Q1. Find the value of expression "2**3**2", where '**' stands for exponentiation

(A) 64 (B) 512 (C) 256 (D) Syntax Error

Q2. Find the value of C-expression "2.0/3.0/2.0"
(A) 0.33 (B) 1.33 (C) 1.66 (D) Syntax Error

Q3. Find the value of C-expression "3 == 4 < 5"
(A) 1 (B) 0 (C) 3 (D) Syntax Error

Q4. Find the value assigned to variable 'a' in the statement "a = a++ ^ a"
(A) 3 (B) 0 (C) 1 (D) Syntax Error

Q5. For any integer variable 'b', the operation "!(b|1)" is always
(A) Odd (B) Even (C) 0 (D) Syntax Error

Q6. For the following C code fragment, find the values of the variables 'a1' and 'a2'.

```
float a1;
int a2;
int x = 5;
a1 = x/2; a2 = x/2.0;
```

(A) a1 = 2.0, a2 = 2 (B) a1 = 2.0, a2 = 2.0
(C) a1 = 2.5, a2 = 2 (D) a1 = 2.5, a2 = 2.5

Q7. For a float variable 'x', the value of "!(x == x)" is
(A) 0 (B) 2 (C) Syntax Error (D) 1

Q8. For the following code fragment, find the value assigned to variable 'f'

```
int f;
int x;
x = 5;
f = x << 2 + x >> 2;
```

(A) 21 (B) 160 (C) 20 (D) 180

Q9. For any integer variable 'x', value of expression "x^(-1)" is equal to
(A) '~x' (B) 0 (C) 'x' (D) 1

Q10. Determine the output of the following C code fragment.

```
{
   float x;
   x = 123.123;
   printf("%2.2f", x);
}
```

(A) 12.12 (B) Syntax Error (C) 123.12 (D) 23.12

Q11. In a certain number system 5+3 is equal to 11. Determine the base of the number system
(A) 7 (B) 8 (C) 9 (D) 10

Q12. Find the value of 'x' if $(72)_x = (101)_8$
(A) 10 (B) 14 (C) Indeterminate (D) 9

Q13. The minimum values of 'x' and 'y', satisfying the relation $(73)_x - (45)_y = (37)_{10}$ are
(A) x = 13 y = 13 (B) x = 8 y = 6
(C) x = 10 y = 13 (D) None of these

Q14. Representation of -2 in 4-bit 1's complement number system is
(A) 0010 (B) 1010 (C) 1110 (D) 1101

Q15. Find the representation of 45 in 6-bit 2's complement number system
(A) 101101 (B) 010011 (C) Cannot be represented (D) 110111

Q16. Find the representation of -5 in 5-bit 2's complement number system
(A) 00101 (B) 11011 (C) 10000 (D) Cannot be represented

Q17. In 4-bit 2's complement number system, 1010 corresponds to decimal
(A) 11 (B) -6 (C) -11 (D) None of these

Q18. Convert the number $(110101011)_2$ to hexadecimal
(A) 1AB (B) D31 (C) D38 (D) D41

Q19. Convert the octal number $(1000)_8$ to hexadecimal
(A) 200 (B) 100 (C) 020 (D) 010

Q20. Represent the decimal number 44 in base 5 number system
(A) Cannot be represented (B) 134 (C) 431 (D) 341

Q21. The number $(512)_6$ in base 8 number system is
(A) 302 (B) 256 (C) 304 (D) 254

Q22. Third generation computers used
(A) Semiconductor diodes (B) Transistors
(C) Vacuum Tubes (D) IC chips

Q23. DRAM stands for
(A) Dynamic RAM (B) Dual RAM (C) Double RAM (D) None of these

Q24. Light pen can be used for
(A) Input (B) Output
(C) Both input and output (D) None of these

Q25. Windows 10 has been commercially introduced in
(A) 2013 (B) 2014 (C) 2015 (D) 2016

Q26. The first compiled programming language is
(A) Algol (B) Pascal (C) COBOL (D) FORTRAN

