3Edge ADSE Entrance Test 2011

Instructions:

- Total time alloted: 45 minutes
- Please write the paper-code and your name in the answer sheet.
- Cross the relevant box in the answer sheet, multiple crosses are invalid.
- No negative marking system
- Do your rough work only on the rough sheets.
- Do not write anything on question paper.
- You will receive question paper, answer sheet and rough sheets. Please return all of them to the invisilator.

1. The number obtained by interchanging the digits of a two-digit number is less than the original number by 63. If the sum of the digits of the number is II, what is the original number?
A) 29 B) 92 C) 74 D) Cannot be determined E) None of these

2. A 200-metre-long train crosses a platform double its length in 36 seconds. What is the speed of the train in KMPH?
A) 60 B) 48 C) 64 D) 66 E) None of these

3. The simple interest accrued on an amount of Rs 84,000 at the end of three years is Rs 30,240. What would be the compound interest accrued on the same amount at the same rate in the same period?
A) Rs 30,013.95 B) Rs31,013.95 C) Rs32,013.95 D) Rs33,013.95 E) Rs34013.95

4. One-fifth of a number is 81. What will 68% of that number be?
A) 1952 B) 275.4 C) 225.6 D) 165.8 E) None of these

5. The profit earned after selling an article for Rs 996 is the same as the loss incurred after selling the article for Rs 894. What is the cost price of the article?
A) Rs. 935 B) Rs. 905 C) Rs.945 D) Rs.975 E) None of these

6. The total of the ages of a class of 75 girls is 1050 years, the average age of 25 of them is 12 years and that of another 25 is 16 years. Find the average age of the remaining girls.
A) 12years B) 13 years C) 14years D) 15years E) None of these

7. In a class f 40 students and 8 teachers, each student got sweets that are 20% of the totAl number of students and each teacher got sweets that are 25% of the total number of students. How many sweets were there?
A) 420 B) 400 C) 320 D) 360 E) None of these

8. By how much is 5/12 of 516 lesser than of 495?
A) 22 B) 15 C) 12 D) 27 E) None of these

9. If the fractions 2/5, 3/8, 4/9, and 6/11 are arranged in ascending order of their values, which one will be the fourth?
A) 4/9 B) 5/13 C) 3/8 D) 2/5 E) None of these

10. A sum of money is divided among A, B, C and D in the Ratio of 2 : 3 : 7: 11. If the share of C is Rs 2,755 more than the share of A, then what is the total amount of money of/ B and D together?
A) RS 4,408 B) Rs 5,510 C) Rs ,612 D) Rs 7,714 E) None of these
A) Rs25,000 B) Rs 28,000 C) Rs 31,000 D) Rs 34,000 E) None of these

11. Fermat's Last Theorem is a statement in number theory which states that it is impossible to separate any power higher than the second into two like powers, or, more precisely- If an integer n is greater than 2, then the equation a^n b^n = c^n has no solutions in non-zero integers a, b, and c. Now, if the difference of any two numbers is 9 and their product is 17, what is the sum of their squares?

a.43 b.45 c.98 d.115

12 .India with a burgeoning population and a plethora of vehicles (at last count there were more than 20 million of them) has witnessed big traffic jams at all major cities. Children often hone their counting skills by adding the wheels of vehicles in schoolyards or bus depots and guessing the number of vehicles. Alok, one such child, finds only bicycles and 4 wheeled wagons in his schoolyard. He counts the totalnumber of wheels to be 46. What could be the possible number of bicycles?
a.25 b.5 c.4 d.8

13. Given a collection of points P in the plane, a 1-set is a point in P that can be separated from the rest by a line; i.e. the point lies on one side of the line while the others lie on the other side. The number of 1-sets of P is denoted by n1(P) . The maximum value of n1(P) over all configurations P of 19 points in the plane is
a.10 b.9 c.3 d.5

14.Both A and B Alice and Bob play the following chip-off-the-table game. Given a pile of 58 chips, Alice first picks at least one chip but not all the chips. In subsequent turns, a player picks at least one chip but no more than the number picked on the previous turn by the opponent. The player to pick the last chip wins. Which of the following is true?

a. In order to win, Alice should pick 14 chips on her first turn.
b. In order to win, Alice should pick two chips on her first turn.
c. In order to win, Alice should pick one chip on her first turn.

