

M.A/M. Sc in Computational Finance
Entrance Test-2009

Answer all the questions

Full Marks: 100

Time: 1 hour

Questions 1-15 carry 4 marks each and questions 16-23 carry 5 marks each.
Choose the right alternative from among the given alternatives. For incorrect answer -1 mark will be awarded.

1. A,B,C and D play a game of cards. A says to B, "If I give you 8 cards, you will have as many as C has and I shall have 3 less than that C has . Also, if I take 6 cards from C, I shall have twice as many as D has". If B and D together have 50 cards, how many card has A got?
(a) 40 (b) 37 (c) 27 (d) 23
2. The age of a father is twice that of the elder son. Ten years hence the age of father will be three times that of the younger son. If the difference of ages of the two sons is 15 years, the age of the father is
(a) 60 years (b) 55 years (c) 50 years (d) 40 years
3. In a group of persons traveling in bus, 6 persons can speak Tamil, 15 can speak Hindi and 6 can speak Telugu. In that group, none can speak any other language. If 2 persons in the group can speak two languages and one person can speak all the three languages then how many persons are there in the group?
(a) 21 (b) 22 (c) 23 (d) 24
4. If x is a positive integer, for which of the following equations must y be a negative integer?
(a) $x + y = 7$ (b) $x + 2y = 6$ (c) $y - x = 4$ (d) $-x - y = 3$
5. If 5 is r percent of 25 and s is 25 percent of 60 then
(a) $r > s$ (b) $s > r$ (c) $s = r$ (d) cannot be determined
6. If the mean of a set of data is 15 and the standard deviation is 4 which of the following represents the interval is two standard deviations from the mean?
(a) 7 to 15 (b) 7 to 23 (c) 11 to 19 (d) 15 to 23
7. If an item is sold for x rupees there is a loss of 10%. If however, the same item is sold for y rupees there is a profit of 10%. What is the ratio $y : x$?
(a) 1 : 1 (b) 11 : 9 (c) 9 : 11 (d) none of them
8. If x and y are positive integers such that $x^2 + 2xy + y^2 = 25$ then $(x + y)^3 =$
(a) -125 (b) 125 (c) 50 (d) not unique
9. Which of the following cannot be an integer if the integer k is a multiple of 12 but not a multiple of 9 ?
(a) $\frac{k}{4}$ (b) $\frac{k}{10}$ (c) $\frac{k}{12}$ (d) $\frac{k}{36}$

10. Let $a = b + 2$, $r = a^2 - 2ab + b^2$, and $s = 2a - 2b$. Then
(a) $r > s$ (b) $s > r$ (c) $r = s$ (d) It cannot be determined from the information given.
11. Anupam's average test score after 8 tests is 84. If his most recent test score is dropped, Anupam's average becomes 85. Then Anupam's most recent test score is
(a) 80 (b) 82 (c) 79 (d) 85
12. In the set of positive, distinct integers $\{i, j, k, l, m\}$ the median is 10. What is the minimum value of $i + j + k + l + m$?
(a) 50 (b) 45 (c) 33 (d) 36
13. A packet containing 5 pieces of item A, 3 pieces of item B and 7 pieces of item C costs Rs 24.50. A packet containing 2, 1 and 3 pieces of A, B and C respectively costs Rs 17.00. Find the cost of packet containing 16, 9 and 23 items of A, B and C respectively.
(a) 100 (b) 105 (c) 95 (d) cannot be determined from the given information.
14. A man starts climbing a wall 11ft.high at 5PM. Every minute he ascends one foot but descends 6 inches. At what time will he reach at the top?
(a) 5.22 PM (b) 5.21 PM (c) 5.23 PM (d) none of these
15. Water lilies double in area every twenty four hours. At the beginning of the summer there is one water lily on a lake. It takes 60 days for the lake to become completely covered with water lilies. On what day it is half covered?
(a) 30th day (b) 45th day (c) 59th day (d) none of these
16. The Japanese economic model created strong domestic industries through subsidies from its Ministry of Trade and by closing off competitive foreign firms to its domestic market. This strategy promised to help economic growth by incubating domestic industries. New Japanese industries could count on a known local demand and would be protected from competition by tariffs and other barriers. The programme could reduce the amount of imports and therefore improve the nation's balance of trade.
- Which of the following, based on the passage above, is a weakness in this economic strategy?
- A protectionist policy will create animosity among other nations.
 - Fast growth of small industries will create a class of millionaires and increase the inequality of income.
 - Subsidies and import constraints keep domestic prices high and impose a burden on consumers.
 - Quotas are more regressive than tariffs.
 - The demand for the products made by the incubated industries would not be known.

17. Historically, famines have generally been followed by periods of rising wages, because when a labor force is diminished, workers are more valuable in accordance with the law of supply and demand. The Irish potato famine of the 1840s is an exception; it resulted in the death or emigration of half of Ireland's population, but there was no significant rise in the average wages in Ireland in the following decade.

