

# JMET Entrance Test

## December 15, 2002

We are pleased to present a detailed analysis of the JMET that was held on December 15, 2002. These questions have been recalled with the help of PT faculty and PT students from across the nation.

### A bird's eye view :

- Duration : 120 minutes; number of questions : 150.
- Total 5 sections:
  - ◆ Section 1: 15 Q (Reading Comprehension)
  - ◆ Section 2: 40 Q (Data sufficiency + Logical reasoning + English Usage)
  - ◆ Section 3: 40 Q (Mathematical aptitude)
  - ◆ Section 4: 40 Q (Data interpretation)
  - ◆ Section 5: 15 Q (General awareness)
- The marking scheme:
  - ◆ +1 for a correct answer.
  - ◆ - ¼ mark for incorrect answers.

### Section 1 : 15 Q (Reading comprehension)

There were 3 passages with 15 questions in all. The length of the passages were small (10-15 lines) and the toughness level was on the easier side. The questions were direct and easy to crack. A well read student could have attempted more than 10 questions easily.

### Section 2 : 40 Q (Data sufficiency + Logical reasoning + English usage)

Data Sufficiency section was on the easier side.

Logical Reasoning comprised 15 questions on Analytical Reasoning, 9 questions on Critical Reasoning, 7 questions on Data Sufficiency, 4 questions on Analogy, 2 questions on para jumbles and 3 questions on Logical Set Theory. An overall attempt of 23-26 questions would have been a decent one.

### Section 3 : 40 Q (Mathematical aptitude)

The Maths section was a moderate one. The emphasis was on Algebra and Arithmetic with 17 and 12 questions respectively. There were 6 questions on Geometry, the last few questions were very lengthy and were time consuming. In all a decent attempt in this section would have been 20 - 25 questions.

### Section 4 : 40 Q (Data interpretation)

Data interpretation comprised 40 questions and were classified as Tables (5 sets, 17 questions), Pie Chart (1 set, 5 questions) Bar Graphs (2 sets, 7 questions), and Line Graph (2 sets, 6 questions). The DI section was a manageable one and a decent attempt in this section could have been around 20 - 25 questions.

### Section 5 : 15 Q (General awareness)

The questions on general awareness were difficult. Some questions were direct and easy to crack. Some questions were based on Economic Affairs and the latest updates in the field of business. A student well aware of the current business events could have easily attempted 7 - 10 questions.

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## Reading Comprehension

**Directions for Q.1 to 15 :** Read the following passage carefully and answer the questions that follow :

The RC section comprised three passages, which were of 15-20 lines each. The very first passage had 5 questions and was approximately of 15 lines. The theme of this passage was - "*Division of labour and alienation*". This passage compared two economic theories. This passage was throwing light on the positive as well as the negative aspects of the two theories.

The second passage was of 10 lines and comprised 4 questions. The theme of this passage was - "*Biology of violence*". In this passage, the author made a mention of the reasons and causes of violence. The questions for this passage were direct and could be easily deduced from the passage.

The third passage had a very general yet, interesting theme. It was speaking about - "*the liberty a child should be given to choose his/her career/profession.*" Total number of questions followed by the passage were 6 in number and the passage was of 8 - 10 lines.

**End of section 1**



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## Data Sufficiency + Logical Reasoning + English Usage

**Directions for Q.1 to 7 :** For each of the following questions two statements are followed by one question. Mark your answer as :

- Option (1), if only statement (A) is sufficient and (B) is not.
- Option (2), if only statement (B) is sufficient and (A) is not.
- Option (3), if the problem can be solved by using both the statements together.
- Option (4), if none of the statement is sufficient to answer the question

1. What is the value of  $xy$  ?  
(A)  $x^3 = 8$   
(B)  $y^2 = 9$

**Sol:** By the statement (A)  $x$  can be calculated as 2, but the value of  $y$  is unknown. Hence statement (A) alone is not sufficient. By statement (B) neither the value of  $x$  nor the unique value of  $y$  can be determined ( $y = \pm 3$ ). Combining both the statements we cannot get a unique value of  $x$  and  $y$ . **Ans.(4)**

2. Is  $x + 2^n y$  odd, when  $n, x, y > 0$ .  
(A)  $x$  is odd  
(B)  $y$  is odd

**Sol:**  $2^n = \text{even}$  (for  $n > 0$ ).  $2^n y = \text{even} \times \text{odd} = \text{even} \times \text{even} = \text{even number}$ .  
 $x + 2^n y = \text{odd} + \text{even} = \text{odd}$  [By statement (A)  $x = \text{odd}$ ]. Hence only statement (A) alone is sufficient to answer the question. **Ans.(1)**

3. What is the probability of drawing a red ball ?  
(A) Number of red balls is  $\frac{1}{2}$  of the number of black balls  
(B) Number of black balls is  $\frac{1}{3}$  of the total number balls.

