University of Engineering & Management, Kolkata
1st Mid Term Examination, March, 2018
Course: B-Tech(CSE) Semester: 6th
Paper Name: ESP VI
Paper Code: GS 601

Full Marks: 50 Time: 1 hour 30 minutes

Group - A (ESP) Marks: 50*.5=25

Answer all of the following:

1. Calculate the time required to perform 1000 operations in a 6 staged pipeline with an execution time of 3 ns per stage?
   A. 3.1 B. 3.125 C. 3.015 D. None of these
2. How many stages have a pipeline that achieves a speed of 9.9 for 100 operations?
   A. 11 B. 12 C. 13 D. 14
3. What is the mean over head of a pipeline with 8 stages and execution time per stage of 2 ns?
   A. 10ns B. 15ns C. 14ns D. 17ns
4. Calculate the mean overhead of a pipeline of a pipeline with 7 stages and an execution time per stage of 2ns.
   A. 11ns B. 12ns C. 13ns D. None of these
5. Comparing the time T1 taken for a single instruction on a pipelined CPU with time T2 taken on a non pipelined but identical CPU, we can say that
   A. T1 <= T2
   B. T1 >= T2
   C. T1 < T2
   D. T1 is T2 plus the time taken for one instruction fetch cycle.

   Choose the correct option.
6. An instruction pipeline consists of 4 stages – Fetch (F), Decode field (D.. Execute (E) and Result Write (W). The 5 instructions in a certain instruction sequence need these stages for the different number of clock cycles as shown by the table below. Find the number of clock cycles needed to perform the 5 instructions.

No. of clock cycles needed for

Instruction	F	D	E	W
1	1	2	1	1
2	1	2	2	1
3	2	1	3	2
4	1	3	2	1
5	1	2	1	2

A.15 B. 17 C. 19 D. 21

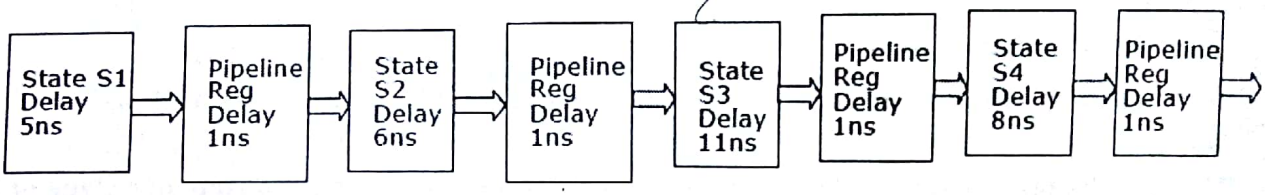
Scanned by CamScanner

7. Consider an instruction pipeline with five stages without any branch prediction: Fetch Instruction (FI), Decode Instruction (DI), Fetch Operand (FO), Execute Instruction (EI) and Write Operand (WO). The stage delays for FI, DI, FO, EI and WO are 5 ns, 7 ns, 10 ns, 8 ns and 6 ns, respectively. There are intermediate storage buffers after each stage and the delay of each buffer is 1 ns. A program consisting of 12 instructions 1 2 3 12 I , I , I ,.....I is executed in this pipelined processor. Instruction 4 I is the only branch instruction and its branch target is 9 I . If the branch is taken during the execution of this program, the time (in ns) needed to complete the program is

A. 132 B. 165 C. 176 D. 328

8. Consider an instruction pipeline with four stages (S1, S2, S3 and S4) each with combinational circuit only. The pipeline registers are required between each stage and at the end of the last stage. Delays for the stages and for the pipeline registers are as given in the figure. What is the approximate speed up of the pipeline in steady state under ideal conditions when compared to the corresponding non-pipeline implementation?

A. 4.0 B. 2.5 C. 1.1 D. 3.0



9. A 4-stage pipeline has the stage delays as 150, 120, 160 and 140 nanoseconds respectively. Registers that are used between the stages have a delay of 5 nanoseconds each. Assuming constant clocking rate, the total time taken to process 1000 data items on this pipeline will be

A. 120.4 microseconds

B. 160.5 microseconds

C. 165.5 microseconds

D. 590.0 microseconds

10. Consider a 6-stage instruction pipeline, where all stages are perfectly balanced. Assume that there is no cycle-time overhead of pipelining. When an application is executing on this 6-stage pipeline, the speedup achieved with respect to non-pipelined execution if 25% of the instructions incur 2 pipeline stall cycles is _____ .