Q27. LCD stands for
(A) Liquid crystal display (B) Liquid colour display
(C) Liquid coded display (D) Liquid comfortable display

Q28. Which of the following retains data even after power off?
(A) ROM (B) Flash (C) Both A and B (D) None of A or B

Q29. The full form of ASCII is
(A) American Standard Code for Information Interface
(B) American Standard Code for Information Intelligence
(C) American Standard Code for Information Interference
(D) American Standard Code for Information Interchange

Q30. MICR is
(A) Input device
(B) Output device
(C) Both input and output device
(D) None of the above

Q31. Which of the following is a valid variable name in C language?
(A) ab*cd (B) ab_cd (C) _ab_cd (D) Both B and C

Q32. The statement "static int k" is a
(A) Function (B) Definition (C) Declaration (D) Syntax error

Q33. Which of the is a keyword in C
(A) continue (B) next (C) Both A and B (D) then

Q34. Number of "#include" statements in a C program
(A) 0 (B) 1 (C) 2 (D) May be many

Q35. The statement "while (0) do x++;"
(A) x incremented once (B) x not affected
(C) x incremented infinitely (D)Syntax error

Q36. The statement "for(;;);" is
(A) an infinite loop (B) never executed
(C) executed only once (D) Syntax error

Q37. The loop-body can be null for
(A) for loop (B) while-do loop
(C) do-while loop (D) All of them

Q38. The "break" statement within a block takes the control
(A) out of innermost block (B) out of all nested blocks
(C) to the same place (D) to the top of the block

Q39. Find the values of 'x', 'y' and 'z' after executing the following code fragment.

```
x = 10;
y = 15;
z = --x + y++;
```

(A) 9,16,25 (B) 9,16,24 (C) 9,16,23 (D) 10,15,25

Q40. The type of parameter passing for arrays in C-language is
(A) Call-by-value (B) Call-by-name
(C) Call-by-reference (D) Call-by-result

Q41. What will be the output of the following program?

```
int main()
{
```

```
                int a[5] = {3, 4, 10, 12, 20};
                int i, j, k;
                i = ++a[0] + --a[1];
                j = a[1]++ + a[2]--;
                k = a[i/4] + a[j/5];
                printf ("%d %d %d", i, j, k);
          }
```

(A) 6 7 14 (B) 6 7 13 (C) 7 13 13 (D) 7 13 14

Q42. What can you say about the following program?

```
int main()
{
      int a = 1, b = 1, c = 0;
      if (c != b != a)
            printf("TRUE\n");
      else
            printf("FALSE\n");
}
```

(A) Prints "TRUE" (B) Prints "FALSE"
(C) Syntax error (D) Output indeterminate

Q43. What will be the output of the following program?

```
int main()
{
      char a[] = "Master", b[] = "Application", c[100];
      strcpy(c, a);
      b[4] = 0;
      strcat(c, b);
      printf("%s", c);
}
```

(A) MasterAppl (B) Master (C) ApplMaster (D) MasterApplication

Q44. What will be the output of the following code fragment?

```
int a[20];
int *p, *q, *r;
int x;
p = &a[0];
q = a;
x = q - p;
printf("%d ", x);
r = p + 5;
x = r - q;
printf("%d", x);
```

(A) 0 0 (B) 5 5 (C) 0 5 (D) Syntax error

Q45. What will be the output of the following code fragment for x = 1?

```
switch (x)
{
      case 1: printf("Case 1 ");
      case 2: printf("Case 2 ");
                  break;
      case 3: printf("Case 3 ");
}
```

(A) Case 1 (B) Case 1 Case 2

(C) Case 1 Case 2 Case 3 (D) Compilation error

Q46. What will be the output of the following code fragment?

```
void modify(int x, int y, int *z)
{
      x = x + 1;
      y = y + 5;
      *z = x + y;
}
int main()
{
      int x = 3;
      int y = 5;
      int z = 10;
      modify(x, y, &z);
      printf("%d %d %d", x, y, z);
}
```

(A) 4 6 16 (B) 3 5 8 (C) 3 5 14 (D) 3 5 16

Q47. What will be the output of the following program?

```
int main()
{
      char *x, *y, *z;
      char s[10] = "abcdedcba";
      x = strchr(s, 'a'); y = strchr(s+4, 'a');
      printf("%d", y - x);
}
```

(A) 8 (B) 4 (C) 7 (D) 3

Q48. For the statement "scanf("%d;;%d", &x, &y)" how to enter data?

