M.Sc in Computational Science

Set No. 1 Question Booklet No.

16P/301/7

(To be filled up by the candidate by blue/black ball-point pen)

Roll No. | | | | | | | | | | |

Roll No. (Write the digits in words) ..... Code No (471) .....

Serial No. of OMR Answer Sheet .....

Day and Date ..... (2016)

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INSTRUCTIONS TO CANDIDATES

(Use only ***blue/black ball-point pen*** in the space above and on both sides of the **Answer Sheet**)

1. Within 30 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall ***except the Admit Card without its envelope***.
3. ***A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.***
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. ***On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.***
6. ***No overwriting is allowed in the entries of Roll No., Question Booklet no. and Set no. (if any) on OMR sheet and Roll No. and OMR sheet no. on the Question Booklet.***
7. ***Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfairmeans.***
8. ***Each question in this Booklet is followed by four alternative answers. For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet.***
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).*
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit only **OMR *Answer Sheet*** at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

Total No. of Printed Pages : 48

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण पृष्ठ पर दिये गए हैं।]

95

ROUGH WORK
रफ़ कार्य

16P/301/7

No. of Questions : 150

Time : $2\frac{1}{2}$ Hours ***Full Marks : 450***

Note : (1) Attempt as many questions as you can. Each question carries **3 (Three)** marks. ***One mark will be deducted for each incorrect answer***. **Zero** mark will be awarded for each unattempted question.

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

01. Consider the following segment of C program :

```
int x, y, n;
x = 1;
y = 1;
if ( n > 0 )
    x = x + 1;
else
    y = y – 1 ;
```

After execution of above program segment the value of x and y if n=1 is :

(1) x = 2, y = 0 (2) x = 1, y = 0

(3) x = 1, y = 1 (4) x = 2, y = 1

02. Consider the following segment of C program :

```
int i, j ;
j = 0 ;
for ( i = 0 ; i < = 5 ; i = i + 2/3)
    {
      j = j + 1;
    }
```

The number of times the body of for loop is executed :

(1) 9 (2) 8

(3) infinite (4) 11

03. How many of the following declarations are correct ?

```
Int x ;
float letter, DIGIT ;
double = p, q
m, n, z : INTEGER
long int m ; count ;
long float temp ;
```

(1) Three are correct (2) One is correct

(3) Two are correct (4) All six are incorrect

04. Consider the following :

(i) 0.0001 (ii) 5z1.15 (iii) 99999 (iv) +100 (v) 74.45 E–2

(vi) "15.75$" (vii) –45.6 (viii) –1.79 e+4 (ix) 0.00001234

The invalid constant are :

(1) ii, v, vi, viii (2) ii, v

(3) vi, viii, ix (4) ii, iv, ix

05. Consider the following logical expression :

(i) a > b || a < c (ii) a < b || a > c (iii) a = = c & & b > a

(iv) b > 5 || c < 0 & & a > 0

If a = 5, b = 10, and c = –6, then the value of expression are :

(1) F, T, F, T (2) F, T, T, T

(3) F, T, F, F (4) T, F, F, T

06. Consider the following segment of C program

```
main( )
        {
          int c = 0, d = 5, e =10, a ;
          a = c > 1 ? d > 1 || e > 1 ? 100 : 200 : 300 ;
          printf ("a = % d" a) ;
        }
```

What will be the output of the above program :

(1) a = 100 (2) a = 200

(3) a = 300 (4) a = 0

07. Consider the following C segment :

```
Main( )
 {
    int j, x ;
    x = 0 ;
   for (j = 0; j < = 5; j++)
      {
          switch ( j + 1 )
```

```
{
case 0:
case – 1 :
    x + = 1;
        break;
     case 1:
    case 2:
    case 3:
            x + = 2;
            break;
    default:
            x + = 3;
    }
printf (" % d", x);
}
}
```

The output of the above program :

(1) 1, 2, 4, 6, 8, 11 (2) –1, 0, 1, 2, 3, 4

(3) 2, 4, 6, 9, 12, 15 (4) 1, 2, 3, 4, 5

08. Consider the following C program :

```
Main( )
 {
  int size = 5;
  int arr [ 5 ] = {1, 2, 3, 4, 5};
  for ( i = 1; i < = size; i ++)
        {
            in ( i  > 3)
```

```
        break;
else
        printf ( " \n % d ", arr [i] ) ;
        continue ;
}
        getch( );
    }
```

The output of the program :

(1) 1, 2, 3, 4, 5
(2) 2, 3, 4, 5
(3) 1, 2, 3
(4) 1, 2, 3, 4

09. Consider the following C program :

```
Main( )
{
int num 1, num 2;
scanf (" % 2 d % 5 d", & num 1, & num 2);
printf (" % d % d", num 1, num 2) ;
}
```

If the data input to the program 31426 and 50, then the output will be :

(1) 31426, 50
(2) 50, 31426
(3) 31, 426
(4) 3142, 650

10. Consider the following C program :

```
main( )
{
   int num 1, num 2, num 3 ;
   scanf (" % d % *d%d", & num 1, & mun 2, & num 3) ;
   printf (" % d % d ", num 1, num 2) ;
}
```

If the data input to the program 123, 456, and 789 then the output will be :

(1) 123, 789
(2) 123, 456
(3) 456, 789
(4) 12, 34

11. Consider the following C program :

```
main( )
{
   int a, val;
   float b ;
   char name [30] ;
   val = scanf (" % d % f % s", & a, & b, name) ;
   printf ( " % d", val) ;
}
```

If the data input to the program is 20, motor, and 150.25 then the output will be :

(1) 3 (2) 2

(3) 0 (4) 1

12. Consider the following C program :

```
main( )
{
      printf (" % 06 d", 9876);
}
```

If input to the program is new delhi 110 002, then the output will be :

(1) 9876 (2) 009876

(3) 987600 (4) 09876

13. Consider the following segment of C program :

```
int x, y, z ;

z = ( x = 10, y = 5, x + y ++) ;
```

value of z and y after execution of the above segment is :