A.4 B.8 C.6 (D.7

11. The performance of a pipelined processor suffers if :

A. the pipeline stages have different delays

B. consecutive instructions are dependent on each other

C. the pipeline stages share hardware resources

D. all of the above

12. Register renaming is done is pipelined processors

A. as an alternative to register allocation at compile time

B. for efficient access to function parameters and local variables

C. to handle certain kinds of hazards

D. as part of address translation

13. For a pipelined CPU with a single ALU, consider the following situations

Scanned by CamScanner

I. The j + 1-st instruction uses the result of the j-th instruction as an operand
II. The execution of a conditional jump instruction
III. The j-th and j + 1-st instructions require the ALU at the same time
Which of the above can cause a hazard?
A. I and II only
B. II and III only
C. III only
D. All the three

14. The use of multiple register windows with overlap causes a reduction in the number of memory accesses for:
I. Function locals and parameters
II. Register saves and restores
III. Instruction fetches
(A) I only
(B) II only
(C) III only
(D) I, II and III

15. Consider the following processors (ns stands for nanoseconds).
Assume that the pipeline registers have zero latency.
P1: Four-stage pipeline with stage latencies 1 ns, 2 ns, 2 ns, 1 ns.
P2: Four-stage pipeline with stage latencies 1 ns, 1.5 ns, 1.5 ns, 1.5 ns.
P3: Five-stage pipeline with stage latencies 0.5 ns, 1 ns, 1 ns, 0.6 ns, 1 ns.
P4: Five-stage pipeline with stage latencies 0.5 ns, 0.5 ns, 1 ns, 1 ns, 1.1 ns.
Which processor has the highest peak clock frequency?
A. P1 B. P2 C. P3 D. P4

16. Dynamic Pipeline may be
A. Linear Only
B. Non-Linear Only
C. Both A. and B.
D. None of these

17. Asynchronous parallelism can be achieved in
A. Pipeline processor
B. Non Von Neumann Architecture
C. Array processor
D. Multiprocessor

18. Consider a 4-stage pipeline that consists of Instruction Fetch (IF), Instruction Decode (ID., Execute (Ex) and Write Back WB stages. The times taken by these stages are 50 ns, 60 ns, 110 ns and 80 ns respectively. The pipeline registers are required after every pipeline stage, and each of these pipeline register consumes 10 ns delay. What is the speedup of the pipeline under ideal conditions compare to the corresponding non-pipelined implementation?
A. 2.3 B. 2.4 C. 2.5 D. 2.6

Consider the execution of a program of 2000 instructions by a linear pipeline processor with a clock frequency 40 MHz Assume that pipeline has 5 stages and that one instruction is issued per clock cycle. The penalties due to branch instructions and out of order instructions are ignored.

19. Calculate the speedup of the pipeline over its equivalent non-pipeline processor.
A. 4.99 B. 4.5 C. 3.5 D. 4.6

20. Calculate the efficiency of the pipeline.

Scanned by CamScanner

A. 0.90 B. 0.99 C. 0.11 D. 0.12

21. Calculate the throughput of the pipeline.
A. 3.96MIPS B. 39 MIPS C. 0.39 MIPS D. 39.6MIPS

22. Given a non pipelined processor with 15ns clock period. How many stages of pipelined version of the processor are required to achieve a clock period of 4ns? Assume that the interface latch has delay of 0.5 ns.
A. 4.3 B. 4.5 C. 3.5 D. 4.6

23. Maximum speed-up of a pipeline is: A. f B. 1 C. ω (D. K

24. Maximum efficiency a pipeline is: A. f B. 1 C. ω (D. K

25. Maximum throughput a pipeline is: A. f B. 1 C. ω D. K

26. A program P reads in 500 integers in the range [0..100] exepresenting the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies? (GATE CS 2005)
A. An array of 50 numbers
B. An array of 100 numbers
C. An array of 500 numbers
D. A dynamically allocated array of 550 numbers

27.Which of the following operations is not O(1) for an array of sorted data. You may assume that array elements are distinct.
A. Find the i-th largest element
B. Delete an element
C. Find the i-th smallest element
D. All of the above

28.Predict the output of below program:

```
#include <stdio.h>

int main()
{
  int arr[5];

  // Assume that base address of arr is 2000 and size of integer
    // is 32 bit
  arr++;
  printf("%u", arr);

  return 0;
}
```

(A) 2002 B. 2004 C.2020 D. lvalue required

Scanned by CamScanner

29.Predict the output of below program:

```
#include <stdio.h>

int main()
{
   int arr[5];
   // Assume base address of arr is 2000 and size of integer is 32 bit
   printf("%u %u", arr + 1, &arr + 1);

   return 0;
}
```

(A) 2004 2020
(B) 2004 2004
(C) 2004 Garbage value
(D) The program fails to compile because Address-of operator cannot be used with array name

30.What is output?

```
# include <stdio.h>

void print(int arr[])
{
  int n = sizeof(arr)/sizeof(arr[0]);
  int i;
  for (i = 0; i < n; i++)
    printf("%d ", arr[i]);
}

int main()
{
  int arr[] = {1, 2, 3, 4, 5, 6, 7, 8};
  print(arr);
  return 0;
}
```

