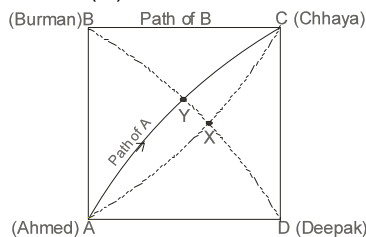
**LOGICAL REASONING**

41. C The passage clearly begins with Gopal stating his father’s point of view and then later giving an example to prove it wrong.
42. A Since Gopal’s father was coaching Gopal’s two seniors who cracked JMET, he must be better aware about the amount of time they must have taken to prepare thoroughly for the JMET exam.
43. B Only III can be deduced.
44. B As in option (A), taking statements II and III together, we can determine neither the total number nor the dimension of the sides. Hence (A) is wrong. As in option (D), taking I and II together, we can determine neither the length nor the breadth of the rectangle. As in option (C), from statements I, II and III we cannot determine the length of the other side of the rectangle.  
 From statement IV, we conclude that the polygon is a rectangle. Further, from statements II and III we get that the rectangle has an area of  $100\text{m}^2$  and one of its sides is 8 m. From this the other side can be calculated to be 12.5 m. Hence (B) is the correct answer.
45. B In the right half, the first L is replaced by U, the second one by Q and I is replaced by R. Both L – U and I – R are separated by the same number of alphabets-8. This pattern is found only in option B, where “A—T” and “E—X” are separated by the same number of alphabets -19 in this case. No other option has the same relation.

46. D The following figure shows the path of Ahmed and Burman, marked by arrows. Chhaya is stationary, at C. From B, Burman moves in a straight line and reaches Chhaya, at C, covering a distance of a units. As Ahmed has the same speed as Burman has, by the time Burman has reached C, Ahmed too will have covered a distance a of units and reached, Y. Point Y lies on the circular arc with radius a units and centre at A. Diagonal AC, cuts the arc BD, at X. Very clearly,

$$YC > XC = (AC - CX) = a\sqrt{2} - a$$

Or,  $YC > a(\sqrt{2} - 1)$  units. Hence (D) is correct.



47. D Statement (D) should have read, “...Every one scoring less than or equal 60% must appear...” Only then we could have concluded that Ravi must have scored over 60% marks. Despite this logical error, option (D) is the best option. Hence (D).

48. A Only II can be conclude from the given three facts. I and III can not be concluded as Fact 2 tells us only the number and not the genders of the members who are proficient in mathematics or programming. Hence (A).
49. C From Fact 3, Manoj told the truth but Anush could have lied. Hence Anush and Manoj must have gone for the movie. Hence only I and II can be concluded with certainty but not III.
50. D None of the three facts inform about the cost of either an aluminum chair or a steel chair. Hence none of the three conclusions can be made. Option (D) is correct.
51. A Only I can be concluded.

**For questions 52 to 57:**

Let their names be denoted by J, L, M, N, R, W, C, A, B, F, E and R. Unless specified that a person has a room-mate , we will assume that the person stays alone.

from (i)

A+C		L+?

from (ii)

J		E	W

from (iii)

M	A+C

from (iv)

B			N
F			

from (v)

R		M
P		

There are only 12 persons and they occupy 6 blocks of rooms. Combining the information from the statements (i), (ii), (iii), (iv), (v) & (vi); we can make following figure.

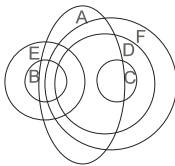
R	B		A+C	N	L+W
P	F			E	

52. C Very clearly, option (C) has the correct order.
53. C Jitender and Mary stay in one block and Narayan and Esha stay in another. Ahmed and Lakshman do not stay in the same block. Hence option (C) is correct.
54. B William is the room-mate of Lakshman.

55. A Rajender (and Pankaj also) stays in the first block and to the left of Balu & fresh. Hence (A) is correct.
56. D Fourth and the sixth blocks have empty rooms. Hence (D).
57. B Either Narayan or Esha will occupy Jitender's old room.
- 58 C Option (C) most effectively strengthens the argument stated in the passage by emphasizing that Ph.D graduates have a higher salary structure in the industry than in the academics.
- 59 C Only option (C) is a logical conclusion that can be drawn from the facts provided.
60. D Only option (D) can be logically derived from the available facts.
61. D The jeep can be parked, at any of the three possible locations, X, Y or Z. In every possible case, statement in option (D), holds true.



**For questions 62 to 65:**



62. A
63. B
64. D
65. C
66. D Charu had noted the time when she left Paru's home. After she returns to her home, she will be able to reset the time correctly, only if she knows the time taken by her to reach her home. Hence (D) is correct answer.
67. D As the rank of a business school depends on not one but many factors, (D) is the best answer.
68. B Option (i) should begin the sequence as it contains the theme of the paragraph that is "liberalization of the aviation sector" followed by options(iii) and (ii) respectively as they present a comparison between the benefits given in railways and private airlines.