**Sol:** Statement (A) and (B) alone or together are not sufficient to answer the question as we don't know that how many colours ball are there. **Ans.(4)**

4. What is the value of  $(x^2 - a^2)y - (x^2 - a^2) \frac{1}{y}$  ?  
(A)  $x = 4$   
(B)  $y = 1$

**Sol:** Since there are two variables  $x$  and  $y$  in the question expression. Value of first variable  $x$  is given in statement (A) and the value of second variable  $y$  is given in statement (B). Hence both the statements together are sufficient to answer the question. **Ans.(3)**

5. The probability of picking up a specimen from a sample of 10 specimens is 0.4. What is the probability that 4 specimens are taken out.

**Questions number 6 and 7 were also based on 4 option DS.**

**Directions : Q.8 - 12 :** Read the following information carefully and answer the questions that follow :

There are 7 courses and 7 rooms numbered 1 to 7, all the 7 rooms have multimedia systems installed. A and C apply for Marketing. D and E will always be in consecutive rooms. B and C will never be in consecutive rooms and B will always occupy the third room.

Questions 8 to 12 were based on the above information.

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**Directions : Q.13 -15 :** Read the following informations carefully and answer the questions that follow :

There are two groups 'Left' and 'Right'. Persons A, B, C and D are in the left group and E, F, G are in the right group. A committee is to be formed of 3 persons, atleast one from each group. B and C will never be together. If G is there in the committee then E will also be there. F and C will be always together. The coordinator has to be from the minority group :

13. Which of them cannot be a valid committee ?
- |         |         |
|---------|---------|
| (1) BDE | (2) FGB |
| (3) AGC | (4) EFG |

**Sol:** Other options do not satisfy the conditions. **Ans.(1)**

14. Which of them cannot be a co-ordinator ?
- |       |       |
|-------|-------|
| (1) F | (2) B |
| (3) G | (4) D |

**Sol:** Since, F and C are always together so neither F nor C can ever be coordinators. **Ans.(1)**

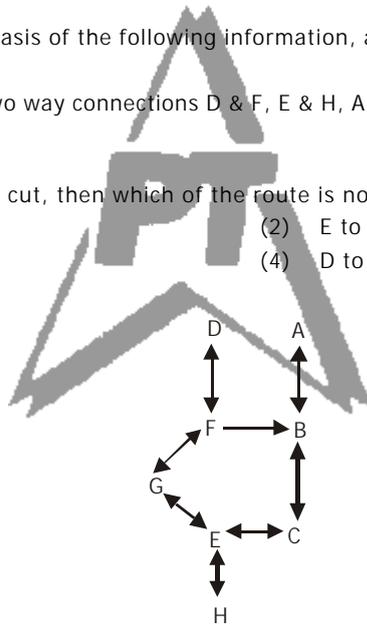
15. Which is the false statement :
- |                             |                             |
|-----------------------------|-----------------------------|
| (1) FBA is a possible group | (2) FCD is a possible group |
| (3) FCE is a possible group | (4) GEA is a possible group |

**Sol: Ans.(1)**

**Directions for Q. 16 & 17 :** On the basis of the following information, answer the questions given below :

A, B, C, D, E, F, G are cities with two way connections D & F, E & H, A & B, B & C, G & E and D & F. There is a one way connection from F to B.

16. If the connection between E & C is cut, then which of the route is not possible ?
- |            |            |
|------------|------------|
| (1) B to E | (2) E to C |
| (3) F to B | (4) D to G |



**Sol:** If the connection between E and C is interrupted, then there is no other way to move from B to E as the route from F to B is one way. **Ans (1)**

17. If a person wishes to travel from D to E, then how many minimum cities he needs to visit enroute ?
- |       |       |
|-------|-------|
| (1) 2 | (2) 4 |
| (3) 3 | (4) 5 |

**Sol:** The path with the minimum possible cities in-between will be D-F-G-E. **Ans (1)**

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**Directions for Q. 18 to 36 :** Questions 10 to 28 were based on English usage :

- 2 Questions were based on analogies.
- 4 Questions on Para formation were very easy.
- 4 Questions were on "Odd one out".
- 7/8 questions were based on critical reasoning.