(A) 1,2,3,4,5,6,7,8
(B) Compiler Error
(C) 1
(D) Run Time Error

31.Output of following program?

```
#include<stdio.h>

int main()
{
 int a[] = {1, 2, 3, 4, 5, 6};
 int *ptr = (int*)(&a+1);
 printf("%d ", *(ptr-1) );
```


Scanned by CamScanner

```
return 0;
}
```

(A) 1
(B) 2
(C) 6
(D) Runtime Error

32. Consider the following C-function in which a[n] and b[m] are two sorted integer arrays and c[n + m] be another integer array.

```
void xyz(int a[], int b [], int c[])
{
 int i, j, k;
 i = j = k = O;
 while ((i<n) && (j<m))
   if (a[i] < b[j]) c[k++] = a[i++];
   else c[k++] = b[j++];
}
```

Which of the following condition(s) hold(s) after the termination of the while loop? (i) j < m, k = n+j-1, and a[n-1] < b[j] if i = n (ii) i < n, k = m+i-1, and b[m-1] <= a[i] if j = m

(A) Only (i)
(B) Only (ii)
(C) Either (i) or (ii) but not both
(D) Neither (i) nor (ii)

33. Assume the following C variable declaration

int *A [10], B[10][10];

Of the following expressions I A[2] II A[2][3] III B[1] IV B[2][3] which will not give compile-time errors if used as left hand sides of assignment statements in a C program ?

(A) I, II and IV only
(B) II, III and IV only
(C) II and IV only
(D) IV only

34. Consider the following declaration of a 'two-dimensional array in C:

char a[100][100];

Assuming that the main memory is byte-addressable and that the array is stored starting from memory address 0, the address of a[40][50] is

(A) 4040
(B) 4050
(C) 5040
(D) 5050

Scanned by CamScanner

35.Which of the following is true about arrays in C.

(A)For every type T, there can be an array of T.
(B)For every type T except void and function type, there can be an array of T.
(C)When an array is passed to a function, C compiler creates a copy of array.
(D)2D arrays are stored in column major form.

36.Predict the output of the below program:

```
#include <stdio.h>
#define SIZE(arr) sizeof(arr) / sizeof(*arr);
void fun(int* arr, int n)
{
   int i;
   *arr += *(arr + n - 1) += 10;
}

void printArr(int* arr, int n)
{
   int i;
   for(i = 0; i < n; ++i)
      printf("%d ", arr[i]);
}

int main()
{
   int arr[] = {10, 20, 30};
   int size = SIZE(arr);
   fun(arr, size);
   printArr(arr, size);
   return 0;
}
```

(A)20 30 40
(B)20 20 40
(C)50 20 40
(D)Compile-time error

37.Predict output of following program

```
int main()
{
   int i;
   int arr[5] = {1};
   for (i = 0; i < 5; i++)
      printf("%d ", arr[i]);
   return 0;
}
```

(A)1 followed by four garbage value
(B)1 0 0 0 0

Scanned by CamScanner

(C) 1 1 1 1 1
(D) 0 0 0 0 0

38. A program P reads in 500 integers in the range [0,100] representing the scores of 500 students. It then prints the frequency of each score above 50. what would be the best way for P to store the frequencies?

A. An array of 50 numbers
B. An array of 100 numbers
C. An array of 500 numbers
D. A dynamically allocated array of 550 numbers

39. An n*n matrix V is defined as follows
V[i,j]=i-j for all i,j, 1<=i<=n;1<=j<=n;
The sum of the elements of the array V is

A. 0 B. n-1 C. n^2-3n+2 D. $n^2(n+1)/2$

40. Suppose you are given an array s[1...n] and a procedure reverse (s,i,j) which reverse the order of elements in s between positions i and j (both inclusive). What does the following sequence do, where 1 < k <= n:

reverse (s, 1, k);
reverse (s, k + 1, n);
reverse (s, 1, n);

A. Rotates s left by k positions
B. Leaves s unchanged
C. Reverses all elements of s
D. None of the above

41. A single array A[1..MAXSIZE] is used to implement two stacks. The two stacks grow from opposite ends of the array. Variables top1 and top2 (topl< top 2) point to the location of the topmost element in each of the stacks. If the space is to be used efficiently, the condition for "stack full" is

A. (top1 = MAXSIZE/2) and (top2 = MAXSIZE/2+1)
B. top1 + top2 = MAXSIZE
C. (top1= MAXSIZE/2) or (top2 = MAXSIZE)
D. top1= top2 -1

42. Let A be a two-dimensional array declared as follows:
A: array [1 .... 10] [1 ..... 15] of integer;

Assuming that each integer takes one memory location, the array is stored in row-major order and the first element of the array is stored at location 100, what is the address of the element A[i][j]?