(1) z = 15, y = 5 (2) z = 16, y = 6

(3) z = 15, y = 6 (4) z = 16, y = 5

14. Minimum size of character array required to store word "WELLDONE" is :
(1) 1 (2) 9 (3) 8 (4) 10

15. Consider the following declaration of array is C language :

float B [20] ;

The address of the first element of the array B is obtained by :
(1) B [0] (2) &B
(3) B (4) *B

16. Consider the following declaration of array is C language :

int B [20];

which expression gives the 10^{th} element of the array :
(1) B [9] (2) * (B + 9)
(3) * B [10] (4) (1) and (2) both

17. The C standard function used to convert the lower case string to upper case and vice-versa is :
(1) strlwr, strupr (2) strlr, strup
(3) lwrstr, uprstr (4) lrstr, upstr

18. The header file needed to include to use function *isprint( )* and *isspace( )* is :
(1) stdlib.h (2) stdio.h
(3) conio.h (4) math.h

19. Which statement is true ?
(1) * has higher precedence than/
(2) * has lower precedence/
(3) * and/have same precedence
(4) /is evaluated first and than *

20. Which is keyword in ANSI C ?

(1) long int (2) isdigit (3) strlen (4) sizeof

21. ANSI C keyword used to declare structure and union is :

(1) struct, union (2) typedef, union

(3) struct, enum (4) struct, typedef

22. In union :

(1) each member has common memory location

(2) each member has its own memory location

(3) same data type member share common memory space

(4) same data type member has its own memory

23. Consider the following ANSI union :

```
union item
  {
     int   m;
     float x;
     char  c;
  };
```

Total memory location required to store any union variable of type item is :

(1) 2 byte (2) 4 byte

(3) 6 byte (4) 7 byte

24. Which of the following file opening modes would destroy the file being opened, if the file already exists on the disk ?

(1) "rb + " (2) "wb + "

(3) " ab + " (4) "r +"

25. Which of the following functions is more versatile for positioning the file pointer in a file ?

(1) fseek( ) (2) rewind( )

(3) ftell( ) (4) fpos( )

26. Consider the following C program :

```
int i;
i = 1 ;
i = i + 2 * i++;
printf ( % d, i) ;
```

The output of the program will be :

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

27. Consider the following C program :

```
main( )
{
int x = 5 ;
printf ( " % d % d%d\n", x, x << 2, x >> 2) ;
}
```

the output of the program will be :

(1) 5 19 9 (2) 5 20 1

(3) 5 16 5 (4) 5 20 2

28. Consider the following C program :

```
main( )
{
int x = 20, y = 35;
x = y++ +x++ ;
y = ++y+ ++x;
Printf ("%d%d\n", x,y);
}
```

The output of the program will be :

(1) 55 93 (2) 56 94

(3) 57 94 (4) 57 93

29. Consider the following C program :

```
main( )
{
int i = 0;
for ( i = 0; i < 20 ; i ++ )
{
Switch(i)
{
case 0 : i + = 5 ;
case 1 : i + = 2 ;
case 5 : i + = 5 ;
default i + = 4 ;
break ;
}
printf ( " % d," , i ) ;
}
}
```

The output of the program will be :

(1) 0, 5, 9, 13, 17 (2) 5, 9, 13, 17

(3) 12, 17, 22 (4) 16, 21

30. Consider the following C program :

```
main( )
{
static i = 3;
printf ( " % d", i--) ;
return i > 0 ? main( ) : 0;
}
```

The output of the program will be :

(1) 321 (2) 333

(3) 000 (4) 111

31. Consider the following C program :

```
void main( )
{
int i = 7 ;
printf ( " % d", i++*i++) ;
}
```

The output of the program will be :

(1) 49 (2) 64 (3) 56 (4) 7*7

32. Consider the following C program :

```
main( )
{
int i = 4, j = 7 ;
j = j || i ++ && printf ( " YOU CAN" );
printf ( " % d % d", i, j) ;
}
```

The output of the program will be :

(1) YOU CAN (2) 4 0

(3) 4 7 (4) 4 1

33.

```
main( )
{
int i = 10, j = 20 ;
if (i, j)
{
if (i,j)
j = i;
else
j = j;
```

```
{
else
j = j;
printf ( " % d%d",i, j);
}
```

The output of the program will be :

(1) 10 20 (2) 20 20

(3) 10 10 (4) 20 10

34. Consider the following C program :

```
#define prod ( a, b) a*b
main( )
{
int x = 3, y = 4;
printf ( " % d", prod (x + 2, y – 1)) ;
}
```

The output of the program will be :

(1) 12 (2) 15

(3) 10 (4) 11

35. Consider the following C program :

```
void main( )
{
char a[ ] = "12345\0"
int i = strlen (a);
printf ( "here in 3 % d\n", ++i);
}
```

The output of the program will be :

(1) here in 3 6 (2) here in 3 5

(3) here in 3 7 (4) here in 3 8

36. Consider the following C program :

```
main( ){
int a = 0; int b = 20; char x = 1; char y = 0;
if ( a, b, x, y)
printf ( "hello" );
else
printf ( " HELLO" )
}
```

The output of the program will be :

(1) hello (2) 1

(3) 0 (4) HELLO

37. Consider the following C program :

```
main( )
{
int i = 5, j = 6, z;
printf (" % d", i +++ j) ;
}
```

The output of the program will be :

(1) 12 (2) 11

(3) 5+6 (4) 6

38. Consider the following C program :

```
main( )
{
int *j. ;
{
int i = 10;
j = & i;
}
printf ( " % d", * j);
}
```

The output of the program will be :

(1) 10 (2) 2

(3) 4 (4) Address of j

39. Consider the following C program :

```
enum colors { BLACK, BLUE, GREEN }
main( )
{
printf (" % d.. % d..% d", BLACK, BLUE, GREEN);
return(1);
}
```