The EU section was jumbled up with the LR section, there were 4 questions on Para formation, which were easy to manage. 4 questions were based on odd one out, which were on the easier side.

18. Find the odd one out :
- (1) Lead : Leader
  - (2) Cook : Cooker
  - (3) Enquire : Inquirer
  - (4) Support : Supporter

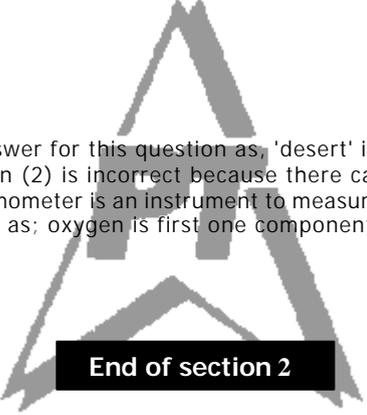
**Sol.** The answer to this questions is option (2) because, one who leads is known as leader, one who inquirer's is inquirer & in the same way, one who supports is a supporter but there is no word as cooker (as a noun) (one who cooks is a Chef & not a cooker). **Ans.(2)**

19. Find the relationship which is similar to that given below:

Desert : Sand

- (1) Ocean : Water
- (2) Pole : Snow
- (3) Thermometer : Temperature
- (4) Oxygen : Atmosphere

**Sol.** Option (1) is the most - suitable answer for this question as, 'desert' is composed of sand and in the same way 'ocean' is composed of water. Option (2) is incorrect because there can be a secondary meaning for 'pole' and hence is ambiguous. Option (3) thermometer is an instrument to measure temperature & is not similar to the given analogy. Option (4) is also incorrect as; oxygen is first one component of atmosphere. **Ans.(1)**



End of section 2

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## Mathematical Aptitude

**Directions for Q. 1 to 29 :** For the following questions choose the correct options.

1. The print area of a square sheet is  $216 \text{ cm}^2$ . If the margin of the header and footer is 3 cm. The left and the right margin is 2 cm each. What is the length and breadth of the sheet ?  
 (1) 19.73 cm (2) 14.73 cm  
 (3) 10.55 cm (4) can not determine

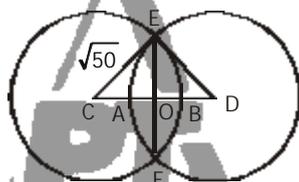
**Sol:** Let the side of the sheet =  $x$  cm. Then by the condition given in the question :  $(x - 6)(x - 4) = 216$   
 $\Rightarrow x^2 - 10x + 24 = 216 \Rightarrow x^2 - 10x - 192 = 0 \Rightarrow x = 19.73 \text{ cm}$ . **Ans. (1)**

2. A stream is flowing along a side of a rectangular field of area  $7200 \text{ m}^2$ . If the three sides are fenced then what is the least length of the border ?  
 (1) 420 m (2) 360 m  
 (3) 240 m (4) 244 m

**Sol:** Let, the length and breadth of the rectangle is  $x$  m. and  $y$  m. respectively. Then,  $x \times y = 7200 \text{ sq. m}$ .  
 In that condition total possible pairs of  $x$  and  $y$  which are possible = (1, 7200), (2, 3600), (3, 2400), (4, 1800), (5, 1440), (6, 1200), (8, 900), (9, 800), (10, 720), (12, 600), (15, 480), (16, 450), (18, 400), (20, 360), (24, 300), (30, 240), (36, 200), (40, 180), (45, 160), (50, 144), (60, 120), (72, 100), (80, 90). In which (60, 120) gives us the minimum length of the other sides. **Ans. (3)**

**Directions for Q. 3 & 4 :** Read the following information and answer the questions that follow.

In the figure given below, two circles of  $\sqrt{50}$  cm radius are overlapping partially. The common chord of both the circle is of 10 cm in length.