A. 15i + j + 84 B. 15j + i + 84
C. 10i + j + 89 D. 10j + i + 89

Scanned by CamScanner

43. Two matrices M1 and M2 are to be stored in arrays A and B respectively. Each array can be stored either in row-major or column-major order in contiguous memory locations. The time complexity of an algorithm to compute M1 × M2 will be

A. best if A is in row-major, and B is in column major order
B. best if both are in row-major order
C. best if both are in column-major order
D. independent of the storage scheme

44. In a compact single dimensional array representation for lower triangular matrices (i.e all the elements above the diagonal are zero) of size n x n , non-zero elements (i.e elements of the lower triangle) of each row are stored one after another, starting from the first row, the index of the (i,j)th element of the lower triangular matrix in this new representation is:

A. i + j B. i + j -1 C. j + [i(i-1)/2] D. i + [j(j-1)/2]

45. The results returned by function under value-result and reference parameter passing conventions

A. Do not differ
B. Differ in the presence of loop
C. Differ in all cases
D. May differ in the presence of exception

46.Given the following input (4322, 1334, 1471, 9679, 1989, 6171, 6173, 4199) and the hash function x mod 10, which of the following statements are true?

i. 9679, 1989, 4199 hash to the same value
ii. 1471, 6171 has to the same value
iii. All elements hash to the same value
iv. Each element hashes to a different value

A. i only
B. ii only
C. i and ii only
D. iii or iv

47. The keys 12, 18, 13, 2, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using open addressing with hash function h(k) = k mod 10 and linear probing. What is the resultant hash table?

0	
1	
2	2
3	23
4	
5	15
6	
7	
8	18
9	

(A)

0	
1	
2	12
3	13
4	
5	5
6	
7	
8	18
9	

(B)

0	
1	
2	12
3	13
4	2
5	3
6	23
7	5
8	18
9	15

(C)

0	
1	
2	12, 2
3	13, 3, 23
4	
5	5, 15
6	
7	
8	18
9	

(D)

Scanned by CamScanner

48. A hash table of length 10 uses open addressing with hash function h(k)=k mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below.

0	
1	
2	42
3	23
4	34
5	52
6	46
7	33
8	
9	

Which one of the following choices gives a possible order in which the key values could have been inserted in the table?

A. 46, 42, 34, 52, 23, 33
B. 34, 42, 23, 52, 33, 46
C. 46, 34, 42, 23, 52, 33
D. 42, 46, 33, 23, 34, 52

49. Consider a hash table with 100 slots. Collisions are resolved using chaining. Assuming simple uniform hashing, what is the probability that the first 3 slots are unfilled after the first 3 insertions?

A. (97 × 97 × 97)/100^3
B. (99 × 98 × 97)/100^3
C. (97 × 96 × 95)/100^3
D. (97 × 96 × 95)/(3! × 100^3)

50. Which one of the following hash functions on integers will distribute keys most uniformly over 10 buckets numbered 0 to 9 for i ranging from 0 to 2020? (GATE-CS-2015)

A. h(i) =i^2 mod 10
B. h(i) =i^3 mod 10
C. h(i) = (11 * i^2) mod 10
D. h(i) = (12 * i) mod 10

Scanned by CamScanner

Group-B (SDP)

50*.5=25

51. There are some boys and girls in a room. The square of the number of girls is less than the square of the number of boys by 28. If there were two more girls, the number of boys would have been the same as that of the girls. The total number of the boys and girls in the room are.

A. 12 B. 14 C. 15 D. None

52. A 4-digit number is formed by repeating a 2-digit number such as 1515, 3737, etc. Any number of this form is exactly divisible by

A. 11 B.121 C. 21 D. 101

53. The greatest among √7−√5, √5−√3, √9−√7, √11−√9 is

A. √7−√5 B. √5−√3 C. √9−√7 D. √11−√9

54. Rama's expenditures and savings are in the ratio 5 : 3. If her income increases by 12% and expenditure by 15%, then by how much percent do her savings increase?

A. 12 B. 7 C. 8 D. 13

55. The value of a commodity depreciates 10% annually. If it was purchased 3 years ago and its present value is Rs. 5,832, what was its purchase price?

A. Rs. 7200 B. Rs. 7862 C. Rs. 8000 D. Rs. 8500

56. The bowling average of a cricketer was 12.4. He improves his bowling average by 0.2 points when he takes 5 wickets for 26 runs in his last match. The number of wickets taken by him before the last match was

A. 125 B. 150 C. 175 D. 200

57. A box contains 1-rupee, 50-paise and 25-paise coins in the ratio 8 : 5 : 3. If the total amount of money in the box is Rs. 112.50, the number of 50-paise coins is

A. 80 B. 50 C. 30 D. 42

Direction(58-60): Each question is followed by two statements giving certain data. You have to decide whether the information provided in the statements is sufficient for answering the question.

A. If the question can be answered by using one of the statements alone, but cannot be answered by using the other statement alone.