The output of the program will be :

(1) 0 1 2 (2) 012

(3) 0..1..2 (4) 1..2..3

40. Consider the following C program :

```
# define square(x) x*x
main( )
{
int i ;
i = 64/square (4);
printf (" % d", i) ;
}
```

The output of the program will be :

(1) 4 (2) 16

(3) 64 (4) 32

41. How many AND gates are required to realize Y = CD + EF + G

(1) 4 (2) 5

(3) 3 (4) 2

42. When simplified with Boolean Algebra (x + y) (x + z) simplifies to :

(1) x (2) x + x (y + z)

(3) x (1 + yz) (4) x + yz

43. What is the binary equivalent of the decimal number 368 :

(1) 101110000 (2) 110110000

(3) 111010000 (4) 111100000

44. The decimal equivalent of hex number 1A53 is :

(1) 6793 (2) 6739

(3) 6973 (4) 6379

45. $(734)_8 = (\quad)_{16}$

(1) C 1 D (2) D C 1

(3) 1 C D (4) 1 D C

46. EPROM contents can be erased by exposing it to :

(1) Ultraviolet rays (2) Infrared rays

(3) Burst of microwaves (4) Intense heat radiations

47. The hexadecimal number 'A0' has the decimal value equivalent to :

(1) 80 (2) 256 (3) 100 (4) 160

48. The digital logic family which has minimum power dissipation is :

(1) TTL (2) RTL

(3) DTL (4) CMOS

49. The 2' s complement of the number 1101101 is :

(1) 0101110 (2) 0111110

(3) 0110010 (4) 0010011

50. Words having 8-bits are to be stored into computer memory. The number of lines required for writing into memory are :

(1) 1. (2) 2. (3) 4. (4) 8.

51. A system of homogeneous linear equation $AX = 0$ may have a non trivial solution if :

(1) A is skew symmetric (2) A is non singular matrix

(3) A is singular matrix (4) A is of full rank

52. The locus of point of intersection of three mutually perpendicular tangent planes to a paraboloid is :

(1) a sphere (2) a circle

(3) a plane (4) a straight line

53. The domain of a real valued function $f(x) = \frac{1}{\sqrt{6x - x^2 - 8}}$ is :

(1) R (2) $(0, \infty)$

(3) (2, 4) (4) [2, 4]

54. The function f (x) = cos 2x is decreasing on :

(1) $\left(0, \frac{p}{2}\right)$ (2) $(0, p)$

(3) $\left(-\frac{p}{2}, \frac{p}{2}\right)$ (4) $\left(-\frac{p}{4}, \frac{p}{4}\right)$

55. If [x] denotes greatest integer function then the value of the function [x sin x] at $x = \frac{p}{2}$ is :

(1) 1 (2) $\frac{p}{2}$ (3) 2 (4) p

56. The equation to a plane in normal form is :

(1) $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$ (2) $lx + my + nz = p$

(3) $\frac{x}{l} + \frac{y}{m} + \frac{z}{n} = 1$ (4) $ax + by + cz + d = 0$

57. The angle between the lines x = 1, y = 2 and y = –1 and z = 0 is :

(1) 90^0 (2) 30^0

(3) 60^0 (4) 0^0

58. The centre of the sphere which passes through points (a, 0, 0), (0, b, 0), (0, 0, c) and (0, 0, 0) is :

(1) $\left(\frac{a}{2}, 0, 0\right)$ (2) $\left(0, \frac{b}{2}, 0\right)$

(3) (a, b, c) (4) $\left(\frac{a}{2}, \frac{b}{2}, \frac{C}{2}\right)$

59. If O be the origin and P (2, 3, 4) and Q (1, b, 1) be two points, then the value of b, such that OP and OQ are mutually perpendicular is :

(1) 2 (2) –2 (3) 1 (4) –1

60. The rank of the matrix $\begin{pmatrix} 2 & -6 & 4 \\ 1 & -3 & 2 \\ -1 & 3 & -2 \end{pmatrix}$ is :

(1) 0 (2) 1 (3) 2 (4) 3

61. The rank of the linear transformation $T:R^2 \rightarrow R^2$ given by $T(x, y) = (x - y, y - x)$ is :

(1) 0 (2) 1

(3) 2 (4) Cannot determine

62. The general solution of the differential equation $(D^3 + 3D^2 + 2D)y = 0$ is :

(1) e^{-x} (2) $C_1 e^{-x} + C_2 e^{-2x}$

(3) $C_1 + C_2 e^{-x} + C_3 e^{-2x}$ (4) $C_1 + C_2 e^{x} + C_3 e^{2x}$

63. If L [F (t)] = f (s) then L [t^2 F (t)] is :

(1) s^2 f (s)

(2) s f (s)

(3) $\frac{df}{ds}$

(4) $\frac{d^2f}{ds^2}$

64. The general solution of the differential equation (x + $2y^3$) $\frac{dy}{dx}$ − y is :

(1) $y = x^3 + cx$

(2) $x = y^3 + cy$

(3) $y = x^3 + cy$

(4) $x = y^3 + cx$

65. The radius of curvature of a curve x = a cos t, y = a sin t at the point t = $\frac{p}{2}$ is given by :

(1) a

(2) 1

(3) 0

(4) $\frac{1}{a}$

66. Let f (x, y) is a homogeneous function of two variables of degree 2 then the value of $x\frac{\partial f}{\partial x} + y\frac{\partial f}{\partial y}$ is :