3. What is the common area ?  
 (1)  $25(\pi - 2) \text{ cm}^2$  (2)  $80\pi - 240 \text{ cm}^2$   
 (3)  $50(\pi - 2) \text{ cm}^2$  (4)  $25\pi - 2 \text{ cm}^2$

**Sol:** The common area = Area of circle C + Area of Circle D - [2 (Area of sector ECF) + Area of square CEDF].  
 $= 50\pi + 50\pi - [2 (\frac{3}{4} \times 50\pi) + 50] \Rightarrow 100\pi - (75\pi + 50) \Rightarrow 25\pi - 50 \Rightarrow 25(\pi - 2)$ . **Ans. (1)**

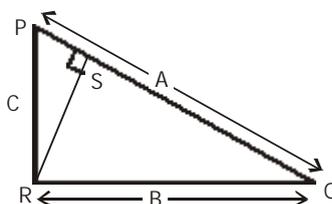
4. The length of AB is :  
 (1)  $10(\sqrt{2} - 1) \text{ cm}$  (2)  $4\sqrt{2} + 5 \text{ cm}$   
 (3)  $5(\sqrt{3} - 1) \text{ cm}$  (4)  $5\sqrt{3} - 6 \text{ cm}$

**Sol:** In right triangle COE,  $EO = CO = 5$ . Given  $CB = \sqrt{50}$ . Hence,  $AO = OB = (CB - CO) = (\sqrt{50} - 5)$ .  
 $AB = AO + OB = AB = 2(5\sqrt{2} - 5) = 10(\sqrt{2} - 1)$ . **Ans. (1)**

5. If  $PS = E$ , then which of the following is true ?

- (1)  $PS^2 = RQ^2 + QS^2$   
 (2)  $RQ < PR + RS$   
 (3)  $C^2 - E^2 = B^2 - (A - E)^2$   
 (4)  $(C + E) < B^2 - (A - E)^2$

**Sol: Ans. (3)**



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6. Two numbers  $x$  and  $y$  are in the ratio of 4 : 9. If 1762 is added to the numerator and the denominator is increased by 10%, then the new ratio is 3 : 2. The ratio of  $x$  and  $y$  is :
- (1) 56 : 23 (2) 43 : 215  
 (3) 65 : 146 (4) None of the above

**Sol:** Since  $x$  and  $y$  are in the ratio of 4 : 9. By the condition given in the question  $\frac{4a+1762}{9a \times 1.1} = \frac{3}{2} \Rightarrow a = 162.4$ .

The required ratio = 65 : 146. **Ans.(3)**

7. In an entertainment park, the cost of the ticket is Rs. 300, if the price of the tickets is reduced by 25%, the sales percentage increase by 32%, then the percentage increase/decrease in the total revenue of the park is :
- (1) 1% decrease (2) 1% increase  
 (3) 2% decrease (4) 2% increase

**Sol:** Let the original sales of tickets =  $y$  tickets.

Then total revenue = Rs.  $300y$

After decrease :  $300 \times 0.75 \times 1.32y = 297y$ . Hence percent decrease =  $(3y \times 100)/300y = 1\%$ . **Ans.(1)**

8.  $P^x = QR$ ,  $Q^y = PR$ ,  $R^z = PQ$  then :

- (1)  $xyz = x + y + z$  (2)  $xyz = x + y + z + 2$   
 (3)  $xyz = 2(x + y + z)$  (4) None of the above

**Sol:**  $P^x \times Q^y \times R^z = P^2 \times Q^2 \times R^2$ . By comparing both sides of the expression.  $x = 2$ ,  $y = 2$ ,  $z = 2 \Rightarrow xyz = x + y + z + 2$   
**Ans.(2)**

9. A Shopkeeper marks the selling price 30% above than the cost price. Now if he sells the things at 20% discount for cash and 10% discount on credit. If he sells 70% of the articles on cash and remaining on credit, then what is his profit percent over the total business ?

- (1) 4.2% (2) 8.4%  
 (3) 7.9% (4) 7.6%

**Sol:** Let, the cost price = Rs.  $x$ . Marked selling price = Rs.  $1.3x$ . Actual selling price for cash =  $0.8 \times 1.3x = 1.04x$ .

Actual selling price for credit =  $0.9 \times 1.3x = 1.17x$ . Now again let the total number of items for sale =  $y$ .