B. If the question can be answered by using either statement alone.

C. If the question can be answered by using both statements together, but cannot be answered by using either statement alone.

D. If the question cannot be answered even by using both the statements together.

58. Is x > 0 ?

1. $x^2 < x$ 2. $X^3 > x^2$

59. If x and y are positive integers, then is x an even number ?

1. 3x + 2y is even 2. 2x + 3y is even

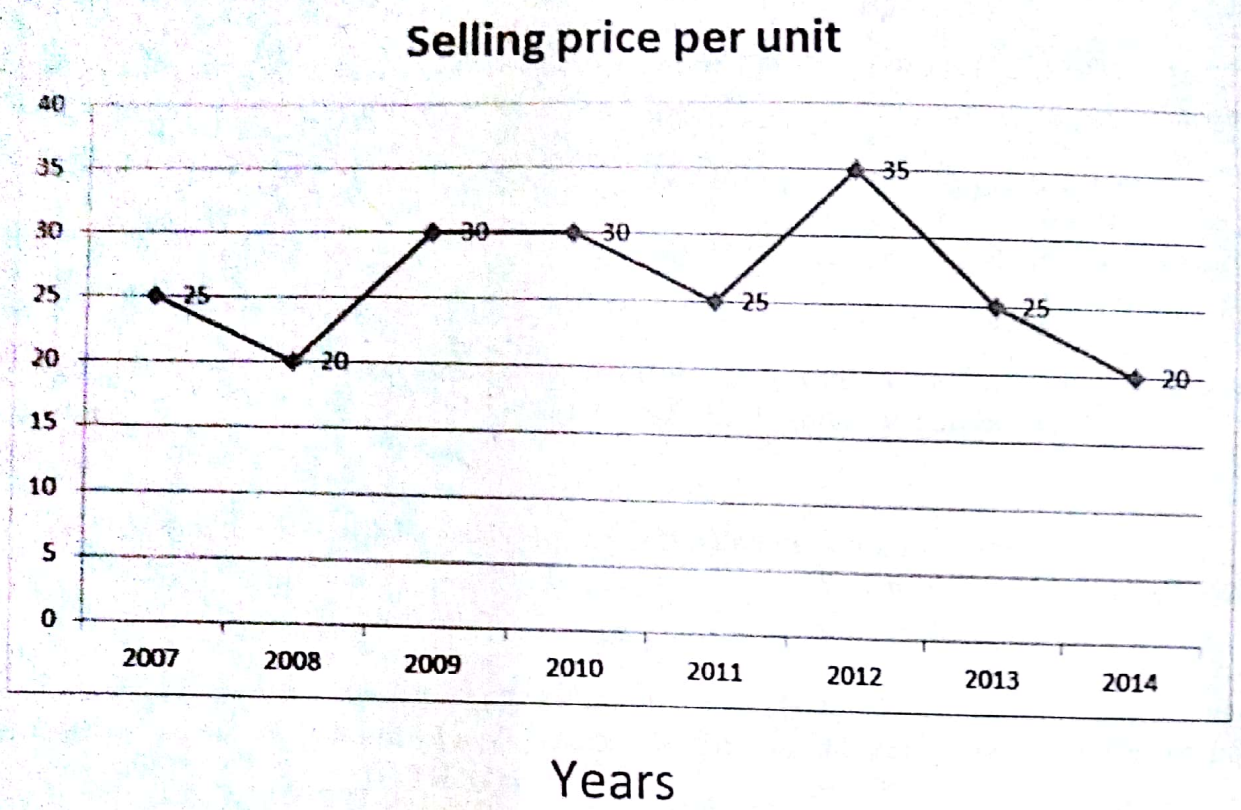
60. Find the area of the square.