15. 30 teams enter a hockey tournament. A team is out of the tournament if it loses 2 games. What is the maximum number of games to be played to decide one winner?
a. 60 b. 59 c. 61 d. 30
e. 34

16. A hare and a tortoise have a race along a circle of 100 yards diameter. The tortoise goes in one direction and the hare in the other. The hare starts after the tortoise has covered 1/5 of its distance and that too leisurely. The hare and tortoise meet when the hare has covered only 1/8 of the distance. By what factor should the hare increase its speed so as to tie the race?
a. 8 b. 37.80 c. 5 d. 40

17.Anoop managed to draw 7 circles of equal radii with their centres on the diagonal of a square such that the two extreme circles touch two sides of the square and each middle circle touches two circles on either side. Find the ratio of the radius of the circles to the side of the square.

a. (2+ 7√2) :1 b. 1:(2+ 6√2) c. 1:(4+ 7√3) d. 1:(2+ 7c2)

18.On the planet Oz, there are 8 days in a week- Sunday to Saturday and another day called Oz day. There are 36 hours in a day and each hour has 90 min while each minute has 60 sec. As on earth, the hour hand covers the dial twice every day. Find the approximate angle between the hands of a clock on Oz when the time is 12:40 am.

a. 251 b. 111 c. 71 d. 89

19. Alok and Bhanu play the following min-max game. Given the expression N = 9 +X + Y– Z where X, Y and Z are variables representing single digits (0 to 9) , Alok would like to maximize N while Bhanu would like to minimize it. Towards this end, Alok chooses a single digit number and Bhanu substitutes this for a variable of her choice (X, Y or Z) . Alok then chooses the next value and Bhanu, the variable to substitute the value. Finally Alok proposes the value for the remaining variable. Assuming both play to their optimal strategies, the value of N at the end of the game would be

a. 27 b. 18 c. 20 d. 0.0

20. A person drives with constant speed and after some time he sees a milestone with 2 digits. Then travels for 1 hours and sees the same 2 digits in reverse order. 1 hours later he sees that the milestone has the same 2 digits with a 0 between them. What is the speed of the car?

a.54.00 mph b.45.00 mph c.27.00 mph d.36.00 mph

21. Ferrari S.P.A is an Italian sports car manufacturer based in Maranello, Italy. Founded by Enzo Ferrari in 1928 as Scuderia Ferrari , the company sponsored drivers and manufactured race cars before moving into production of street-legal vehicles in 1947 as Feraari S.P.A. Throughout its history, the company has been noted for its continued participation in racing, especially in Formula One where it has employed great success .Rohit once bought a Ferrari . It could go 4 times as fast as Mohan's old Mercedes. If the speed of Mohan's Mercedes is 46 km/hr and the distance traveled by the Ferrari is 953 km, find the total time taken for Rohit to drive that distance.

A) 20.72 B) 5.18 C) 238.25 D) 6.18

22. There are two water tanks A and B, A is much smaller than B. While water fills at the rate of one litre every hour in A, it gets filled up like 10, 20, 40, 80, 160... in tank B.(At the end of first hour, B has 10 litres , second hour it has 20, and so on) . If tank B is 1/32 filled after 21 hours, what is the total duration required to fill it completely?

A) 26 hrs B) 25 hrs C) 5 hrs D) 7 hrs

23. For the FIFA world cup, Paul the octopus has been predicting the winner of each match with amazing success. It is rumored that in a match between 2 teams A and B, Paul picks A with the same probability as A's chances of winning. Let's assume such rumors to be true and that in a match between Ghana and Bolivia, Ghana the stronger team has a probability of 2/3 of winning the game. What is the probability that Paul will correctly pick the winner of the Ghana-Bolivia game?

A) 4/9 B) 2/3 C) 1/9 D) 5/9

24. The IT giant Tirnop has recently crossed a head count of 150000 and earnings of $7 billion. As one of the forerunners in the technology front, Tirnop continues to lead the way in products and services in India. At Tirnop, all programmers are equal in every respect. They receive identical salaries ans also write code at the same rate.Suppose 12 such programmers take 12 minutes to write 12 lines of code in total. How long will it take 72 programmers to write 72 lines of code in total?

A) 6 B) 18 C) 72 D) 12

25. The citizens of planet nigiet are 8 fingered and have thus developed their decimal system in base 8. A certain street in nigiet contains 1000 (in base 8 buildings numbered 1 to 1000. How many 3s are used in numbering these buildings?

A) 256 B) 54 C) 192 D) 64

26. 36 people {a1, a2, …, a36} meet and shake hands in a circular fashion. In other words, there are totally 36 handshakes involving the pairs, {a1, a2}, {a2, a3}, …, {a35, a36}, {a36, a1}. Then size of the smallest set of people such that the rest have shaken hands with at least one person in the set is

A) 12 B) 13 C) 18 D) 11

27. Alok is attending a workshop “How to do more with less” and today’s theme is Working with fewer digits . The speakers discuss how a lot of miraculous mathematics can be achieved if mankind (as well as womankinD) had only worked with fewer digits.

The problem posed at the end of the workshop is

How many 5 digit numbers can be formed using the digits 1, 2, 3, 4, 5 (but with repetition) that are divisible by 4?

Can you help Alok find the answer?