(1) f

(2) 2f

(3) 0

(4) − f

67. The value of $\Gamma\left(\frac{1}{2}\right)$ is :

(1) $\left(\frac{1}{2}\right)$

(2) 2

(3) p

(4) $\sqrt{p}$

68. The value of $\int_0^{\frac{p}{2}} \frac{\sin^{2016} x}{\sin^{2016} x + \cos^{2016} x}\, dx$ is :

(1) p (2) $\frac{p}{2}$ (3) $\frac{p}{4}$ (4) 0

69. If $a_n = \sin \frac{n p}{2} + \frac{(-1)^n}{n}$ $n \in N$, then limit superior of sequence a_n is :

(1) $\overline{\lim}\, a_n = -1$ (2) $\overline{\lim}\, a_n = 0$

(3) $\overline{\lim}\, a_n = 1$ (4) $\overline{\lim}\, a_n = \infty$

70. Which of the following set is convex :

(1) $\{ (x, y) : x^2 + y^2 \geq 1 \}$ (2) $\{ (x, y) : y^2 \geq x \}$

(3) $\{ (x, y) : 3x^2 + 4y^2 \geq 5 \}$ (4) $\{ (x, y) : y \geq 2, y \leq 4 \}$

71. Let X_1 and X_2 are optimal solutions of a linear programming problem, then :

(1) $X = ?X_1 + (1-?) X_2, ? \in R$ gives an optimal solution

(2) $X = ?X_1 + (1-?) X_2, 0 \leq ? \leq 1$ gives an optimal solution

(3) $X = ?X_1 + (1+?) X_2, 0 \leq ? \leq 1$ gives an optimal solution

(4) $X = ?X_1 + (1+?) X_2, ? \in R$ gives an optimal solution

72. The region represented by the inequation system $x, y \geq 0, y. \leq 6, x + y \leq 3$ is :

(1) Unbounded in first quadrant

(2) Unbounded in first and second quadrant

(3) Bounded in first quadrant but unbounded in second quadrant

(4) Bounded in first and second quadrant both

73. The value of objective function is maximum under linear constraints :

(1) At the centre of feasible region

(2) At (0, 0)

(3) At any vertex of feasible region

(4) The vertex which is maximum distance from (0, 0)

74. If $\vec{a}$ is any vector, then $\left(\vec{a}\times\hat{i}\right)^2+\left(\vec{a}\times\hat{j}\right)^2+\left(\vec{a}\times\hat{k}\right)^2$ is equal to :

(1) $\vec{a}^2$ (2) $2\vec{a}^2$

(3) $3\vec{a}^2$ (4) $4\vec{a}^2$

75. If vector $\vec{b}=3\hat{i}+4\hat{k}$ is to be written as the sum of a vector $\vec{\alpha}$ parallel to $\vec{a}=\hat{i}+\hat{j}$ and a vector $\vec{\beta}$ perpendicular to $\vec{a}$, then the vector $\vec{\alpha}$ is :

(1) $\frac{3}{2}\left(\hat{i}+\hat{j}\right)$ (2) $\frac{2}{3}\left(\hat{i}+\hat{j}\right)$

(3) $\frac{1}{2}\left(\hat{i}+\hat{j}\right)$ (4) $\frac{1}{3}\left(\hat{i}+\hat{j}\right)$

76. A unit vector perpendicular to both $\hat{i}+\hat{j}$ and $\hat{j}+\hat{k}$ is :

(1) $\hat{i}-\hat{j}+\hat{k}$ (2) $\hat{i}+\hat{j}+\hat{k}$

(3) $\frac{1}{\sqrt{3}}\left(\hat{i}+\hat{j}+\hat{k}\right)$ (4) $\frac{1}{\sqrt{3}}\left(\hat{i}-\hat{j}+\hat{k}\right)$

77. If O is the origin, OP = 3 with direction ratios proportional to -1, 2, –2 then the coordinates of P are :

(1) (–1, 2, –2) (2) (1, 2, 2)

(3) (–1/9, 2/9, –2/9) (4) (3, 6, –9)

78. If a line makes angles a, ß, ?, d with four diagonals of a cube, then $\cos^2 a + \cos^2 ß + \cos^2 ? + \cos^2 d$ is equal to :

(1) 1/3 (2) 2/3

(3) 4/3 (4) 8/3

79. The value of $\int_0^1 x(1-x)^{99}\,dx$ is equal to :

(1) $\frac{1}{10100}$ (2) $\frac{11}{10100}$

(3) $\frac{1}{10010}$ (4) $\frac{11}{11100}$

80. If $I_{10} = \int_0^{\frac{p}{2}} x^{10} \sin x\,dx$, then the value of $I_{10} + 90\, I_8$ is :

(1) $9\left(\frac{p}{2}\right)^9$ (2) $10\left(\frac{p}{2}\right)^9$ (3) $\left(\frac{p}{2}\right)^9$ (4) $9\left(\frac{p}{2}\right)^8$

81. The value of the $\int_0^1 \frac{d}{dx}\left\{\sin^{-1}\left(\frac{2x}{1+x^2}\right)\right\} dx$ is equal to :

(1) 0 (2) p (3) $\frac{p}{2}$ (4) $\frac{p}{4}$

82. The least positive integer n such that $\left(\frac{2i}{1+i}\right)^n$ is a positive integer, is :

(1) 16 (2) 8 (3) 4 (4) 2

83. If $z = 1 - \cos? + i \sin?$, then $|z|$ is equal to :

(1) $2\sin\frac{?}{2}$ (2) $2\cos\frac{?}{2}$

(3) $2\left|\sin\frac{?}{2}\right|$ (4) $2\left|\cos\frac{?}{2}\right|$

84. The value of $(1 + i)^4 + (1 - i)^4$ is :

(1) 8 (2) 4 (3) –8 (4) –4

85. The argument of $\frac{1-i}{1+i}$ is :

(1) $-p/2$ (2) $p/2$ (3) $3p/2$ (4) $5p/2$

86. If $(1 + i)(1 + 2i)(1 + 3i) \ldots \ldots (1 + ni) = a + ib$ then $2.5.10.17 \ldots$ $(1 + n^2)$ is equal to :

(1) $a - ib$ (2) $a^2 - b^2$

(3) $a^2 + b^2$ (4) $(a + b)^2$

87. Polar form of the Complex number $\frac{2+6\sqrt{3}i}{5+\sqrt{3}i}$ is :

(1) $z = 2\left(\cos\frac{p}{3} - i\sin\frac{p}{3}\right)$ (2) $z = 2\left(\cos\frac{p}{3} + i\sin\frac{p}{3}\right)$