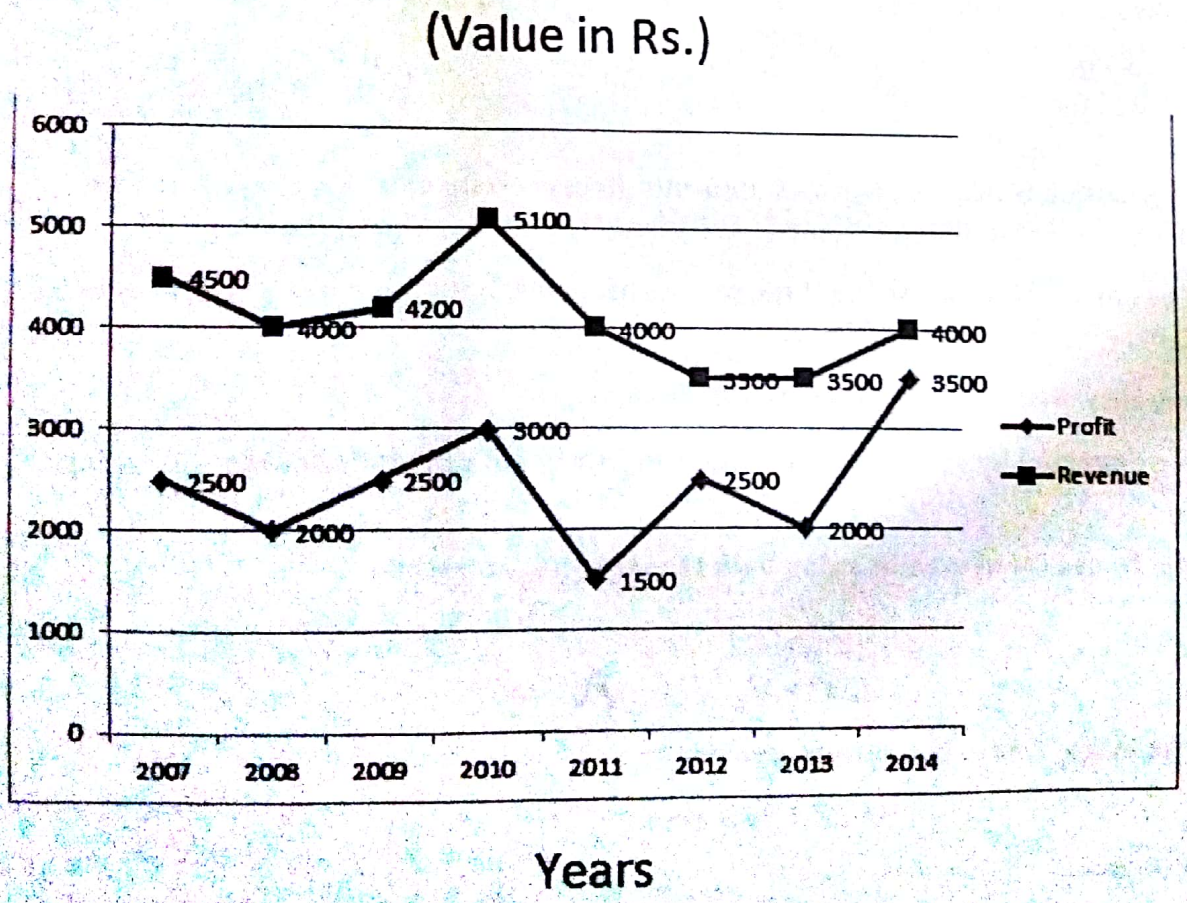
1. Perimeter of the square is 36 cm. 2. Diagonal of the square is 10

Scanned by CamScanner

Directions (61-65): Study the following line graph carefully and answer the questions given be

Assuming that there is no fixed component and all the units produced are sold in the same year.





61. In which of the following years the per unit cost is maximum.

Scanned by CamScanner

009 B. 2010 C. 2011 D. None

62. What is the average cost during the period of 2007 to 2014 ?

A. Rs.1662.5 B. 1660 C. 1665.5 D. None

63. If the SP per unit decreases by 20% during 2007 to 2010 and the cost per unit increases by 20% in 2011 to 2014 ,then during how many years there is no profit or loss.

A. None B. One C. Two D. Three

64. What is the average of quantity sold during the period 2008 to 2012 ?

A. 146 B. 144 C. 145 D. 154

65. If the SP per unit decreased by 25% during 2007 to 2010 and the CP per unit increased by 25% during 2011 to 2014 then the cumulative profit for the entire period 2007 to 2014 decreased by-

A. Rs.5725 B. Rs.5825 C. Rs.5600 D. None

Directions (66-70): Study the following information carefully and answer the questions.

Seven friends Manjil, Mayank, Anubhav, Bansi, Sajal, Monti and Lokesh attend different language classes, namely French, English, Spanish, Sanskrit, Chinese, German and Japanese, but not necessarily in the same order, from Monday to Sunday.

Manjil attends a class on Friday. Sajal is not learning Japanese. Only two persons attend classes between Manjil and the one who is learning Sanskrit. Monti attends a class immediately before Bansi. Neither Monti nor Bansi is learning Sanskrit. Only one person attends a class between Monti and the one who is learning Spanish. The one who is learning Spanish does not have a class on Monday. Mayank attends a class immediately before the one who is learning French. Manjil is not learning French. Only one person has a class between Monti and Sajal. Anubhav is learning German. Only two persons have classes between Anubhav and the one who is learning Chinese.

66.Which of the following represents those who have language classes immediately before and immediately after Mayank?

A. Bansi, Manjil

B. Sajal, Manjil

C. Sajal, Monti

D. Other than those given as options

67.Which of the following language is being learned by Sajal?

A. Other than those given as options

B. Chinese

C. English

D. Spanish

68.As per the given arrangement, Sajal is related to Chinese and Monti is related to Japanese in a certain way. To which of the following is Bansi related to in the same way?