Then, total cost = Rs.  $xy$  and the total revenue get after selling all the items =  $(0.7y \times 1.04x) + (0.3y \times 1.17y) = 0.728xy + 0.351xy = 1.079xy$ . Hence profit percent = 7.9% **Ans.(3)**

10. A person moves  $30^\circ$  North of East from a point and after travelling  $5\sqrt{3}$  km turns to his right and travels 5 kms. What is the shortest distance between the starting point and the finishing point ?

- (1) 10 (2) 15  
 (3) 20 (4) 25

**Sol:** The shortest distance between the starting point and end point = AB.

C  
 90°



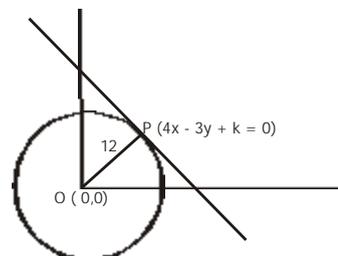
In right triangle ABC  $\cos 30^\circ = \frac{5\sqrt{3}}{AB} \Rightarrow AB = \frac{5\sqrt{3}}{\cos 30^\circ} = 5\sqrt{3} \times \frac{2}{\sqrt{3}} = 10$  m. **Ans.(1)**

11. If  $4x - 3y + k = 0$  is a tangent to the circle  $x^2 + y^2 = 144$ , then what is the value of  $k$  ?

- (1)  $\pm 60$   
 (2) 30  
 (3) 10  
 (4) 20

**Sol:** The perpendicular distance OP is given by the formula :

$$\frac{4x - 3y + k}{\sqrt{4^2 + 3^2}} = 12. \text{ Where } (x,y) = (0,0). k = \pm 60 \text{ Ans.(1)}$$



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12. If  $x + y = 1$ , and  $x^2 + y^2 = 9$ , then  $x^4 + y^4 = ?$

- (1) 36 (2) 31  
(3) 49 (4) 27

**Sol:**  $(x^2 + y^2)^2 = x^4 + y^4 + 2x^2y^2 \Rightarrow 81 = x^4 + y^4 + 2x^2y^2 \Rightarrow 81 - 2x^2y^2 = x^4 + y^4 \dots (1)$

$(x + y)^2 = x^2 + y^2 + 2xy \Rightarrow 1 = 9 + 2xy \Rightarrow -8 = 2xy \Rightarrow xy = -4 \Rightarrow x^2y = 16 \dots (2)$

Substituting equation (2) in equation (1) :  $81 - 32 = x^4 + y^4 \Rightarrow x^4 + y^4 = 49$ . **Ans. (3)**

13. If U, V and W is in G.P. and a, b, c is in A.P., then which of the following statement is true :

- (A)  $U^{b-c} \times V^{c-a} \times W^{a-b} = 1$   
(B)  $U^{b+c} \times V^{c+a} \times W^{a+b} = 1$   
(1) Only (A) is true (2) Only (B) is true  
(3) Both (A) and (B) is true (4) None of (A) and (B) is true

**Sol:** Assume any three numbers in G.P. say : p, pr, pr<sup>2</sup> as U, V and W respectively and a, a+b, a+2b as a, b and c respectively.

Therefore,  $(p)^{-b} \times (pr)^{2b} \times (pr^2)^{-b} \Rightarrow p^{-b} \times p^{2b} \times r^{2b} \times p^{-b} \times r^{-2b} = 1$ . **Ans. (1)**

14. A cylinder filled with oil has a base of radius 8 cm. If we want to raise the level of oil by 3 cm then how many solid spheres of radius 2 cm should be dropped to raise the level of oil by 3 cms.

- (1) 18 (2) 16  
(3) 22 (4) 15

**Sol:** The volume of the spheres is equal to the oil displaced by the sphere.

Hence, if 'n' spheres are dropped in the  $n \left( \frac{4}{3} \pi r_s^3 \right) = \pi r_c^2 h_c$

$\Rightarrow n \left( \frac{4}{3} \pi \times 2^3 \right) = \pi \times 8^2 \times 3 \Rightarrow n \left( \frac{4}{3} \pi \times 8 \right) = \pi \times 8 \times 8 \times 3 \Rightarrow n \left( \frac{4}{3} \right) = 24 \Rightarrow n = \frac{24 \times 3}{4} = 18$  spheres **Ans. (1)**

15. The ratio of investments of A and B is in the ratio 7 : 10. If B invested his money for 10 months, then for how many months A must invest his capital so that the profits will be distributed in the ratio of 3 : 7 ?