(A) 8 9 (B) 8;;9; (C) 8;;9 (D) Syntax error

Q49. What will be the output of the following program?

```
# define PLUS(x) 5*(x) + 2*x - 2
int main()
{
      int y;
      int x = 3;
      y = PLUS(x+5) + 3;
      printf ("%d", y);
}
```

(A) 52 (B) 49 (C) 29 (D) 27

Q50. What will be the output of the following code fragment? Assume integer to be 4 byte wide and character 1 byte.

```
struct record1
{ int a, b, c;
  union { int a; char c;} abc;
};
printf("%d", sizeof(struct record1));
```

(A) 16 (B) 17 (C) 12 (D) 13

Q51. What will be the output of the following code fragment?

```
float x = 4.0, y;
int b = 5;
y = b/(int)x + b/x;
printf("%f", y);
```

(A) 2.5 (B) 2.25 (C) 2.15 (D) Syntax error

Q52. What will be the output of the following code fragment?

```
char s[10] = "abcd\0abcd";
if (strcmp(s,s+5))
      printf("NO MATCH");
else
      printf("MATCH");
```

(A) MATCH (B) NO MATCH (C) Indeterminate (D) Syntax error

Q53. What will be the output of the following program?

```
int func1 (int a)
{
      if (a <= 0 ) return 1;
      else
            return func1(a-1) + func1(a-2);
}
int main()
{
      int x = 5;
      printf("%d", func1(x));
}
```

(A) 10 (B) 11 (C) 12 (D) 13

Q54. What will be the output of the following program?

```
int p[5], q[10], sum;
int i, j;
for (i = 0; i < 5; i++)
      q[i] = i;
for(j = 0; j < 10; j++)
      p[j] = j;
sum = 0;
for (i = 0; i < 5; i++)
      sum += q[i];
printf("%d", sum);
```

(A) 10 (B) 20
(C) Syntax Error (D) Depends on allocation of p and q

Q55. What will be the output of the following code fragment?

```
int a[10], b[5];
a[9] = 5;
    b[-1] = 6;
b[0] = 7;
printf("%d%d%d", a[9], b[-1], a[10]);
```

(A) 567 (B) 667 (C) Syntax error (D) Depends on allocation of a and b

Q56. For a C program supporting command-line arguments, each argument is a

(A) Character string (B) Integer
(C) Void (D) Character or Integer

Q57. For the following code fragment, what will be the output?

```
union abc {
      int a;
      char b;
} x;
x.a = 65;
printf("%d %c", x.a, x.b);
```

(A) 65 <unknown> (B) Syntax error (C) 65 A (D) 65 65

Q58. What is the output of the following code fragment?

```
int *p1;
struct abc {
      int q;
            float r, s;
} *p2;
if (sizeof(p1) == sizeof(p2))
      printf("Equal");
else
      printf("Not equal");
```

(A) Equal (B) Not equal (C) Indeterminate (D) Syntax error

Q59. Fill in the blank in line 3 of following code fragment to have 10 as value of 'a' after executing the fragment.

```
int a=5;
int *b;
 b = ____;
*b = a + *b;
```

(A) a (B) *a (C) &a (D) 10

Q60. For the following C function, find the value returned by the call "func(5)".

```
int func(int x)
{
      if (x<=0) return 1;
      else return x + func(x-1);
}
```

(A) 13 (B) 14 (C) 15 (D) 16

61. The product of the three positive reals is 1 and their sum is greater than sum of their reciprocals. Exactly one of them is greater than ------