(3) $z = 2\left(\cos\frac{p}{6} - i\sin\frac{p}{6}\right)$ (4) $z = 2\left(\cos\frac{p}{6} + i\sin\frac{p}{6}\right)$

88. If $f(x) = (x-a)^2 + (x-b)^2 + (x-c)^2$ then $f(x)$ has a minimum at :

(1) $\frac{a+b+c}{3}$ (2) $\sqrt[3]{abc}$

(3) $\frac{3}{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}}$ (4) $\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)^{\frac{1}{3}}$

89. If $y = e^x$ is part of Complementary function of $\frac{d^2y}{dx^2} + P\frac{dy}{dx} + Qy = R$, then :

(1) $1 + P + Q = 0$ (2) $1 - P - Q = 0$

(3) $1 - P + Q = 0$ (4) $1 + P - Q = 0$

90. Particular Integral of $\frac{d^2y}{dx^2} + 9y = \sin 3x$ is :

(1) $-\frac{x}{6}\cos 3x$ (2) $\frac{x}{6}\cos 3x$

(3) $\frac{x}{6}\sin 3x$ (4) $-\frac{x}{6}\sin 3x$

91. If $\frac{dx}{dt} + 5y = 0$ and $\frac{dy}{dt} - 5x = 0$ then :

(1) $y = A\cos 5t - B\sin 5t$ (2) $y = A\cos 5t + B\sin 5t$

(3) $y = -A\cos 5t + B\sin 5t$ (4) $y = -A\cos 5t - B\sin 5t$

92. The Laplace transform of the function $F(t) = \begin{cases} 1, & 0 \le t \le 2 \\ -1, & 2 \le t \le 4 \end{cases}$ where $f(t+4) = f(t)$ is given by :

(1) $\frac{1-e^{-2s}}{s(1+e^{-2s})}$ (2) $\frac{1+e^{-2s}}{s(1+e^{-2s})}$ (3) $\frac{1-e^{-2s}}{s(1-e^{-2s})}$ (4) $\frac{1+e^{-2s}}{s(1-e^{-2s})}$

93. The Laplace transform of the function $F(t) = t^n e^{-at}$ is :

(1) $\frac{\Gamma(n)}{(s+a)^n}$ (2) $\frac{(n+1)!}{(s-a)^{n+1}}$ (3) $\frac{n!}{(s+a)^n}$ (4) $\frac{\Gamma(n+1)}{(s+a)^{n+1}}$

94. Inverse Laplace transform of $\frac{1}{(s^2+a^2)^2}$ is :

(1) $\frac{1}{2a^3}[\sin at - at\cos at]$ (2) $\frac{1}{2a^3}[\sin at + at\cos at]$

(3) $\frac{1}{2a^3}[-\sin at - at\cos at]$ (4) $\frac{1}{2a^3}[-\sin at + at\cos at]$

95. Fourier series expansion of the function $f(x) = x\cos x$, $-p < x < p$ is :

(1) $\frac{1}{2}\sin x + \frac{4\sin 2x}{2^2-1} + \frac{6\sin 3x}{3^2-1} + \ldots\ldots$

(2) $-\frac{1}{2}\sin x + \frac{4\sin 2x}{2^2-1} - \frac{6\sin 3x}{3^2-1} + \ldots\ldots$

(3) $\frac{1}{2}\sin x - \frac{4\sin 2x}{2^2-1} + \frac{6\sin 3x}{3^2-1} - \ldots\ldots$

(4) $-\frac{1}{2}\sin x - \frac{4\sin 2x}{2^2-1} - \frac{6\sin 3x}{3^2-1} - \ldots\ldots$

96. The sum of the series $\frac{1}{1^2}+\frac{1}{3^2}+\frac{1}{5^2}+\ldots\ldots$ is :

(1) $\frac{\pi^2}{2}$ (2) $\frac{\pi^2}{4}$

(3) $\frac{\pi^2}{8}$ (4) $\frac{\pi^2}{16}$

97. General solution of the Partial differential equation $\frac{\partial^2 z}{\partial x \partial y} = x^2 y$ where $z(x, 0) = x^2$ and $z(1, y) = \cos y$ is :

(1) $z = \frac{1}{6}x^3y^2 + \cos y + \frac{1}{6}y^2 + 1 + x^2$

(2) $z = \frac{1}{6}x^3y^2 + \cos y - \frac{1}{6}y^2 - 1 - x^2$

(3) $z = \frac{1}{6}x^3y^2 + \cos y - \frac{1}{6}y^2 - 1 + x^2$

(4) $z = -\frac{1}{6}x^3y^2 - \cos y + \frac{1}{6}y^2 + 1 - x^2$

98. The Particular Integral of $\left(\frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial x \partial y} - 6\frac{\partial^2 z}{\partial y^2}\right) = xy$ is :

(1) $\frac{xy}{6}+\frac{x^4}{24}$ (2) $\frac{xy^3}{6}+\frac{x^4}{24}$

(3) $\frac{xy^3}{6}-\frac{x^4}{24}$ (4) $\frac{x^3y}{6}+\frac{x^4}{24}$

99. The general solution of $\frac{\partial^4 z}{\partial x^4} - 2\frac{\partial^4 z}{\partial x^3 \partial y} + 2\frac{\partial^4 z}{\partial x \partial y^3} - \frac{\partial^4 z}{\partial y^4} = 0$ is :