Which one of the following, if true, would LEAST contribute to an explanation of the exception to the generalization?

- a. Improved medical care reduced the mortality rate among able-bodied adults in the decade following the famine to below prefamine levels.
 - b. Eviction policies of the landowners in Ireland were designed to force emigration of the elderly and infirm, who could not work, and to retain a high percentage of able-bodied workers.
 - c. Advances in technology increased the efficiency of industry and agriculture, and so allowed maintenance of economic output with less demand for labor.
 - d. The birth rate increased during the decade following the famine, and this compensated for much of the loss of population that was due to the famine.
 - e. England, which had political control of Ireland, legislated artificially low wages to provide English-owned industry and agriculture in Ireland with cheap labor.
18. During the past year, Boz Corporation, a cigarette manufacturer, has engaged in a "corporate image" advertising campaign. One executive now urges that the advertising be extended for another year because profits have increased by 29% over the previous year. Another executive, however, is skeptical. She observes that the increases are typical for the industry over the past year, although none of their competitors have used corporate image advertising.
- The most accurate way of summarizing the second executive's point would be
- a. She argues that the effect may not really be due to its supposed cause because there has not been a sufficient lapse of time between the cause and the effect.
 - b. She argues that the assignment of a cause for this effect is premature, because there is as yet no well established theory of such interactions.
 - c. She argues that corporate image advertising is unprofitable, since it has evidently benefited competitors as much as the corporation that paid for it.
 - d. She knows that effective advertising requires a constant influx of new ideas and approaches, and she argues that one year of corporate image advertising is enough for awhile.
 - e. She argues that the effect may not be due to its alleged cause since the same effect is found elsewhere without that cause

19. A group of three or four has to be selected from seven persons. Among the seven are two women: Fiza and Kavita, and five men: Ram, Shyam, David Peter and Rahim. Ram would not like to be in the group if Shyam is also selected. Shyam and rahim want to be selected together in the group. Kavita would like to be in the group only if David is also there. David, if selected, would not like Peter in the group. Ram would like to be in the group only if Peter is also there. David insists that Fiza be selected in case he is there in the group.

Which of the following statements is true?

- a. Kavita and Ram can be a part of a group of four.
- b. A group of four can have two women.
- c. A group of four can have all four men.
- d. Shyam, Rahim, Fiza and david is a feasible group of four.
- e. None of the above.

In the following questions (Q. 20 & Q.21), three / two statements are given below followed by four conclusions numbered I, II, III and IV. Assuming the given statements to be true, choose your answer from among the given alternatives.

20. **Statements:** (A) Some doors are windows.
(B) All windows are black.
(C) Some black are brown.

Conclusions: (i) Some windows are brown.
(ii) All doors are black
(iii) Some doors are black.
(iv) No windows is brown.

- (a) Only (ii) follows.
- (b) Only (iii) follows
- (c) Only (iv) follows
- (d) Either (i) or (iv), and (iii) follow.
- (e) None of these.

21. **Statements:** (1) Only those teachers do not teach in high school who do not wear caps.

(2) Only those teachers do not wear caps who do not use spectacles.

Conclusions: (i) Teachers who teach in high school wear caps as well as spectacles.

- (ii) No teachers wear both.
- (iii) Teachers who teach in high school do not wear caps.
- (iv) Some teachers without spectacles wear caps.

- (a) Only (i) follows.
- (b) Only (iv) follows.
- (c) Either (ii) or (iii) follows.
- (d) Only (iii) follows.
- (e) None of the above.

22. Testifying before the Parliamentary committee investigating charges that cigarette manufactures had manipulated nicotine levels in cigarettes in order to addict consumers to their product. Tobacco executives argued that cigarette smoking is not addictive. The primary reason they give in support of this claim was that cigarette smoking was not regulated by the Central Drug Administration.

For the tobacco executives' argument to be logically correct, which of the following must be assumed?

- (a) Substances that are not addictive are not regulated by the Central Drug Administration.
 - (b) The tobacco executives lied when they claimed that cigarette smoking was not addictive.
 - (c) Some addictive substances are not regulated by the Central Drug Administration.
 - (d) There is no scientific proof that cigarette smoking is addictive.
 - (e) Substances that are not regulated by the Central Drug Administration are not addictive.
23. No national productivity measures are available for underground industries that may exist but remain unreported. On the other hand, at least some industries that are run entirely by self-employed industrialists are included in national productivity measures.

From the information given above, it can be validly concluded that

- (a) There are at least some industries run entirely by self-employed industrialists that are underground industries.
- (b) No industries that are run entirely by self-employed industrialists operate underground.
- (c) There are at least some industries other than those run entirely by self-employed industrialists that are underground industries.
- (d) There are at least some industries run entirely by self-employed industrialists that are not underground industries.
- (e) There are at least some underground industries for which national productivity measures are available.