(A) 0 (B) 1 (C) -1 (D) -2

62. Solution of $|3x+2|<1$ is ------

(A) $[-1,-1/3]$ (B) $[-1/3,-1]$ (C) $(-1,-1/3)$ (D) $(1/3,-1/3)$

63. Solution of $2x-3=|x+7|$ is --------

(A) 8 (B) -2,-8 (C) -2 (D) 12

64. The roots z_1,z_2,z_3 of the equation $z^3+3\alpha z^2+3\beta z+\gamma=0$ correspond to the points A,B and C on the complex plane. Then , the triangle is equilateral if ----

(A) $3\alpha^2=\beta^2$ (B) $\alpha=\beta^2$ (C) $\alpha^2=3\beta^2$ (D) $\alpha^2=\beta$

65. If the fourth roots of unity are z_1,z_2,z_3,z_4 then $z_1^2+z_2^2+z_3^2+z_4^2$ is equal to ------

(A) -1 (B) 1 (C) i (D) 0

66. If the cube root of unity are $1,\omega,\omega^2$, then the roots of the equation $(x+1)^3+8=0$ are ---

(A) $-1,1+2\omega,1+2\omega^2$ (B) $-3,-1-2\omega,-1-2\omega^2$ (C) $-1,-1,-1$ (D) $i,-i,-\mathrm{i}$

67. If $n_{C_{12}}=n_{C_8}$, then $n_{C_{17}}$ is equal to -------

(A) 1040 (B) 1240 (C) 1140 (D) 1120

68. The number of words that can be formed from the letters *a ,b, c, d, e, f,* taken 3 at a time , each word containing atleast one vowel is ------

(A) 96 (B) 84 (C) 106 (D) 69

69. In the expansion of $\left(3x-\frac{1}{x^2}\right)^{10}$, the 5th term from the end is ------

(A) $\frac{16486}{x^8}$ (B) $\frac{17010}{x^8}$ (C) $\frac{13486}{x^8}$ (D) $\frac{11256}{x^8}$

70. If $A=\begin{bmatrix}2&4&1\\5&-6&2\\2&1&5\end{bmatrix}$, then the trace of A is ----

(A) -8 (B) -7 (C) -1 (D) 1

71. If $A=\begin{bmatrix}1&0&1\\0&0&0\\1&0&1\end{bmatrix}$, then A^2 is equal to ---

(A) $2A$ (B) A (C) $-A$ (D) $-2A$

72. If $\begin{vmatrix}\alpha&-\beta&0\\0&\alpha&\beta\\\beta&0&\alpha\end{vmatrix}=0$, then ----- is a cube root of unity

(A) α (B) β (C) $\frac{\alpha}{\beta}$ (D) $\alpha\cdot\beta$

73. Number of value of 'a' for which the system of equations, $a^2x+(2-a)y=4+a^2$, $ax+(2a-1)y=a^5-2$ possess no solution is -----

(A) 0 (B) 1 (C) 2 (D) 3

74. The value of the determinant $\begin{vmatrix} 0 & p-q & p-r \\ q-p & 0 & q-r \\ r-p & r-q & 0 \end{vmatrix}$ is -------

(A) 0 (B) pqr (C) $p+q+r$ (D) $(p-q)(q-r)(r-p)$

75. If a 3×3 matrix A has inverse equal to the A, then A^2 is equal to ------

(A) $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ (C) $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 0 \\ 1 & 0 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

76. If the system of equations $x-ky-z=0$, $kx-y-z=0$, $x+y-z=0$ has a non-zero solution, then the possible values of k are-------

(A) -1, 2 (B) 1, 2 (C) 0, 1 (D) -1, 1

77. Two cards are drawn at random from a pack of 52 cards. The probability of getting at least a spade and an ace, is --------

(A) $\frac{1}{34}$ (B) $\frac{1}{26}$ (C) $\frac{8}{22}$ (D) $\frac{2}{51}$

78. A and B draw two cards each, one after another, from a pack of well-shuffled pack of 52 cards. The probability that all the four cards drawn are of the same suit, is -----

(A) $\frac{11}{85\times49}$ (B) $\frac{13}{85\times49}$ (C) $\frac{44}{85\times49}$ (D) $\frac{23}{85\times49}$