A) 375 B) 625 C) 500 D) 3125

28. After the typist writes 12 letters and addresses 12 envelopes, she inserts the letters randomly into the envelopes (1 letter per envelopE) . What is the probability that exactly 1 letter is inserted in an improper envelope?

A) 0 B) 12/212 C) 11/12 D) 1/12

29. There are two boxes, one containing 10 red balls and the other containing 10 green balls. You are allowed to move the balls between the boxes so that when you choose a box at random and a ball at random from the chosen box, the probability of getting a red ball is maximized. This maximum probability is

A) 3/4 B) 14/19 C) 37/38 D) 1/2

30. The difference between the ages of two of my three grandchildren is 3. My eldest grandchild is three times older than the age of my youngest grandchild and my eldest grandchild’s age is two years more than the ages of my two youngest grandchildren added together. How old is my eldest grandchild?

A) 13 B) 10 C) 15 D) 20

31. If it is possible to make only one meaningful word with the Third, Seventh, Eighth and Tenth letters of the word COMPATIBILITY, which of the following would be the last letter of that word ? If no such word can be made, give ‘X’ as your answer and if more than one such word can be formed, give your answer as ‘Y’.

(A) I (B) B (C) L (D) X (E) Y

32. How many meaningful three letter English words can be formed with the letters AER, using each letter only once in each word ?
(A) None (B) One (C) Two (D) Three (E) Four

33. If 'Apple' is called 'Orange', 'Orange' is called 'Peach', 'Peach' is called 'Potato', 'Potato' is called 'Banana', 'Banana' is called 'Papaya' and 'Papaya' is called 'Guava', which of the following grows underground ?
(A) Potato (B) Guava (C) Apple (D) Banana (E) None of these

34. Each vowel of the word ADJECTIVE is substituted with the next letter of the English alphabetical series, and each consonant is substituted with the letter preceding it. How many vowels are present in the new arrangement ?
(A) None (B) One (C) Two (D) Three (E) None of these

35. How many such pairs of letters are there in word ENGLISH, each of which has as many letters between its two letters as there are between them in the English alphabets ?
(A) None (B) One (C) Two (D) Three (E) More than three

Directions—(Q. 36–40) In each of the questions below are given three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read both the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Read the statements and the conclusions which follow it and
Give answer—
(A) if only conclusion I is true.
(B) if only conclusion II is true.
(C) if either conclusion I or conclusion II is true.
(D) if neither conclusion I nor conclusion II is true
(E) if both conclusions I and II are true.

36. Statements : All stars are suns. Some suns are planets. All planets are satellites.
Conclusions :
I. Some satellites are stars. II. No star is a satellite.

37. Statements : All fishes are birds. All birds are rats. All rats are cows.
Conclusions :
I. All birds are cows II. All rats are fishes

38. Statements : All curtains are rods. Some rods are sheets. Some sheets are pillows.
Conclusions :
I. Some pillows are rods. II. Some rods are curtains.

39. Statements : Some walls are windows. Some windows are doors. All doors are roofs.
Conclusions :
I. Some doors are walls. II. No roof is a window.

40. Statements : All switches are plugs. Some plugs are bulbs. All bulbs are sockets.
Conclusions :
I. Some sockets are plugs. II. Some plugs are switches.

Directions for questions 41- 45: Read the passage carefully and answer the questions below:
The Indian middle class consist of so many strata that it defies categorisation under a single term class, which would imply a considerable degree of homogeneity. Yet two paradoxical features characterise its conduct fairly uniformly; extensive practice and intensive abhorrence of corruption. In the several recent surveys of popular perceptions of corruptions, politicians of course invariably and understandably top the list, closely followed by bureaucrats, policemen, lawyers, businessmen and others. The quintessential middle class. If teachers do not figure high on this priority list, it is not for lack of trying, but for lack of oppurtunities. Over the years, the sense of shock over acts of corruption in the middle class has witnessed a steady decline, as its ambitions for a better material life have soared but the resources for meeting such ambitions have not kept pace. What is fascinating, however, is the intense yearning of this class for a clean corruptionless politics and society, a yearning that has again and again surfaced with any figure public or obscure, focus on his mission of eradicating corruption. Even the repeated failure of this promise on virtually every man's part has not subjected it to the law of diminishing returns.

41. The intense Middle Class intensely yearns for
A. better material resources B. extensive practice of corruption
C. clean honest society D. law of increasing returns

42. Teachers are not high on the list of corruption because they do not have
A. courage B. opportunities C. support D. ambition

43. The Indian Middle class is
A. defiant B. mysterious C. homogeneous D. stratified

44. Who figure on top of the list of corruption?
A. businessmen B. lawyers C. politicians D. policemen

45. This yearning, over the years, has
A. persisted B. soared C. declined D. disappeared