69. A Only option(i) can start the sequence as it introduces the theme that is “the ongoing war in Iraq”. Hence the answer has to be option (a) as it is the only answer option which starts with sentence(i).
70. B It is a very simple parajumble in which option (iii) has to be followed by option(i) because of the direct link that can be traced through the presence of the phrase “these paintings” in option (i). Similarly option (iv) has to be followed by option (ii) again because of the presence of the direct link in the form of “hunting dog” in option (iv) and the presence of the pronoun “it” in option (ii).
71. D Again a similar case of simple parajumble where option (iv) introduces the main idea “young cubs getting engaged in aggressive play” followed by option (iii) where it is further elaborated that their aggressive behaviour is instigated by their parents. Similarly, the concept of a tiger cub’s behaviour change in captivity is introduced in option (ii) followed by its further analysis in option (i).
72. C Option (ii) introduces the central theme that is “the electronic media campaigning strongly for the cause of Taj Mahal” followed by its lack of relevance in option (iv). Similarly option (iii) and option(i) again share a direct link with each other. Hence the correct answer is option (C).
73. C In this parajumble option (iii) has to come first as it introduces the main theme that is the source of income for the monarchs followed by option (i) which explains the government’s action to cut down the monarch’s expenses followed by option (iv) which gives reasons for the action and finally the conclusion is stated in option (ii).
74. B It is clear from the conversation that Rajeev is doubtful regarding the news and not Sachin. Hence option (A) can be eliminated. Similarly option (D) is a repetition of the facts stated in the question and so it has to be discarded. Option (C) is wrong statement going by the idea presented in the conversation. Hence the only answer which is suitable as an inference from the stated conversation is option (B).
75. B Pick one ball from the 5 and divide the rest 4 in two groups of two balls each. Weigh the two groups in step 1, above. If the two groups have same weight then the ball picked in the step 1, is the lighter ball. If the two groups do not weigh equally, then weigh the two balls in the lighter of the two groups to find the lighter ball. Therefore, we need to make at least 2 weighs in order to identify the lighter ball from the given 5. Hence option (B) is correct.
76. d The only conclusion that can be drawn from the given question is that only IIT students are supposed to wear shirts with IIT logo on it. Hence the answer obviously has to be option (D).
77. A Clearly out of the four given options, option(A) most strengthens the given argument as it specifies that only those employees who use gymnasium facilities are considered fit as is also indicated in the stated argument.

78. C The given argument indicates that only those employees who use gymnasium facilities stay fit. Hence the opposite logic would be that it is not true that all the employees who use gymnasium facilities are fit and therefore the most weakening statement would be option (C).
79. D As 3 witnesses said that the thief was stout and only 2 said that he was thin, he is probably stout. As 3 witnesses said that the thief was tall and only 2 said that he was short, he is probably tall. As 3 witnesses said that the thief was young and only 2 said that he was old, he is probably young. Hence (D) is correct.
80. A Statement III can definitely be deduced as there were no demonstrations on previous occasions. Of the remaining two statements - I and II, II is a far –off reason which cannot be deduced from the available information. But I is a one step ahead conclusion that can be traced from the information. Hence the correct answer has to be option (A).

**QUANTITATIVE ABILITY**

81. C Max  $Z = 105 + 25P$  (Given in 2<sup>nd</sup> line of the question)  
Clearly, the timing for two shifts =  $2 \times 8 \times 60 = 960$  minutes  
Also, both the condition for  $M_1$  and  $M_2$  as given in the question should be satisfied.  
So,  $\frac{S}{30} + \frac{P}{50} \leq 960$   
 $\frac{S}{40} + \frac{P}{60} \leq 960$   
Hence choice (C) is correct
82. B It follows from the question that:  
 $R \geq (S + 80) + (50 + P)$   
 $\Rightarrow R \geq S + P + 130$   
 $\Rightarrow R - (S + P) \geq 130$   
Hence choice (B) is correct.
- 83.B Total number of students = 8  
MIS will give offer to 0, 1, 2 or 3 students. So, the number of ways of selections:  
 $= 1 + {}^8C_1 + {}^8C_2 + {}^8C_3 = 1 + 8 + 28 + 56 = 93$   
Hence option (B).
- 84.D We assume that MIS is followed by CMA and CMA is followed by BLB, for the campus placement process. If MIS does not recruit any student then the total number of students available to CMA for recruitment will be 8 and the total number of ways in which CMA can recruit will be 93. Hence the probability that CMA does not recruit any student is  $\frac{1}{93}$ .  
Hence, option (D).
85. Either the problem statement is ambiguous or the correct answer is not in the options.  
If MIS and CMA exercise all the options that they have, they can together recruit 0 or 1 or 2 or 3 or 4 or 5 or 6 students. Accordingly, BLB will have 8 or 7 or 6 or 5 or 4 or 3 or 2 students available to recruit from. Depending upon individual case when 2 students are available, BLB will have 4 options to recruit and when 7 students are available, the number of options will be 64.
86. A Initial Investment = 2 lakhs  
Cost of capital at the end of the first year = 10% of 2 lakhs  
= 20,000.  
Total investment at the end of first year = 220,000  
Cost of capital at the end of the second year = 10% of 2.2 lakh = 22,000  
So total investment = 220,000 + 22,000 = 242,000  
Which should be the minimum yield.