79. All the spades are taken out from a pack of cards. From these cards, cards are drawn one by one without replacement till the ace of spades comes. The probability that the ace comes in the 4^{th} draw, is-------

(A) $\frac{1}{13}$ (B) $\frac{12}{13}$ (C) $\frac{4}{13}$ (D) $\frac{2}{13}$

80. In a right angle triangle, then the hypotenuse is four times as long as the perpendicular drawn to it from the opposite vertex. One of the acute angle is ------

(A) 60^0 (B) 45^0 (C) 30^0 (D) 15^0

81. If $A+B+C=\pi$, then $cos^2A+cos^2B+cos^2C$ is equal to -----

(A) $1-\cos A\cos B\cos C$ (B) $1-2\sin A\sin B\sin C$

(C) $1-\sin A\sin B\sin C$ (D) $1-2\cos A\cos B\cos C$

82. If in a ΔABC, $sin^2A+\sin^2B+\sin^2C=2$,then the triangle is always----

(A) Acute angled (B) Obtuse angled (C) Right angled (D) Isosceles triangle

83. If $\sin\alpha\sin\beta-\cos\alpha\cos\beta+1=0$,then the value of $\cot\alpha\tan\beta$ is -------

(A) -1 (B) 0 (C) 1 (D) 2

84. The number of solutions of the equation $5\sec\theta-13=12\tan\theta$ in $[0,2\pi]$, is ------

(A) 0 (B) 2 (C) 4 (D) 6

85. If a,b,c are the sides of a triangle ABC, then $\sqrt{a}+\sqrt{b}-\sqrt{c}$ is always--------

(A) negative (B) non-negative (C) positive (D) non -positive

86. The value of $sin\left(cos^{-1}\frac{3}{5}\right)$ is-------

(A) $\frac{3}{5}$ (B) $\frac{5}{3}$ (C) $\frac{4}{5}$ (D) $\frac{1}{5}$

87. If $sin^{-1}\frac{2a}{1+a^2}+sin^{-1}\frac{2b}{1+b^2}=2tan^{-1}x$,then -----

(A) $x=\frac{a+b}{1-ab}$ (B) $x=\frac{a-b}{1+ab}$ (C) $x=\frac{b-a}{1+ab}$ (D) $x=\frac{b+a}{1+ab}$

88. Three persons A, B and C are to speak at a function along with five others.tf they all speak in random order, the probability that A speaks before B and B speaks before C, is ------

(A) $\frac{3}{8}$ (B) $\frac{5}{8}$ (C) $\frac{5}{6}$ (D) $\frac{1}{6}$

89. Let A and B be two independent events such that $P(A)=\frac{1}{5}$, $P(A\cup B)=\frac{7}{10}$. Then , $P(\overline{B})$ is equal to -------

(A) $\frac{3}{8}$ (B) $\frac{2}{7}$ (C) $\frac{7}{9}$ (D) $\frac{5}{7}$

90. The composite mapping fog, of the maps $f:R\to R$, $f(x)=\sin x; g:R\to R, g(x)=x^2$ is -----

(A) $\sin x+x^2$ (B) $\sin x^2$ (C) $(\sin x)^2$ (D) $\sin x$

91. Let $A=\{1,2,3\}$.We define $R_1=\{(1,2),(3,2),(1,2)\}$, $R_2=\{(1,3),(3,6),(2,1),(1,2)\}$.Then,the relation on A is ------

(A) R_1 and R_2 relation (B) R_1 is relation and R_2 is not

(C) R_1 and R_2 are both non- relation (D) R_1 is reflexive but not R_2

92. If $\{x+3,4-y\}=(1,7)$ then $\{x-3,4+y\}$ is equal to --------

(A) (-2, -3) (B) (-3, 2) (C) (3, 4) (D) (-5, 1)