(1) $z = f_1(y - x) + x f_2(y - x) + f_3(y + x) + x f_4(y + x)$

(2) $z = f_1(y - x) + f_2(y + x) + x f_3(y + x) + x^2 f_4(y + x)$

(3) $z = f_1(y - x) + x f_2(y - x) + x^2 f_3(y - x) + f_4(y + x)$

(4) $z = f_1(y - x) + x f_2(y - x) + x^2 f_3(y - x) + x^3 f_4(y - x)$

100. The given differential equation $\frac{\partial^2 y}{\partial x^2} - 6\frac{\partial^2 y}{\partial x \partial t} + \frac{\partial^2 y}{\partial t^2} = 0$ is :

(1) Elliptic (2) Parabolic

(3) Hyperbolic (4) Not classified

101. Which of the graph uses only one axis to show the data summary ?

(1) Histogram (2) Line diagram

(3) Box and whisker plot (4) Frequency polygon

102. Select the most appropriate alternative from the following :

In pai chart the data summary is shown by :

(1) Sector angle (2) Radius

(3) Sector area (4) Sector circumference

103. Which of the following are **not** used to get median of data ?

(1) Frequency polygon

(2) Less than cumulative frequency curve

(3) Ogive

(4) Stem leaf plot

104. The most suitable graph to compare temporal data is :

(1) Bar diagram

(2) Histogram

(3) Line diagram

(4) Scatter diagram

105. The height of rectangle in histogram representing frequency distribution with classes of unequal width are proportional to :

(1) Frequency of the class

(2) Cumulative (less than) frequency of the class

(3) Cumulative (greater than) frequency of the class

(4) Frequency density of the class.

106. In a histogram class interval of highest rectangle is 30-40. Which of the following is most appropriate statement ?

(1) Mean lies between 30-40.

(2) Median lies between 30-40

(3) Mode lies between 30-40

(4) Mode and median both lies between 30-40

107. Average temperatures of city A and city B were measured as 20°C and 40°C respectively. Which of the following statement is **not** true ?

(1) Combined average temperature of the cities was 30°C

(2) City B was twice hotter than city A

(3) The average temperature of city A was smaller then city B

(4) Both (1) and (2)

108. Data is being collected about opinion of people regarding " Should we marry our daughters in a family having higher status than ours ?" The data so obtained is called :

(1) Secondary data

(2) Quantitative data

(3) Qualitative data

(4) Discrete data

109. Qualitative research is often exploratory and has all of the following characteristics except :

(1) It is typically used when a great deal is already known about the topic of interest

(2) It relies on the collection of nonnumeric data such as words and pictures

(3) It is used to generate hypotheses and develop theory about phenomena in the world

(4) It uses the inductive scientific method

110. Which of the following is **not** used directly in qualitative data ?

(1) Median (2) Proportion

(3) Ratio (4) Arithmetic mean

111. In a survey of 50 households 30 households were having at least one literate person. Among at least one literate households 70 % while among other households 20 % were having at least one person in job. The percentage of households having at least one person in job was :

(1) 45 (2) 50 (3) 40 (4) 55

112. Choose the most appropriate alternative from the following :

Primary data is :

(1) Collected only when we have related secondary data

(2) Collected for the first time for a specific purpose

(3) The information that already exists in the form of grouped frequency

(4) That data which may have been collected for some other purposes but being used for the first time for the present purpose

113. Census report used as a data is :

(1) Primary data if used for the first time

(2) Primary data whenever used for the first time for a new problem

(3) Secondary data

(4) Secondary data if it is used earlier by someone for same problem

114. The arithmetic mean of marks of 10 students was 70 while the arithmetic mean of marks of first 9 students was also 70. The marks of tenth students was :

(1) 0 (2) 65 (3) 10 (4) 70

115. Let X_i, i = 1, 2 ....., n denotes a data set and its mean, median and mode are 10, 15 and 20 respectively. Which of the following sum will be smallest ?

(1) $\sum_{i=1}^{n}(X_i - 15)^2$ (2) $\sum_{i=1}^{n}(X_i - 10)^2$

(3) $\sum_{i=1}^{n}(X_i - 20)^2$ (4) $\sum_{i=1}^{n}(X_i - 0)^2$

116. If value of each observation in increased by 10 then standard deviation will.

(1) Increase (2) Decrease

(3) Either increase or decrease (4) Neither increase or decrease

117. For a certain data set X, if $\sum(X-20)=25$, $\sum(X-25)=0$, and $\sum(X-30)=-25$, then mean of X is equal to :

(1) 20 (2) 60 (3) 35 (4) 25

118. Which measure of central tendency will be more suitable for following data set :

2, 4, 5, 6, 7, 4, 5, 6, 7, 9, 10, 12, 50

(1) Mean (2) Median

(3) Mode (4) Quartile

119. If a test was very easy, except for a few students who had very low scores, then the distribution of scores would be :

(1) Positively skewed (2) Negatively skewed

(3) Normal (4) None of these

120. Which of the following cannot be negative ?

(1) Mean (2) Median

(3) Mode (4) range

121. The age of 5 children are 1, 2, 3, 4, 5 years. Variance of age is :

(1) 2 years (2) 3 years

(3) 4 years (4) 5 years

122. The daily maximum temperature of Varanasi city was recorded in Celsius for all 31 days of April 2015. The arithmetic mean and geometric mean of these 31 observations were found to be 45^0 C (degree Celsius) and 40^0 C respectively. A 'C' degree Celsius temperature is equal to 'F' degree Fahrenheit (^{0}F) where F = 32 + 9 C/5. If the above data would have been measured in Fahrenheit,

S1 : The arithmetic mean would have been 113^0F.

S2 : The geometric mean would have been 104^0F.

Choose yours answer from the following codes :

(1) Both S1 and S2 are correct.

(2) S1 is correct but S2 is false.

(3) S1 is false but S2 is correct.

(4) Both S1 and S2 are false.