- 87.C Initial Investment = 1lakh  
 Investment after 1<sup>st</sup> year = 110000  
 Investment after 2<sup>nd</sup> year = 210000 × 1.1 = 231000  
 From 3<sup>rd</sup> year onwards:

$$231000 \left(1 + \frac{10}{100}\right)^t = 1.5 \times t$$

t = 2 (In beginning of 4<sup>th</sup> year)  
 ⇒ Total Time = (2 yrs + 2 yrs) = 4 yrs .

- 88.D  $\frac{dS}{dt} = 0.04(700 - S)$  and  $S = 0$  at  $t = 0$ .

Using options

(A) put  $t = 0, S = 700 \Rightarrow S \neq 0$

(B) put  $t = 0, S = 0$

(C) put  $t = 0, S = \frac{1}{700} \neq 0$

(D) put  $t = 0, S = 0$

$$\text{Differentiating } = 700(1 - e^{-0.04t}) \quad \dots(i)$$

$$\frac{dS}{dt} = 700(-(-0.04).e^{-0.04t})$$

$$= 700(0.04)e^{-0.04t}$$

$$= 0.04[700e^{-0.04t}]$$

$$[\text{from (i)}] \frac{dS}{dt} = 0.04(700 - S) = \frac{dS}{dt} \text{ (given)}$$

So option (D) is correct answer.

- 89.D Double declining depreciation percentage =  $\frac{2 \times 100}{(\text{estimated life})} = \frac{200}{5} = 40$

$$\text{Value at the end of the 2<sup>nd</sup> year} = \frac{60}{100} \times \frac{60}{100} \times 16000 = 5760$$

- 90.D

	Market 1		Market 2	
Channel	C <sub>1</sub>	C <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>
Cost of distribution per unit	f <sub>1</sub>	f <sub>2</sub>	f <sub>1</sub>	f <sub>2</sub>
Quantities	q <sub>1</sub>	q <sub>3</sub>	q <sub>2</sub>	q <sub>4</sub>
Total cost	F <sub>1</sub>		F <sub>2</sub>	

$$\Rightarrow q_1 f_1 + q_3 f_2 = F_1 \quad \dots(i)$$

$$\& \quad q_2 f_1 + q_4 f_2 = F_2 \quad \dots(ii)$$

$$\Rightarrow \begin{bmatrix} q_1 & q_3 \\ q_2 & q_4 \end{bmatrix} \begin{bmatrix} f_1 \\ f_2 \end{bmatrix} = \begin{bmatrix} F_1 \\ F_2 \end{bmatrix}$$

or 
$$\begin{bmatrix} q_3 & q_1 \\ q_4 & q_2 \end{bmatrix} \begin{bmatrix} f_2 \\ f_1 \end{bmatrix} = \begin{bmatrix} F_1 \\ F_2 \end{bmatrix}$$

Hence option (D) is correct.

91.A From equations (1) and (2):

$$2f_1 + 4f_2 = 10$$

$$4f_1 + 8f_2 = 0$$

$\Rightarrow (f_1, f_2)$  could be either (3, 1) or (1, 2).

Hence, option (A) is correct.

92. D Now,  $TR = 3(1.05)^{1.2} \cdot W^{1.2}A^{3.6}$   
 $= 1.06[3W^{1.2}A^{3.6}]$

$\Rightarrow$  The approximate change is 6%.

Hence option (D) is correct.

93. D Now,  $TR = 3(1.05W)^{1.2}(0.98A)^{3.6}$   
 $TR = 0.986[3W^{1.2}A^{3.6}]$

$\Rightarrow$  Change of  $-1.34\% \approx -1.4\%$  is observed. Hence Option (D).

94.B  $E(X) = 9 \times 0.3 + 12 \times 0.4 + 15 \times 0.3 = 12$

$$E(Y) = 12 \times 0.7 + 15 \times 0.2 + 16 \times 0.1 = 13$$

$$V(X) = 3 \times 0.3 \times 3 + 0 + 3 \times 3 \times 0.3 = 5.4$$

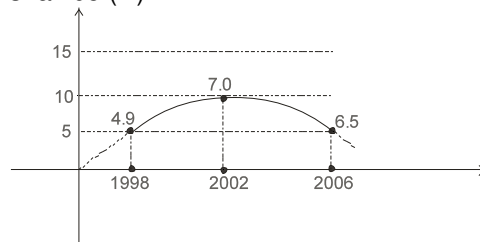
$$V(Y) = 1 \times 1 \times 0.7 + 2 \times 2 \times 0.2 + 3 \times 3 \times 0.1$$

$$= 0.7 + 0.8 + 0.9 = 2.4$$

Hence option (B) is correct.