- (1) 1 month (2) 2 months  
(3) 3 months (4) 4 months

**Sol:** Ratio of the investments are 10 : 7. Therefore  $\frac{A}{B} = \frac{10x}{7x}$ . If the profits are shared in the ratio of 3 : 7 and 'B'

invests for 10 months then,  $\frac{10 \times T_A}{7 \times 10} = \frac{3}{7} \Rightarrow T_A = 3$  months. Hence, A must invest his capital for 3 months. **Ans. (3)**

16. My age is 2 times your age. When will your age be equal to my present age ?

- (1) When I will be thrice of your present age (2) When I will twice of your present  
(3) 15 years after (4) Never

**Sol: Ans. (1)**

17. If A, B, C is not a triangle and the coordinates of point A, B, C are respectively (1, -2), (2, 4) and (5, s) then the value of s is :

- (1) 23 (2) 15  
(3) 35 (4) 22

**Sol:** Since A, B, C is not a triangle, the coordinates of the points C has to be colinear with that of A and B.

i.e., the determinant must be 0.  $\begin{vmatrix} 1 & 1 & 1 \\ 1 & 2 & 5 \\ -2 & 4 & s \end{vmatrix} = 0 \therefore s = 22$  **Ans. (4)**

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18. If numbers are formed from all possible combination of 1, 2, 3, 4 and 5 then What will be the 87th number if the number are arranged in descending order ?

- (1) 23451 (2) 51234  
 (3) 43215 (4) 45321

**Sol:** In the descending order, the first series will start with five in the extreme left hand side.

5 \_ \_ \_ . The four places can be filled in 4! ways.

Starting with 4, 4 \_ \_ \_ . The four places can be again filled in 4! ways.

Same will be the case with digits starting with 3 in the left hand side.

So, in all we have 72 numbers in the series. Now freezing 2 and 5 in the left hand side 2 5 \_ \_ . These three places can be filled in 6 ways. Placing 2 and 4 in the left hand side 2 4 \_ \_ . The three places can again be filled in 6 ways. Now in all we have 84 numbers. The next set will start with 2 3 \_ \_ .

85<sup>th</sup> number will be : 2 3 5 4 1, 86<sup>th</sup> number will be 2 3 5 1 4 and finally the 87<sup>th</sup> number will be 23451. **Ans.(1)**

19. There are 5 members and 3 teams has to be made, the size of the team can vary. If every person has to be a member of one team then in how many possible ways a team can be made ?

- i (1) 10 (2) 15  
 (3) 20 (4) 25

**Sol:** Three teams has to be chosen from five members and the size of the team can vary.

Members in the first team	Members in the second team	Members in the third team
1	1	3
1	1	2
1	1	1
1	2	2
1	2	1
1	3	1
2	1	2
2	1	1
2	2	1
3	1	1

**Ans.(1)**

**Directions for Q. 20 and 21 :** Read the following information and answer the questions that follow.

A, B and C are 3 vendors, supply components to an assembly lane. The following are the particulars about the components supplied :

Vendors	% of Components	% of defects
A	40	10
B	35	5
C	25	1

20. What fraction of A is defective ?

- (1) 1/10 (2) 2/10  
 (3) 1/5 (4) 1/8

**Sol: Ans.(1)**

21. what are the average defects in a lot of components supplied by B and C ?

- (1) 1 (2) 2  
 (3) 3 (4) 4

**Sol:** 5% of 35 = 1.75 and 1% of 25 = 0.25. Therefore, average defect = (1.75 + 0.25)/2. **Ans.(1)**

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22. The prices of motorcycles and scooters are in the ratio of 3 : 7. After 3 years the cost of the scooter is increased by Rs. 1700 and hence increase of 10% in the price of scooter. What is the price of the motorcycle ?
- (1) Rs. 9840 (2) Rs. 8546.56  
 (3) Rs. 11000 (4) Rs. 7285.7

**Sol:** Prices of motorcycles and scooters are in the ratio of 3 : 7. Let the price of one motorcycles =  $3x$  and the price of one scooters =  $7x$ . After 3 years the price of the scooter =  $7x + 1700 = 1.1 \times 7x \Rightarrow x = 17000/7$ . Hence the cost of the motorcycle =  $3x = 51000/7 = \text{Rs. } 7285.7$  **Ans.(4)**