93. Let $f(x)=x^2-x+1, x\ge\frac{1}{2}$, then the solution of the equation $f^{-1}(x)=f(x)$ is ----------

(A) $x=-1$ (B) $x=-2$ (C) $x=1$ (D) $x=2$

94. The fundamental period of the function $f(x)=2\cos\left(\frac{x-\pi}{3}\right)$ is -------

(A) 8π (B) 6π (C) 3π (D) 2π

95. If $f(x)=3x-5$, then $f^{-1}(x)$ is

(A) $\frac{x+5}{3}$ (B) $\frac{1}{3x-1}$ (C) $\frac{1}{3x-5}$ (D) $\frac{5}{x-3}$

96. The equation of the line passing through the point (2, 3) and perpendicular to the line joining (-5, 6) and (-6, 5) is -------

(A) $x+y+5=0$ (B) $x-y+5=0$ (C) $x-y-5=0$ (D) $x+y-5=0$

97. The value of λ, if the lines $3x-4y-13=0$, $8x-11y-33=0$ and $2x-3y+\lambda=0$ are concurrent, is ---------

(A) 7 (B) -7 (C) 8 (D) -8

98. The straight lines $3x+4y-5=0$ and $4x-3y-15=0$ intersect at the point P. On these lines the point Q and R are chosen so that $PQ=PR$. The slopes of the lines QR passing through (1, 2) are -----

(A) $3,\frac{1}{3}$ (B) $7,\frac{1}{7}$ (C) $-7,\frac{1}{7}$ (D) $-3,\frac{1}{3}$

99. A light ray gets reflected from the line $x=-2$.If the reflected ray touches the circle $x^2+y^2=4$ and point of incident is $(-2,-4)$, then equation of incident ray is -------

(A) $3x+4y+22=0$ (B) $4x+3y+20=0$ (C) $2x+4y+20=0$ (D) $x+y+6=0$

100. $\int \frac{\log}{x^2} dx$ is equal to --------

(A) $\frac{-1}{x}(1+\log x)+c$ (B) $\frac{-1}{x}(x+\log x)+c$ (C) $\frac{-1}{x}(1+\log 2x)+c$ (D) $\frac{-1}{x}(2+\log x)+c$

101. The value of the integral $\int_1^3 |(x-1)(x-2)(x-3)| dx$ is ------

(A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{9}{4}$ (D) 1

102. $\int_0^\infty \left[\frac{2}{e^x}\right] dx$ (where $[.]$ denotes the greatest integer function) equal to -----

(A) e^2 (B) $\frac{2}{e}$ (C) $\ln 2$ (D) 0

103. The value of integral $\int_0^{\pi/2} \sin 2x \cot x \, dx$, where n is positive , is -----

(A) 0 (B) π (C) $\frac{\pi}{2}$ (D) $\frac{\pi}{3}$

104. If $\int_1^x \frac{dt}{|t|\sqrt{t^2-1}} = \frac{\pi}{6}$, then x can be equal to --------

(A) $\frac{2}{\sqrt{3}}$ (B) $\sqrt{3}$ (C) 2 (D) $\frac{1}{\sqrt{3}}$

105. The differential equation of all circles passing through the origin and having their entre on the $x-$axis is -------

(A) $y^2=2xy\frac{dy}{dx}$ (B) $y^2=x^2+2xy\frac{dy}{dx}$ (C) $x^2=2xy\frac{dy}{dx}$ (D) $y^2=x^2-2xy\frac{dy}{dx}$

106. The solution of the differential equation $x\sin\left(\frac{y}{x}\right)dy=\left(y\sin\frac{y}{x}-x\right)dx$ is--------

(A) $\log\left(\frac{x}{y}\right)=\cos\left(\frac{x}{y}\right)+c$ (B) $\log y=\cos\left(\frac{x}{y}\right)+c$

(C) $\log x=\cos\left(\frac{x}{y}\right)+c$ (D) $\log x=\cos\left(\frac{y}{x}\right)+c$

107. If the straight lines $\frac{x-1}{k}=\frac{y-2}{2}=\frac{z-3}{3}$ and $\frac{x-2}{3}=\frac{y-3}{k}=\frac{z-1}{2}$ intersect at a point , then the integer k is equal to----

(A) -5 (B) 5 (C) 2 (D) -2

108. A line with positive direction cosines passes through the point $P(2,-1,2)$ and makes equal angles with the coordinates axes. The line meets the plane $2x+y+z=9$ at point Q. The length of the line segment PQ equals to --------