95. C The tourist data may have fluctuations because of unusual events and so there should be some part which is free from time (t) and may have some values (either positive or negative) as per the situations. So  $N(t) = a_2t^2 + b_2t + c$  has that factor "c" which is not defined and may be defined as per the circumstances. Hence option (C) is correct.

96. D When number of tourists are plotted against years, the smooth curve resemble an inverted parabola. As there are no unusual events, the most appropriate model shall be  $N(t) = at^2 + bt; (a < 0)$ . As none of the given options has this model, the correct answer shall be (D).



97.A Every month people go out from  $X = 5(Y) + 3(Z) + 3(\text{retirements})$

Every month people come to  $x = 8(Y) + 10(Z) + 10(\text{fresh recruits})$

Net change =  $28 - 11 = 17$

Every month people go out from  $Y = 8(X) + 1(Z) + 6(\text{retirements})$   
 Every month people come to  $Y = 5(X) + 12(Z) + 12(\text{fresh recruits})$   
 Net change =  $29 - 15 = 14$

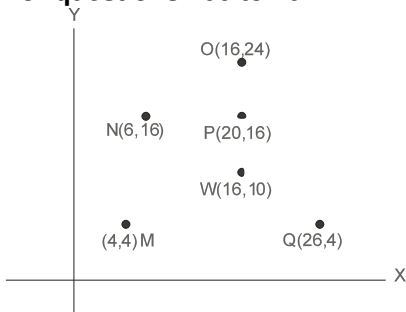
Every month people go out from  $Z = 10(X) + 12(Y) + 10(\text{retirements})$   
 Every month people come to  $Z = 3(X) + 1(Y) + 20(\text{fresh recruits})$   
 Net change =  $24 - 32 = -8$

X after 12 month =  $500 + 12 \times 17 = 704$   
 $Y = 650 + 12 \times 14 = 818$   
 $Z = 800 - 12 \times 8 = 704$   
 Hence (A) is correct.

98.B  $X - Y = 150 - 3x$  (months)  
 $Y - Z = 150 - 22x$  (months)  
 Value of  $Y - Z$  is changing from 6 to 7 months  
 June value of  $|Y - Z| = 18$   
 July value of  $|Y - Z| = 18$   
 $\Rightarrow$  The minimum will be in month of July. Hence (B) is correct.

99.C His efficiency = 120%  
 $\Rightarrow$  His wage =  $2 + 10\%$  of 2 +  $(20 \times 2)\%$  of 2  
 $= 2 + 50\%$  of 2  
 $= \text{Rs. } 3$  per hour  
 He works for 50 hours, so wages payable to him  $50 \times 3 = \text{Rs. } 150$ .

**For questions 100 to 102:**



$M = (4, 4)$   
 $N = (6, 18)$   
 $O = (16, 24)$   
 $P = (20, 16)$   
 $Q = (26, 4)$   
 $W = (16, 10)$

100. C P, O, N and Q, M is the right order of distances.

101. (Blank)

$$M \text{ to } N = 2 + 12 = 14$$

$$W \text{ to } O = 10 + 8 = 18$$

$$O \text{ to } P = 4 + 8 = 12$$

$$P \text{ to } Q = 6 + 12 = 18$$

$$Q \text{ to } M = 0 + 22 = 22$$

M to N to O to P to Q to M =  $(14 + 18 + 12 + 18 + 22) = 84$  units. As one unit corresponds to 2 km, the distance is 168 km. None of the options has the correct answer.

102. D  $S_M = 54 \text{ kmph}$        $t_M = \frac{D_M}{S_M} = \frac{18}{54} = 0.33 \text{ m}$

$$S_N = 50 \text{ kmph} \quad t_N = \frac{16}{50} = 0.32 \text{ m}$$

$$S_O = 42 \text{ kmph} \quad t_O = \frac{14}{42} = 0.33 \text{ m}$$

$$S_P = 25 \text{ kmph} \quad t_P = \frac{10}{25} = 0.4 \text{ m}$$

$$S_Q = 40 \text{ kmph} \quad t_Q = \frac{16}{40} = 0.4 \text{ m}$$

So answer is (D) W to N

103. D Total surface area of the packet with:

$$5 \text{ Biscuits} = 2\pi(2.5)^2 + 2\pi(2.5)(5 \times 0.5) = 2\pi(12.5)$$

$$10 \text{ Biscuits} = 2\pi(2.5)^2 + 2\pi(2.5)(10 \times 0.5) = 2\pi(18.75)$$

$$20 \text{ Biscuits} = 2\pi(2.5)^2 + 2\pi(2.5)(20 \times 0.5) = 2\pi(31.25)$$

$$\text{Required ratio} = 2\pi(12.5) : 2\pi(18.75) : 2\pi(31.25)$$

$$= 1:1.5:2.5$$

104. A Total surface area of all packets =  $10000 \times 2\pi \times (6.25 + 12.5 + 25)$   
 $= 20,000 \times \pi (43.75) \text{ WE}$

$$\text{Number of sheets} = \frac{\text{Total surface area}}{\text{Area of each sheet of paper}} = \frac{20000 \times 22 \times 43.75}{7 \times 100 \times 66}$$

$$= 416.66 \approx 417$$

105. A

$C_B = \text{Rs. } 0.40$	MRP (5) = Rs. 8
$C_{PS} = \text{Rs. } 168$	MRP (10) = Rs. 14
$C_{EC} = \text{Rs. } 0.50$	MRP (20) = Rs. 23
$C_{\text{per packet}} = \text{Rs. } 1$	Cost of Sheet/cm <sup>2</sup> = $\frac{168}{100 \times 66}$