123. If the random variables X and Y are such that $Y = X^2$, then the Pearson's correlation coefficient between X and Y :

(1) Will be always zero

(2) Will be always positive and greater than zero

(3) May be negative, if equally spaced non-negative values of X and corresponding values of Y are taken as data

(4) May be positive, negative or zero depending on the choice values of X and corresponding values of Y

124. An urn contains 'a' white and 'b' black balls. A ball is drawn at random and kept aside without noticing its colour. Then a ball is drawn at random from the remaining balls. The probability of this ball being white is :

(1) $(a - 1) / (a + b)$ (2) $a / (a + b)$

(3) $(a - 1) / (a + b - 1)$ (4) $a / (a + b - 1)$

125. If X is distributed as chi-square with n degrees of freedom, the asymptotic distribution of $\sqrt{(2x)}$ is normal with.

(1) Mean 0 and variance 1 (2) Mean 2n and variance 1

(3) Mean $\sqrt{(2n)}$ and variance 1 (4) Mean $\sqrt{(2n)}$ and variance 4n

126. From population of size 100, a simple random sample drawn by using without replacement method has the observations as 4, 2, 2, 4 and 3.

Assertion (A) : The sample total 15 is not unbiased estimate of population total.

Reason (R) : The given sample cannot be a simple random sample drawn by using without replacement method.

Select your answer from the following codes :

(1) Both A and R is true and R is correct explanation of A

(2) Both A and R is true but R is not correct explanation of A

(3) A is false but R is true

(4) A is true but R is false

127. $X_1, X_2, \ldots\ldots, X_n$ is a random sample from normal population with known mean 9 and unknown variance σ^2.

S1 : $\{(X_1 + X_2 + \ldots\ldots + X_n)^2/n\} - 9n$ is not unbiased estimator of σ^2

S2 : The only unbiased estimator of σ^2 is $\{(X_1^2 + X_2^2 + \ldots\ldots + X_n^2) - (X_1 + X_2 + \ldots\ldots + X_n)^2/n\}/(n-1)$

Choose your answer from the following codes :

(1) Both S1 and S2 are correct (2) S1 is correct but S2 is false

(3) S1 is false but S2 is correct (4) Both S1 and S2 are false

128. A random variable X has mean 10 and variance 25 and Y = a X – b is a standardized variable having mean zero and unit variance, then the value of a and b are respectively :

(1) 0.2, 2 (2) 0.2, 0.5

(3) 2, 0.2 (4) .5, 0.2

129. 3X + 4Y = 11 and 4X + 3Y = 10 are the equations of the pair of regression lines for a given data. Then :

(1) 3X + 4Y = 11 is the equation of regression of X on Y.

(2) 4X + 3Y = 10 is the equation of regression of Y on X.

(3) Correlation coefficient between X and Y is 0.75.

(4) Variance of X and Y are equal.

130. A random variable X has the cumulative distribution function F(x) given below :

$$F(x) = 0, \text{ if } x \leq 0$$
$$= x, \text{ if } 0 < x \leq 1$$
$$= 1, \text{ if } 1 < x$$

The probability density function corresponding to F(x), if it exists, is denoted by f (x). Then :

S : $f(x) = 1$, if $0 < x < 1$

$= 0$, elsewhere

P : F (x) is discontinuous at x = 0 and x=1.

Choose your answer from the following codes :

(1) Both S and P are true (2) S is true but P is false

(3) S is false but P is true (4) Both S and P are false

131. Which of the following pair (A, B) of events is mutually exclusive, in the random experiment of tossing of a coin four times ?

(1) A : Obtaining at least two heads, B : Obtaining at most two tails.

(2) A : Obtaining at least two heads, B : Obtaining at least two tails.

(3) A : Obtaining at least three heads, B : Obtaining at most three tails.

(4) A : Obtaining at least three heads, B : Obtaining at least three tails.

132. Read the following statements :

S1 : Classical definition of probability sometimes fails to provide the measure of uncertainty even when the sample space (space of outcomes) is discrete and finite.

S2 : Statistical definition only provides a frequentist's interpretation of probability.

Choose the most appropriate answer from the following codes :

(1) Both S1 and S2 are correct.

(2) S1 is correct but S2 is incorrect.

(3) S1 is incorrect but S2 is correct.

(4) Neither S1 nor S2 are correct.

133. An unbiased coin is tossed until a head is obtained or the total number of tosses becomes 7. An event 'A' is defined as' The coin is tossed at least 3 times'. In this context read the following statements carefully :

S1 : The total number of mutually exclusive and exhaustive outcomes is 8.

S2 : The number of outcomes favourable to the event A is 3.

Choose the correct answer from the following codes :

(1) Both S1 and S2 are correct.

(2) S1 is correct but S2 is incorrect.

(3) S1 is incorrect but S2 is correct

(4) Neither S1 nor S2 are correct.

134. In an examination the percentage of male and female candidates are 60 and 40 respectively. If 80 percent of the students have passed the examination, the percentage of females passing the examination is at least.

(1) 20 percent

(2) 50 percent

(3) 80 percent

(4) 100 percent

135. A and B are two events. $\overline{A}$ and $\overline{B}$ denote the compliment of A and B respectively. The event C denotes the happening of exactly one out of A and B.

S1 : $C = (A \cap \overline{B}) \cup (\overline{A} \cap B)$

S2 : $C = (A \cup B) \cap (\overline{A} \cup \overline{B})$

S3 : $P(C) = P(A) + P(B) - 2P(A \cap B)$

(1) Only S1 and S2 are true. (2) Only S2 and S3 are true.

(3) Only S1 and S3 are true. (4) S1, S2 and S3 all are true.

136. Five sticks of length 1, 3, 5, 7 and 9 meters are given. Three are selected at random. The probability that selected sticks can form a triangle is :

(1) 1/10 (2) 2/10 (3) 3/10 (4) 4/10

137. Which of the following pair (A, B) of events is mutually exclusive, in the random experiment of tossing of a coin four times ?

(1) A : Obtaining at least two heads, B : Obtaining at most two tails

(2) A : Obtaining at least two heads, B : Obtaining at least two tails

(3) A : Obtaining at least three heads, B : Obtaining at most three tails

(4) A : Obtaining at least three heads, B : Obtaining at least three tails

138. Read the following statements :

S1 : Classical definition of probability sometimes fails to provide the measure of uncertainty even when the sample space (space of outcomes) is discrete and finite.