(A) 1 (B) $\sqrt{2}$ (C) $\sqrt{3}$ (D) 2

109. A plane passing through a fixed point (a,b,c). The locus of the foot of the perpendicular to it from the origin is the sphere ----

(A) $x^2+y^2+z^2-2ax-2by-2cz=0$ (B) $x^2+y^2+z^2-4ax-4by-4cz=0$

(C) $x^2+y^2+z^2-ax-by-cz=0$ (D) $x^2+y^2+z^2+ax+by+cz=0$

110. Radius of circle $\overrightarrow{r^2}+\overrightarrow{r^2}\cdot(2\hat{i}-2j-2k)-19=0$, $\vec{r}\cdot(\hat{i}-2j+2k)+8=0$ is ------

(A) 2 (B) 3 (C) 4 (D) 5

111. The direction cosines of the diagonals of a cube which joins the origin to the opposite corner are (when the three concurrent edges of the cube are coordinate axes)-----

(A) 1, -1, 1 (B) 2,-2, 1 (C) 1, 1, 1 (D) 1, 2, 3

112. If $\vec{a}$ and $\vec{b}$ are two unit vectors inclined at an angle θ such that $\vec{a}+\vec{b}$ is a unit vector, then θ is equal to ----

(A) $\frac{2\pi}{3}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{2}$ (D) $\frac{\pi}{3}$

113. If θ is the angle between vectors $\vec{a}$ and $\vec{b}$ such that $\vec{a}\cdot\vec{b}\geq 0$, then------

(A) $0\leq\theta\leq\pi$ (B) $0\leq\theta\leq\frac{\pi}{2}$ (C) $\frac{\pi}{2}\leq\theta\leq\pi$ (D) $0<\theta<\frac{\pi}{2}$

114. The solution of the differential equation $\frac{d^2y}{dx^2}=e^{-2x}$ is -------

(A) $\frac{e^{-2x}}{4}$ (B) $\frac{e^{-2x}}{4}-cx^2+d$ (C) $\frac{e^{-2x}}{4}+cx^2+d$ (D) $\frac{e^{-2x}}{4}+cx+d$

115. Solution of the differential equation $(x+2y^3)\frac{dy}{dx}=y$ is ------

(A) $x=y^2(c+y^2)$ (B) $x=y(c-y^2)$ (C) $x=y(c+y^2)$ (D) $x=2y(c-y^2)$

116. The equation of a curve passing through $\left(1,\frac{\pi}{4}\right)$ and having slope $\frac{\sin 2y}{x+\tan y}$ at (x,y) is -------

(A) $x=\tan y$ (B) $y=\tan x$ (C) $x=2\tan y$ (D) $y=2\tan x$

117. If $\vec{a}$, $\vec{b}$ are the positions vectors of A, B respectively and C is a point on AB produced such that $AC=3AB$, then the position vector of C is -------

(A) $3\vec{a}+2\vec{b}$ (B) $2\vec{a}+3\vec{b}$ (C) $3\vec{b}+2\vec{a}$ (D) $3\vec{b}-2\vec{a}$

118. $\vec{a}$ and $\vec{b}$ are unit vectors and θ is the angle between them, then $\frac{|\vec{a}-\vec{b}|}{2}$ is ------

(A) $2\sin\theta$ (B) $\sin\theta$ (C) $\sin\frac{\theta}{2}$ (D) $\sin 2\theta$

119. The $\vec{a}$, $\vec{b}$ and $\vec{c}$ are unit coplanar vectors, then the scalar triple product $[2\vec{a}-\vec{b}\quad 2\vec{b}-\vec{c}\quad 2\vec{c}-\vec{a}]$ is equal to -------

(A) -1 (B) 0 (C) 1 (D) 2

120. Negation of the " If it rains , I shall go to School" is ----------

(A) It rains and I shall go to school (B) If does not rains and I shall go to school

(C)) It rains and I shall not go to school (D) If it does rains and I shall go to school