23. The cost of a reserved berth is Rs. 1200 which comprises of a fixed cost and the cost of the berth. For a senior citizen the fixed cost remains the same but the cost of the berth is  $\frac{3}{4}$  th of the original cost. The combined cost of a full ticket and a senior citizen's ticket is Rs. 2200. Find the cost of a ticket for a disabled person, if the fixed cost is 80% of the original and the cost of the berth is  $\frac{2}{3}$  rd the cost of the berth for a senior citizen.
- (1) Rs.120 (2) Rs.720  
 (3) Rs.660 (4) Rs.450

**Sol:** The cost of a reserved berth is Rs.1200. Let us assume that the final cost is  $F$  and the cost of the berth is 'B'  
 $\therefore F + B = 1200 \dots\dots\dots(1)$

For a senior citizen let the cost of the berth be  $B_s$

also given that  $B_s = \frac{3}{4} B$ .

As per the condition  $(F + B) + (F + \frac{3}{4} B) = 2200 \Rightarrow F + \frac{3}{4} B = 1000 \dots (2)$

Equating equations (1) and (2) 'B' = Rs.800.  $\therefore B_s = \text{Rs. } 600$  and  $F = \text{Rs. } 400$ .

For a disabled person the fixed cost is 80% of the original. Hence the fixed cost for a disabled person is 80% of 400 = Rs. 320 is the cost of the berth is.

Hence the cost of the ticket for a disabled person is

Rs.400 + Rs. 320 = Rs.720. **Ans.(2)**

24. If the point (5,6) lie on the curve whose tangent is  $2x - y - 4$ , then the equation of the curve is :

- (1)  $y^2 - x^2 = 11$  (2)  $y^2 + x^2 = 17$   
 (3)  $x^3 - y^3 = 11$  (4)  $y^3 - x^3 = 4$

**Sol:** Point (5, 6) satisfies both the equations of the tangent and the curve  $y^2 - x^2 = 11$ . **Ans.(1)**

25. A rectangular box has a base whose length is twice its breadth. The volume of the box is  $72 \text{ cm}^3$ . The material cost is Rs. 10 per square cm and the material of the base is Rs. 5 per square cm. What is the value of the breadth of the box to bear the minimum cost?

- (1) 1.1 cm (2) 3.8 cm  
 (3) 7.2 cm (4) 5.2 cm

**Sol:** As per the given conditions the total cost of the box =  $2b^2 \times 5 + (2bh + 4bh \times 10) \Rightarrow 10b^2 + 60bh = c \dots(1)$

Given  $2b^3h = 72$ . Therefore  $h = 36/b^3 \dots\dots(2)$ . Combining both the equations  $10b^2 + (60 \times 36) / b^2 = c$ . For the

cost to be minimum  $\frac{dc}{db} = 0$  . i.e.,  $20b + 2160 (-2b^{-3}) = 0$  or  $b^4 = 216$  or  $b = 3.8 \text{ cm}$ . **Ans.(2)**

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26. Find out the total number of squares having a side common with the sides of a regular hexagon.
27. Out of every 10 users, if we search a particular site, what is the probability that this site will be visited ?
28. If  $x$  can obtain a real value. What is the value of  $b$  in the expression  $4(ax - b)^2 + 3c = 16x^2 + 64x$  ?
29. Given  $2x^2 - mx - n = 0$ . If the roots of the above equation differ by 1, then which of them is correct.

End of section 3

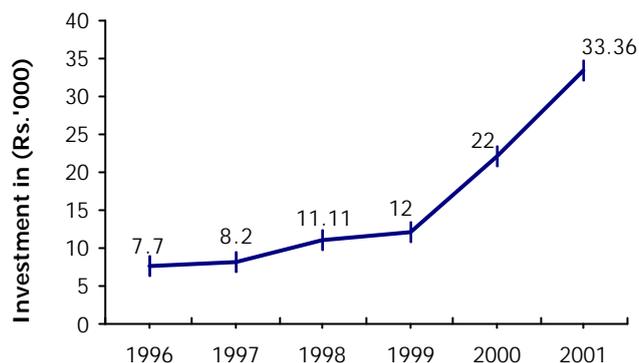


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## Data Interpretation

**Directions for Q. 1 to 5 :** Study the line graph given below and answer the questions that follow :



1. In which year was the percentage change in the investment maximum over the previous year.
- 2000
  - 2001
  - 1998
  - 1999