Total cost of packet with 5 biscuits in each packet.

$$= \text{Number of Biscuits} \times C_B + \text{Cost of sheet/cm}^2 \times \text{Curved area of packet} + 2 \times C_{EC} + 1$$

$$\begin{aligned} (\text{Total cost})_5 &= 5 \times 0.4 + \frac{168}{100 \times 66} \times 2 \times 6.25 + 2 \times 0.5 + 1 \\ &= 2 + 1 + 1 + 1 = \text{Rs. } 5 \end{aligned}$$

$$\begin{aligned} (\text{Total cost})_{10} &= 10 \times 0.4 + \frac{168}{100 \times 66} \times 2 \times \frac{22}{7} \times 12.5 + 2 \times 0.5 + 1 \\ &= 4 + 2 + 1 + 1 = \text{Rs. } 8 \end{aligned}$$

$$\begin{aligned} (\text{Total cost})_{20} &= 20 \times 0.4 + \frac{168}{100 \times 66} \times 2 \times \frac{22}{7} \times 25 + 2 \times 0.5 + 1 \\ &= 8 + 4 + 1 + 1 = \text{Rs. } 14 \end{aligned}$$

Profit per packet of 5 biscuit =  $8 - 5 = \text{Rs. } 3$

Profit per packet of 10 biscuit =  $14 - 8 = \text{Rs. } 6$

Profit per packet of 20 biscuit =  $23 - 14 = \text{Rs. } 9$

So the required Ratio =  $3 : 6 : 9$

=  $1 : 2 : 3$

106.C As  $x_1$  and  $x_2$  are number of thousand of packets of biscuits, each of them must be a non negative integer. Hence (D) is correct. There are 15 distributors for each of the  $x_1$  packets of 5's and 5 distributors for each of the  $x_2$  thousand packets of 10's. The maximum number of distributors is 75. Hence  $15x_1 + 5x_2 \leq 75$ . From the additional packets, the total profit will be  $(P_5x_1 \times 1000 + P_{10}x_2 \times 1000)$  rupees, hence  $P_5x_1 + P_{10}x_2$  can be an objective function, to be maximized. The expression  $5000x_1 + 10000x_2$  gives the total number of biscuits available to make the additional  $(x_1 + x_2)$  thousand packets. As we have no information on the total number of biscuits available, the equation  $5x_1 + 10x_2 = 100$  may or may not be a constraint. Hence (C) is correct

107. D Data given in the question gives more than one solution for  $x_1$  and  $x_2$ .

108. B We should use Binomial distribution.

109.C Probability that none of the packets is rejected:  
 = (probability of packets to be accepted)<sup>(number of packets of that kind)</sup>  
 Probability that packets of 5's will be accepted =  $(1 - 0.1) = 0.9$   
 Probability that packets of 10's will be accepted =  $(1 - 0.2) = 0.8$   
 Probability that packets of 20's will be accepted =  $(1 - 0.3) = 0.7$   
 Required Probability =  $(0.9)^3 \times (0.8)^3 \times (0.7)^3 = 0.128$

110. A The total requirement is of 4600 seats.

B777 : A321 : B747

(3) (5) (1)

Option (B) B747 = 4 & A321 = 6 which violates the condition.

Option (C) B747 = 3 & A321 = 5 which violates the condition.

Option (A) B747 = 2  $\Rightarrow$  seats =  $400 \times 2 = 800$

B777 = 6  $\Rightarrow$  seats =  $300 \times 6 = 1800$

B321 = 10  $\Rightarrow$  seats =  $200 \times 9 = 2000$

$\Rightarrow$  total seats = 4600

Option (D) B747 = 1  $\Rightarrow$  seats =  $400 \times 1 = 400$   
 B777 = 6  $\Rightarrow$  seats =  $300 \times 6 = 1800$   
 B321 = 12  $\Rightarrow$  seats =  $200 \times 12 = 2400$   
 Total seats = 4600 which meets the requirement.  
 In option (A), the given ratio is satisfied. Hence (A) is correct.

111.D The available budgets is \$200 Million.

Option (A)

$$\text{Seats} = 2 \times 400 + 4 \times 300 + 9 \times 200 = 3800$$

$$\text{Budget} = 2 \times 250 + 4 \times 150 + 9 \times 100 = 2000\$$$

Option (B)

$$\text{Seats} = 2 \times 400 + 6 \times 300 + 6 \times 200 = 3800$$

$$\text{Budget} = 2 \times 250 + 6 \times 150 + 9 \times 100 = 2300\$$$

Option (C)

$$\text{Seats} = 2 \times 400 + 5 \times 300 + 7 \times 200 = 3700$$

Option (D)

$$\text{Seats} = 1 \times 400 + 5 \times 300 + 10 \times 200 = 3900$$

$$\text{Budget} = 1 \times 250 + 5 \times 150 + 10 \times 100 = 2000\$$$

Option (D) has the best deal, hence correct.