A. Sanskrit

B. Other than those given as options

Scanned by CamScanner

C. Spanish

D. English

69.Four of the following five form a group as per the given arrangement. Which of the following does not belong to the group?

A.Sajal -Tuesday

B.B. Mayank -Thursday

C. Lokesh -Sunday

D. Manjil -Saturday

70.On which of the following day does Bansi have a class?

A.Monday

B.B. Thursday

C. Wednesday

D. Tuesday

Directions (71-75): Study the given information and answer the questions:

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of an input and rearrangement.

Input: to 68 and 59 cart 76 fix 33 grow 46 smart 91

Step I: and to 68 59 cart 76 fix grow 46 smart 91 34

Step II: cart and to 68 76 fix grow 46 smart 91 34 60

Step III: fix cart and to 68 76 grow 46 smart 34 60 92

Step IV: grow fix cart and to 68 76 smart 34 60 92 45

Step V: smart grow fix cart and to 76 34 60 92 45 67

Step VI: to smart grow fix cart and 34 60 92 45 67 75

And Step VI is the last step of the rearrangement of the above input.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

Input: bold 56 such 29 act 24 put 17 end 32 risk 33

71. In which step the elements '56 such 18' found in the same order?

A. Step I

B. Step II

C. Step III

D. Step V

Scanned by CamScanner

step IV, which of the following word/number would be at 3rd position to the left of 5th from the right end?

A. act

B. such

C. bold

D. 56

73. How many step required completing the above arrangement?

A. Three

B. Four

C. Six

D. Seven

74. Which of the following would be the step III after arrangement?

A. end bold act 56 such 24 put 32 risk 18 30 34

B. end bold act 56 such 24 put 32 risk 30 18 34

C. end bold act 56 such 24 put 32 risk 34 30 18

D. end bold act 56 such 32 put 24 risk 18 30 34

75. In step VI, 'such' is related to '55' and 'risk' is related to '31'. In the same way 'put' is related to?

A. 34

B. 55

C. 31

D. 23

Directions (76-80): In each of the following questions, a word has been used in sentences in four different ways. Choose the option corresponding to the sentence in which the usage of the word is INAPPROPRIATE.

76. Insert
A. The writer was asked to insert a change in the manuscript.
B. It is his habit to insert new topics in the discussion.
C. The country is planning to insert a new satellite into the orbit.
D. None of the above

77. Write
A. The boy writes Sanskrit with ease.
B. The ailing old asked his attorneys to write his will.
C. He was asked to write in a cheque for the amount he owed.
D. None of the above

78. Scale
A. Thick scales covered the animal.
B. The government brought in policies to scale imports.
C. He scaled the fish by scraping it with a knife.
D. None of the above

Scanned by CamScanner

79. Make
A. The children intended to make a lot of fun during the picnic.
B. One should not make a disturbance near hospitals.
C. The housekeeping department makes beds twice a day.
D. None of the above

80. Gain
A. The clock gains a minute per day.
B. The trekkers gained the peak in the evening.
C. The amplifier helped the signal gain intensity.
D. None of the above

Directions (81-85): Read the passage carefully and choose the best answer to each question out of the four alternatives.

The buzzword of police "reform" is upon us once again with the Union Cabinet approving a Rs.25, 000 crore outlay for upgrading the internal security apparatus in States. An umbrella scheme, "Modernization of Police Forces", has been cleared, with the government projecting this as "one of the biggest moves towards police modernization in India".

It is big money, especially the Centre's contribution of about 75%, with the promise that gaps in police transport, weaponry, communications, and forensic support among others will be met. The funds are to be rolled out over the next three years, with the Centre contributing Rs.18, 636 crore and States Rs.6, 424 crore along the lines of the established police "modernization" model. Under the scheme, Jammu and Kashmir, the Northeastern States and those affected by Maoist violence are to receive special focus.

In the absence of a comprehensive policy document in the public domain that details the benchmarks of this scheme, several questions arise. It is important to cut through the hype and get to the model of reform being propagated, and be reminded of the essential reforms aimed at democratizing the police which are still being firmly resisted by States and the Centre.

81. How much money has been sanctioned to reform the police department?

A. 20,000 crores

B. 25,000 crores

C. 15,000 crores

D. 35,000 crores

82. What is Centre's contribution in the totally money mentioned in the passage?

A. 75%

B. 77%

C. 65%

D. 100%

83. Which umbrella scheme has been talked about in the given paragraph?

A. Welfare scheme run by Police department

B. Normalization of Issues

C. Democratization of Army

D. Modernization of Police Forces"

84. According to the paragraph, which of the following states will receive special focus under the scheme?

A. those affected by Maoist violence

B. Jammu and Kashmir and those affected by Maoist violence

C. Jammu and Kashmir, the Northeastern States and those affected by Maoist violence

D. None of these

Scanned by CamScanner

What is the synonym of the given word 'propagate' in the paragraph?