**Sol. Ans.(1)**

2. The profit earned by the country is directly proportional to investment, if the profit earned in 1996 is Rs. 300, then what is the profit earned in 1998.
- Rs.432.86
  - Rs.332.50
  - Rs.232.87
  - Rs.500.75

**Sol.**  $\frac{7.7}{11.11} = \frac{300}{x}$ ,  $x = \text{Rs.}432.86$ . **Ans.(1)**.

**Directions for Q. 6 to 8 :** Study the information given below and answer the questions that follow :

There are two groups named left and right. The left group consists of A,B,C, D and the right group consists of E, F and G. A committee of 3 has to be formed. At least one person has to be from either of the groups. The following are the conditions that have to be followed.

- B will never come with c.
- If G is there in the group E will be always there.
- F and C is always together
- The coordinator must be there from the minority group.

6. Which of the following cannot be a valid committee.
- BDE
  - FGB
  - AGC
  - EFG

**Sol.** Other option do not satisfy the condition. **Ans.(1)**

7. Which cannot be a coordinator :
- F
  - B
  - G
  - D

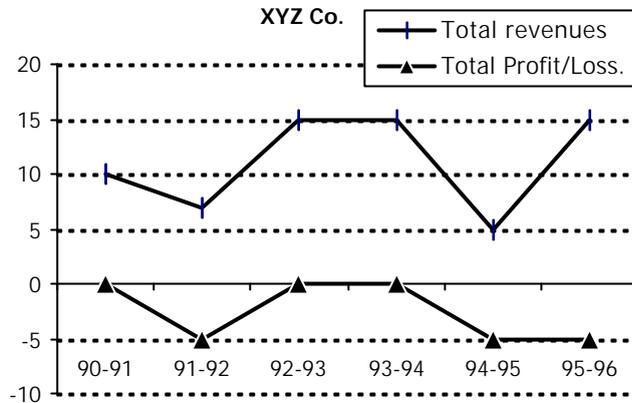
**Sol.** Since F and C are always together, so F or C can never be coordinator. **Ans.(1)**

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**Directions for Q. 8 to 10 :** Study the information given below and answer the questions that follow :

There are seven persons who have enrolled themselves for 7 different courses in seven different cabins, room number 1 and 7 have multimedia systems, for marketing courses multimedia systems are always required. Persons A and C always enroll form marketing D and E will always be together. B and C will be never taking up their courses in consecutive rooms B will always work in room number 3. On the above condition 3 questions were given.

**Directions for Q. 11 to 14 :** Study the line graph given below and answer the questions that follow :



11. For how many years the company has been running in loss?

- (1) 3
- (2) 4
- (3) 2
- (4) 5

**Sol: Ans (3)**

12. In which year the total revenue line did not follow the same trend?

- (1) 1995-96
- (2) 1992-93
- (3) 1994-95
- (4) 1991-92

**Sol:** The total revenue line is supposed to be following a constant or upwards trends. Therefore the answer is 1994-95. **Ans (3)**

**End of section 4**

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## General Knowledge

**Directions for Q. 1 to 15 :** For the following questions, choose the correct option.

1. Which of the following is the reason for the reduction of CRR from 5.5% to 5%?
2. Which segment contributes the most to the government's revenue ?
3. Why is net telephony cheaper than wired telephony?
4. What is true about VSNL?
5. Why was 'Kumar Mangalam Committee' formed?
6. What is the role of the Exim policy?
7. What is the latest recommendation of IRDA for the insurance sector?
8. Which of the following companies has the highest turnover for the year 2002?
9. Why has RBI reduced the bank rates?
10. Which of the following is not true about DOHA summit?
11. Which of the following is true about Simputers?
12. What is true about 'VAT' ?
13. Which of the following is a criteria for a foreign investor to 'invest' in the Indian Insurance Sector ?
14. The recent amendments in the stock exchange policies are following except :

End of section 5



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## Overall Analysis & Expected Cut-Offs

The test can be rated as a moderate one. The DI and the GK sections were typical and the questions were direct. The RC section was easy one with only three passages and 15 questions.

The mathematical aptitude section was easy to manage. The last few questions on logical reasoning were lengthy.

Thus we expect that the average attempts should have been in the range of 115 + and the minimum score of 75 to 80 should be a good score to get a call from almost all the IITs.



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