112

Let the number of aircrafts purchased be x(for B747), y(for B777) and z (for A321).

Hence,

$$250x + 150y + 100z = 2000$$

$$\Rightarrow x = 8 - \left( \frac{3y + 2z}{5} \right)$$

The non-negative integral values (x, y, z), which satisfy above are-

(1, 3, 13), (1, 5, 10), (1, 7, 7), (1, 9, 4), (1, 11, 1), (0, 0, 20), (0, 2, 17), (0, 4, 14) and so on....

We have taken all these cases since no other constraint is given in the question statement. Hence none of the given options is correct.

113.

Let the number of aircrafts purchased be x(for B747), y(for B777) and z(fro A321).

Hence,  $250x + 150y + 100z = 1950$

$$\Rightarrow x = \frac{39 - 3y - 2z}{5}$$

Solving the above equation for the value of (x, y, z) as in the previous solution we get more than 6 solutions.

Hence none of the given option is correct.

114.C Using option (B)

$$DI_{wc} = 0 + 0 = 0$$

$$DI_{ic} = 10 - 0 = 10$$

$$\text{Total Dissatisfaction, } DI_{wc} + DI_{ic} = 10 + 0 = 10$$

$$(D) \quad DI_{wc} = \frac{(100)^2}{75} + 0.1 \times 10 = 1.3 + 1 = 2.3$$

$$DI_{ic} = 10 - 0.5 \times 10 = 5$$

$$\text{Total Dissatisfaction, } DI_{wc} + DI_{ic} = 2.3 + 5 = 7.3$$

$$(C) \quad DI_{wc} = \frac{(15)^2}{75} + 0.1 \times 15 = 3 + 1.5 = 4.5$$

$$DI_{ic} = 10 - 0.5 \times 15 = 10 - 7.5 = 2.5$$

$$\text{Total Dissatisfaction} = 4.5 + 2.5 = 7$$

$$(A) \quad DI_{wc} = \frac{(12.75)^2}{75} + 0.1 \times 12.75 = 2.16 + 1.275 = 3.4425$$

$$DI_{ic} = 10 - 0.5 \times (12.75) \cong 10 - 6.375 = 3.625$$

$$\text{Total Dissatisfaction} = 3.4425 + 3.625 = 7.0675$$

So the answer in option (C), 15 minutes, is correct.

115. A 7, Refer the solution given to problem number 114.

116. B  $DI_{wc} = DI_{ic}$

$$\left(\frac{t^2}{75}\right) + 0.1 \times t = 10 - 0.5 \times t$$

$$\frac{t^2}{75} + 0.6t = 10$$

$$\text{Using options; (C) } \frac{(10)^2}{75} + 0.6(10) = \frac{4}{3} + 6 = 7.33 \neq 10$$

$$(A) \frac{(15)^2}{75} + 0.6(15) = 3 + 9 = 12 \neq 10$$

So answer should lie between 15 & 10. Hence, option (B), 12.75 minutes, is the right answer.

117. D Comparing 1.  $f_1(t) = a2^{bt}$  & 3.  $f_3(t) = ae^{bt}$

$$f_3(t) > f_1(t) \text{ as } e > 2.$$

$$\text{Now comparing 2. } f_2(t) = a + bt \text{ & 4. } f_4(t) = at^2 + bt = t(at + b)$$

$$f_4(t) > f_2(t)$$

Only the option (D) is correct.

$$118.A \quad (A) \frac{1}{42} > \frac{1}{62} > \frac{1}{79}$$

$$\text{\$} > \text{\text{€}} > \text{\text{£}}$$

Hence, option (A)

119. C Deal with exchanging money from Bank =  $0.024 \times (x - 1000)$ .  
Deal with exchanges money from changer at airport =  $0.022 \times x$   
Now,  $0.023(x - 1000) < 0.022x$   
 $\Rightarrow 0.001x < 23$   
 $\Rightarrow x < 23000$   
Hence option (C)
120. C The reference currency is INR. In 1INR we can buy  $\frac{1}{79}$  or  $\frac{1}{62}$  €. From this relation the to € rate come out to be  $1 = 1.274€$ . But the given rate is  $1 = 1.222€$ . Hence the rate should change by  $\frac{1.274 - 1.222}{1.222} \times 100 = 4.25\%$ . Hence option (c) is correct