A. dissection

B. decimate

C. disseminate

D. None of these

Directions(86-90): Choose the grammatically Incorrect sentence from the given sentences.

86. a) Though providing leadership to oppose both the disruption and destruction of our value system is essential, that alone will not do.
b) Our integrity, commitment to values and our attitudes are etched and stored in digital mode.
c) we must be careful in our utterance lest they come back to haunt us.
d) Our taxing regime must be far more humane then it is today.
A. Only a
B. Only a & b
C. Only c & d
D. No Error

87. a) The world have changed radically.
b) The communication revolution has eliminate the concept of distance.
c) Proximity is the order of the day.
d) Every word we utter is heard with rapt attention.
A. Only a
B. Only a & b
C. Only b & c
D. No Error

88. a) Politics must be grounded to solve the problems of today.
b) While a party may draw inspiration from the past, it must live in the present.
c) The laurels of the past will not serve the present.
d) The present is far more dynamic than the past ever was.
A. Only a
B. Only a & b
C. Only b & c
D. No Error

89. a) Political parties must be alive to this and have an army of digital soldiers to guide and educates.
b) More important is the ability of a political party to sensitise itself to the most fundamental issue of the people.
c) The two areas of concern to every home are educating children and health-care facilities for the family.
d) We need a transformational education policy and a radically different mechanism for delivery.
A. Only a
B. Only a & b
C. Only b & c
D. No Error

90. a) Those details must be work out after thoughtful debate.
b) A similar exercises must be done with reference to the delivery of health care.
c) Existing systems of education and health care suffer from a deep malaise.
d) Any proposed solution must take that into account.
A. Only a
B. Only a & c
C. Only a & b
D. No Error

Scanned by CamScanner

91.

Assume that float takes 4 bytes, predict the output of following program.

```
#include <stdio.h>

int main()
{
   float arr[5] = {12.5, 10.0, 13.5, 90.5, 0.5};
   float *ptr1 = &arr[0];
   float *ptr2 = ptr1 + 3;

   printf("%f ", *ptr2);
   printf("%d", ptr2 - ptr1);

   return 0;
}


}
```

A. 90.500000 3
B. 90.500000 12
C. 10.000000 12
D. 0.500000 3

92.

```
#include<stdio.h>
int main()
{
  int a;
  char *x;
  x = (char *) &a;
  a = 512;
  x[0] = 1;
  x[1] = 2;
  printf("%d\n",a);
  return 0;
}
```

What is the output of above program?

A. Machine dependent
B. 513
C. 258
D. Compiler Error

93.

```
int main()
{
 char *ptr = "UEM";
 printf("%c\n", *&*&*ptr);
 return 0;
}
```

A. Compiler Error
B. Garbage Value
C. Runtime Error
D. U

Scanned by CamScanner

94.

```
#include<stdio.h>
void fun(int arr[])
{
 int i;
 int arr_size = sizeof(arr)/sizeof(arr[0]);
 for (i = 0; i < arr_size; i++)
    printf("%d ", arr[i]);
}

int main()
{
 int i;
 int arr[4] = {10, 20 ,30, 40};
 fun(arr);
 return 0;
}
```

A. 10 20 30 40
B. Machine Dependent
C. 10 20
D. Nothing

95.

```
#include<stdio.h>
int main()
{
   int *p = (int *)malloc(sizeof(int));

   p = NULL;

   free(p);
}
```

A. Compiler Error: free can't be applied on NULL pointer
B. Memory Leak
C. Dangling Pointer
D. The program may crash as free() is called for NULL pointer.

96.

What is the return type of malloc() or calloc()

A. void *
B. Pointer of allocated memory type
C. void **
D. int *

97.

```
#include<stdio.h>

int main()
{
 int a[] = {1, 2, 3, 4, 5, 6};
 int *ptr = (int*)(&a+1);
 printf("%d ", *(ptr-1) );
```

Scanned by CamScanner

return 6;
}

A. 1
B. 2
C. 6
D. Runtime Error

98.

Consider the following declaration of a two-dimensional array in C:

char a[100][100];

Assuming that the main memory is byte-addressable and that the array is stored starting from memory address 0, the address of a[40][50] is

A. 4040
B. 4050
C. 5040
D. 5050

99.

Predict output of following program

```
int main()
{
  int i;
  int arr[5] = {1};
  for (i = 0; i < 5; i++)
    printf("%d ", arr[i]);
  return 0;
}
```

A. 1 followed by four garbage values
B. 1 0 0 0 0
C. 1 1 1 1 1
D. 0 0 0 0 0

100.

What does the following fragment of C-program print?

```
char c[] = "GATE2011";
char *p = c;
printf("%s", p + p[3] - p[1]);
```

A. GATE2011
B. E2011
C. 2011
D. 011

Scanned by CamScanner