S2 : Statistical definition only provides a frequentist's interpretation of probability.

Choose the most appropriate answer from the following codes :

(1) Both S1 and S2 are correct.

(2) S1 is correct but S2 is incorrect

(3) S1 is incorrect but S2 is correct

(4) Neither S1 nor S2 are correct

139. An unbiased coin is tossed until a head is obtained or the total number of tosses becomes 7. An event 'A' is defined as' The coin is tossed at least 3 times'. In this context read the following statements carefully :

S1 : The total number of mutually exclusive and exhaustive outcomes is 8.

S2 : The number of outcomes favourable to the event A is 3.

Choose the correct answer from the following codes :

(1) Both S1 and S2 are correct

(2) S1 is correct but S2 is incorrect

(3) S1 is incorrect but S2 is correct

(4) Neither S1 nor S2 are correct

140. The operation in which the CPU waits for a device to be ready for an I/O operation is :

(1) Buffering (2) Spooling

(3) Polling (4) DMA

141. The amount of ROM needed to implement a 4 bit multiplier is :

(1) 64 bits (2) 128 bits

(3) 1 Kbits (4) 2 Kbits

142. How many distinct binary search trees can be carried out of 4 distinct keys ?

(1) 5 (2) 14 (3) 24 (4) 42

143. Consider the events A and B such that $P(A) = \frac{1}{4}$ $P(B \mid A) = \frac{1}{2}$ and $P(A \mid B) = \frac{1}{4}$ The random variables X and Y are defined as

$X(w) = 1$, if $w \in A$

$= 0$, otherwise

and

$Y(w) = 1$, if $w \in B$

$= 0$, otherwise

which of the following is true ?

(1) $P(X = 0 \cap Y = 0) = 5/8$ (2) $P(X = 0 \cap Y = 1) = 1/8$

(3) $P(X = 1 \cap Y = 0) = 3/8$ (4) $P(X = 1 \cap Y = 1) = 1/8$

144. The distribution function of any random variable is

S1 : always right continuous.

S2 : may be discontinuous at countable number of points

S3 : monotone non-increasing.

Chose the correct answer from the following :

(1) S1 and S2 are true but S3 is false

(2) S2 and S3 are true but S1 is false

(3) S1 and S3 are true but S2 is false

(4) S1 and S2 and S3 all are true

145. The probability mass function of a random variable X is given below :

$f(x) = x/15$; $x = 1, 2, 3, 4, 5$

$= 0$; otherwise.

Then the conditional probability that X lies between $\frac{1}{2}$ and $\frac{5}{2}$ given that X is greater than 1 is :

(1) 1/7 (2) 3/7 (3) 2/15 (4) 1/5

146. Read the following statements carefully in context of the function given below :

$$F(x) = 0 \quad \text{if } x < 0$$
$$= 3c^2, \quad \text{if } 0 \leq x < 1$$
$$= 4c - 7c^2, \quad \text{if } 1 \leq x < 2$$
$$= 9c - 7c^2 - 1, \quad \text{if } 2 \leq x < 3$$
$$= 1, \quad \text{if } 3 \leq x.$$

Assertion (A) : F (x) can be cumulative distribution function of a continuous positive random variable for properly chosen value of 'c'.

Reason (R) : For proper choice of 'c', F (x) is monotone and bounded between 0 and 1. Select your answer from the following codes :

(1) Both A and R is true and R is correct explanation of A

(2) Both A and R is true but R is not correct explanation of A

(3) A is true but R is false

(4) A is false but R is true

147. Read the following statements carefully :

S1 : Poisson distribution is limiting case of Binomial distribution.

S2 : Poisson distribution is limiting case of Negative Binomial distribution.

S3 : Geometric distribution is special case of Negative Binomial distribution.

Choose the correct answer from the following :

(1) S1 and S2 are true but S3 is false

(2) S2 and S3 are true but S1 is false

(3) S1 and S3 are true but S2 is false

(4) S1 and S2 and S3 all are true

148. X is a standard normal distribution. Define.

$$Y = \begin{cases} X & \text{if } |X| \le 1 \\ -X & \text{if } |X| > 1 \end{cases}$$

Then the distribution of Y is :

(1) Uniform over (0, 1)

(2) Uniform over (–1, 1)

(3) Standard normal

(4) Normal but other than standard normal

149. S is the set of positive real numbers less than or equal to 6 i.e. $S = \{x : 0 \le x \le 6\}$. If $A = \{x : 1 \le x \le 3\}$, $B = \{x : 2 < x \le 6\}$ $C = \{x : 3 \le x < 5\}$ and $D = \{x : 0 \le x < 2\}$ which of the following is not correct :

(1) $A \cup B = \{x : 1 \le x \le 6\}$

(2) $B \cup D = S$

(3) $A \cap B = \{x : 2 < x \le 3\}$

(4) $C \cap B = C$

150. In a laboratory, an experiment is repeated everyday till it is successful ; the probability of success is 'p'. The experiment starts on Monday, then the probability that the process of repetition end on Sunday is :

(1) $p(1-p)^5$ (2) $p(1-p)^6$

(3) $(1-p)^5$ (4) $(1-p)^6$

ROUGH WORK
रफ़ कार्य

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली-काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में ***लिफाफा रहित प्रवेश-पत्र के अतिरिक्त,*** लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. *उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।*
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. *उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।*
6. *ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्नपुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्नपुस्तिका पर अनुक्रमांक और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।*
7. *उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।*
8. *प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिए आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।*
9. प्रत्येक प्रश्न के उत्तर के लिए केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. *ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो संबंधित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।*
11. रफ कार्य के लिए प्रश्न-पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा उत्तर-पुस्तिका के अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त *केवल* ***ओ एम आर उत्तर-पत्र*** परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।