**DATA INTERPRETATION**

121. C Clearly, it can be seen that the production exceeds sales in all the years till 2004-05. Hence, the quantity of cumulative unsold stock was the largest for 2004-05 and was equal to  $(2000 + 1000 + 4000) = 7000$ .
122. B The cumulative cash in hand after-each year is
- |         |   |                                 |
|---------|---|---------------------------------|
| 2002-03 | - | 18 (millions)                   |
| 2003-04 | - | 18 + 35 (millions)              |
| 2004-05 | - | 18 + 35 + 5 (millions)          |
| 2005-06 | - | 18 + 35 + 5 + 8 (millions)      |
| 2006-07 | - | 18 + 35 + 5 + 8 + 16 (millions) |
- Clearly the highest percentage increase is for 2003-04.
123. A The difference in income and costs for the years 2002-03, 2003-04, 2004-05, 2005-06 and 2006-07 in million (Rs.) are 18, 35, 5, 8, 16 respectively. The increase or decreases are 17, -30, 3, 8. Hence, the increase is the largest in the year 2003-04.
124. D The cumulative cash in hand at the end of 2006-07 would be  $5 + 18 + 35 + 5 + 8 + 16 = 87$  millions.
125. B If the company was able to do so, then prices for given years are as follows.

Duration	Price(million)
2002-03	Rs.140
2003-04	Rs.198
2004-05	Rs.220
2005-06	Rs.187
2006-07	Rs.180

Therefore cumulative cash in hand =  $5 + 38 + 46 + 49 - 14 - 32 = 92$  million Rs.

126. C The variable cost per unit incurred in the various years are

$$2002-03 = \frac{84}{14} \times 10^3 = 6000$$

$$2003-04 = \frac{122}{18} \times 10^3 = 6.78 \times 10^3$$

$$2004-05 = \frac{141}{20} \times 10^3 = 7.05 \times 10^3$$

$$2005-06 = \frac{161}{17} \times 10^3 = 9.47 \times 10^3$$

$$2006-07 = \frac{172}{15} \times 10^3 = 11.47 \times 10^3$$

So, the highest is for 2006-07.

127.A The transaction time on Sunday for the various sections are:

$$\text{Grocery} = \frac{0.38 \times 10^6}{120} \times 20 = 3.167 \times 10^3 \times 20$$

$$\text{Confectionary} = \frac{0.58}{180} \times 10^6 = 3.22 \times 10^3 \times 10$$

$$\text{Personal products} = 1.525 \times 10^3 \times 12$$

$$\text{Men's Apparel} = \frac{1.42 \times 10^6}{650} \times 20$$

$$\text{Ladies Apparel} = \frac{1.46 \times 10^6}{850} \times 30$$

$$\text{Appliances} = \frac{1.42 \times 10^6}{2000} \times 40$$

Clearly, the highest value is for Grocery.

128. B The following are the item-wise number of transactions, on Sunday

$$\text{Grocery} = \frac{0.38 \times 10^6}{120} = 3.167 \times 10^3$$

$$\text{Confectionary} = \frac{0.58 \times 10^6}{180} = 3.22 \times 10^3$$

$$\text{Personal Products} = \frac{1.22 \times 10^6}{800} = 1.525 \times 10^3$$

For others, it is still lower, as can be observed. Hence, highest number of transactions on Sunday is for confectionary.

129. D The total sales of all the sections put together for the various days.  
 Monday = 2.91; Tuesday = 2.64; Wednesday = 3.19;  
 Thursday = 3.06; Friday = 3.06; Saturday = 4.61;  
 Sunday = 6.48

130. A Using the data from the previous solution, we get the required ratio =

$$\frac{4.61 + 6.48}{2.91 + 2.64 + 3.19 + 3.06 + 3.06 + 4.61 + 6.48}$$

$$= \frac{11.09}{25.95} \approx 1 : 2.34 \text{ (approx)}$$

131. A The section requiring the maximum number of salespersons for various sections on Saturday is directly proportional to,

$$\text{Grocery} = \frac{0.33 \times 10^6}{120} \times 20 = 55 \times 10^3$$

$$\text{Confectionary} = \frac{0.42 \times 10^6}{180} \times 10 = 23.33 \times 10^3$$

$$\text{Personal products} = \frac{1.1}{800} \times 10^6 \times 12 = 16.5 \times 10^3$$

$$\text{Men's Apparel} = \frac{.88}{650} \times 20 \times 10^6 \times 12 = 16.5 \times 10^3$$

$$\text{Ladies Apparel} = \frac{.88}{850} \times 30 \times 10^6 = 31.06 \times 10^3$$

$$\text{Appliances} = \frac{0.96}{2000} \times 40 \times 10^6 = 19.2 \times 10^3$$

Clearly, the maximum requirement of salesperson will be for Grocery.

132. C The required ratio

$$= \frac{\frac{0.86}{2000} \times 40 \times 10^6}{\frac{1.42 \times 40}{2000} \times 10^6}$$

$$\approx 1 : 1.65$$

**For questions 133 to 138:**  
 In 2006 – 2007:

Country	Production (billions)	Consumption (billion)
I	12	12
J	7	6.5
K	5	3.3
L	10	12
M	9	9.8

Consumption = Population × Consumption per capita  
 In 2007-2008

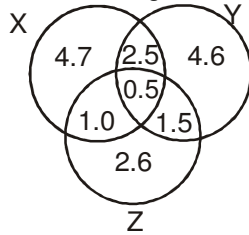
Country	Production (billions)	Consumption (billion)
I	13.2	12.852
J	7.35	7.234
K	5.25	3.67
L	11	12.241
M	9.45	10.803

New consumption  
 = New population × New consumption per capita

133. D Clearly from the table, Option (D) is the right answer.
134. C The country with maximum export capacity in 2006-2007 is K and the capacity is  $(5 - 3.3) = 1.7$  billion liters
135. D In 2006-2007, only J and K had the capacity to export; but none of these companies need to import even in 2007-2008.
136. B The import requirement =  $103 \times (12.852 + 7.234 + 3.67 + 3.67 + 12.24 + 10.803) - (13.2 + 7.35 + 5.25 + 11 + 9.45) = 550$  million liters.
137. D The annual consumption of edible oil, in liters per capita, in the year 2008-2009 for the various countries are:  
 $I = 12 \times (1.05)^2 = 13.92$   
 $J = 7 \times (1.06)^2 = 14.6$   
 $K = 5 \times (1.07)^2 = 12.59$   
 $L = 10 \times (1.01)^2 = 10.2$   
 $M = 9 \times (1.66)^2 = 15.73$   
 Clearly M has the highest value.
138. C The average of all the above calculated values  
 $= \frac{(13.92 + 14.6 + 12.59 + 10.2 + 15.737)}{5} = 13.2$ (approx)

**For questions 139 to 144:**

As per the direction given, the following Venn diagram can be formed:-



139. C Number of people (in lakhs) who read at least one news paper  
 $= 2.5 + 0.5 + 1.5 + 1.0 + 4.7 + 4.6 + 2.6 = 17.4.$

140. B Number of people (in lakh) who read only one news paper  
 $= 4.7 + 4.6 + 2.6 = 11.9.$

141. C Number of people who read at least two news papers  
 $= 10^5 \times (2.5 + 1.5 + 1 + 0.5) = 5.5 \times 10^5$   
 Total population  $= 14 \times 10^6.$

So, the required percentage  $= \frac{55}{14} = 3.9$  (Approx)

142. A The ratio of readers reading only one newspaper to. Those reading only two newspapers  
 $= \frac{11.9}{(2.5+1.0+1.5)} = \frac{11.9}{5} = 2.38 : 1$

143. A The following are the advertising costs (in Rs. Per sq. cm per 1000 readers for these newspapers :-

$$X = \frac{600}{87} = 6.89; Y = \frac{650}{91} = 7.14;$$

$$Z = \frac{500}{56} = 8.92.$$

So, the combination giving minimum advertising cost is X and Y.

144. A The minimum expenditure (in Rs./cm<sup>2</sup>) on advertising required to reach at least 12 lakh readers  $= 5000 + 6000 = 11000$

145. B The following are the profits:

$$\text{Bearing} = \frac{40}{100} \times \frac{40}{100} \times 2200 = 352$$

$$\text{Values} = \frac{20}{100} \times \frac{60}{100} \times 1100 = 132$$

$$\text{Pipes} = \frac{50}{100} \times \frac{30}{100} \times 3000 = 450$$

$$\text{Bells} = \frac{30}{100} \times \frac{30}{100} \times 2500 = 225$$

$$\text{Gears} = \frac{30}{100} \times \frac{20}{100} \times 5000 = 300$$

So, the combined profit for these most profitable products  
 = 352 + 450 + 300 = 1102 (in million Rs.)

146. B Using the results the previous solution, it can be easily seen that Pipes is the most profitable product in 2006-2007.

147. B Market share of the various productions in 2007-2008:

$$\text{Bearing} = 3960 \times (.40 + .36) \approx 3010$$

$$\text{Values} = 1760 \times (.2 + .32) \approx 915$$

$$\text{Pipes} = 5700 \times (.5 + .45) = 5415$$

$$\text{Bells} = 3500 \times (.3 + .42) = 2520$$

$$\text{Gears} = 8500 \times .3 + .42) = 6120$$

Clearly the product for values to the last in 2007-2008.

148. D The total market size of the various products in 2007-2008:-

$$\text{Bearing} = 2200 \times 1.8 = 3960$$

$$\text{Values} = 1100 \times 1.6 = 1760$$

$$\text{Pipes} = 3000 \times 1.9 = 5700$$

$$\text{Belts} = 2500 \times 1.4 = 3500$$

$$\text{Gears} = 5000 \times 1.7 = 8500$$

So, total market size for all the productions = 23420.

149. A The total market size for years (in million Rs.) in the year 2008-09

$$= 1.7 \times 1.7 \times 5000$$

$$= 14450$$

150. D The combined profit of the company from the remaining three products in 2007-08

$$= 3010 \times 0.4 + 5415 \times 0.3 + 6120 \times 0.2$$

$$= 1204 + 1624.5 + 1224$$

$$\approx 4052$$