



## PART – A

1. Fill the appropriate pair from the following in the given blanks :

Wait \_\_\_\_\_ I come back and do the second sum \_\_\_\_\_ you finish the first one.

- A) before, when  
B) till, after  
C) since, before  
D) up, after

2. What is incorrect in the following lines ?

When his turn came he mentally bowed to Saraswati the goddess of learning he began his address.

- A) tense  
B) spelling  
C) punctuation  
D) clause

3. Choose the correct spelling from the following :

- A) Monteparnasse  
B) Montparnasse  
C) Montepernasse  
D) Monteparnase

4. Find the appropriate indirect narration of the following sentence :

The teacher said, “The earth moves round the sun.”

- A) The teacher said that the earth moved round the sun.  
B) The teacher told that the earth moved round the sun.  
C) The teacher said that the earth moves round the sun.  
D) The teacher said the earth moves round the sun.

5. Which one is the correct passive voice of the following sentence ?

Ram gave Radha an apple.

- A) An apple was given to Radha by Ram  
B) Apple is given to Radha by Ram  
C) An apple has been given to Radha by Ram  
D) Apple had been given to Radha by Ram.

6. Pick up the correct synonym for Transcendental from the following :

- A) mundane  
B) magnificent  
C) mystical  
D) mythic

7. From which drama of Shakespeare the poem “The Seven Ages of Man” has been extracted ;

- A) As You Like It  
B) Hamlet  
C) Richard II  
D) Tempest



8. Which poem of Alexander Pope contains the following lines :  
“Sol thro’ white curtains shot a tim’rous ray,/And oped those eyes that must eclipse  
the day.”  
A) The Dunciad  
B) An Epistle to Dr. Arbuthnot  
C) The rape of the Lock  
D) Pastorals
9. Who wrote the following lines and in which book ?  
“The mind is its own place, and in itself can make a heaven of hell, a hell of heaven.”  
A) Pope in The Dunciad  
B) Dryden in Absalom and Achitophel  
C) Milton in Paradise Lost  
D) Eliot in The Waste Land
10. Who is the author of “Elegy Written in a Country Churchyard ?”  
A) William Cowper  
B) Thomas Gray  
C) William Wordsworth  
D) James Thomson
11. How many times has Brazil won the World Cup Football Championship ?  
A) Four times      B) Twice      C) Five times      D) Once
12. Jude Felix is a famous Indian player in which of the fields ?  
A) Volleyball      B) Tennis      C) Football      D) Hockey
13. Who built the Jama Masjid ?  
A) Sher Shah Suri  
B) Ala-ud-din Khilji  
C) Aurangzeb  
D) Shahjahan
14. The Reserve Bank of India was established in  
A) 1920      B) 1930      C) 1935      D) 1940
15. The New Development Bank of BRIC countries is based at  
A) Beijing      B) Shanghai      C) St. Petersburg      D) Sao Paulo
16. If  $x = 1 - q$  and  $y = 2q + 1$ , then for what value of  $q$ ,  $x$  will be equal to  $y$  ?  
A)  $-1$       B)  $0$       C)  $\frac{1}{2}$       D)  $2$
17. If  $P\%$  of  $P$  is  $36$ , then  $P$  is equal to  
A)  $15$       B)  $60$       C)  $600$       D)  $3600$







33. Of the 200 candidates who were interviewed for a position at a call center, 100 had a two-wheeler, 70 had a credit card and 140 had a mobile phone. 40 of them had both, a two-wheeler and a credit card, 30 had both, a credit card and a mobile phone and 60 had both, a two wheeler and mobile phone and 10 had all three. How many candidates had none of the three ?
- A) 0                      B) 20                      C) 10                      D) 18
34. There are 12 yes or no questions. How many ways can these be answered ?
- A) 1024                      B) 2048                      C) 4096                      D) 144
35. The process of building new classes from existing one is called
- A) Polymorphism                      B) Structure  
C) Inheritance                      D) Cascading
36. The minimum number of multiplications and additions required to evaluate the polynomial  $P = 4x^3 + 3x^2 - 15x + 45$  is
- A) 6 and 3                      B) 4 and 2  
C) 3 and 3                      D) 8 and 3
37. The data structure required to evaluate a postfix expression is
- A) queue                      B) stack                      C) array                      D) linked-list
38. A queue is a
- A) FIFO (First In First Out) list                      B) LIFO (Last In First Out) list  
C) Ordered array                      D) Linear tree
39. The logical expression  $y = A + \bar{A} B$  is equal to
- A)  $y = AB$                       B)  $y = \bar{A} + B$   
C)  $y = \bar{A} B$                       D)  $y = A + B$
40. Indicate which of the following logic gates can be used to realize all possible combinational Logic functions ?
- A) OR gates                      B) XOR gates  
C) NAND gates                      D) ABC gates
41. The arithmetic mean of the following frequency distribution is

<b>x</b>	1	2	3	4	5	6	7
<b>f</b>	5	9	12	17	14	10	6

- A) 4.096                      B) 2                      C) 3.5                      D) 10





51. A relation R in a set X is said to be equivalence relation, if it is  
 A) reflexive but not symmetric                      B) reflexive but not transitive  
 C) reflexive, symmetric and transitive            D) reflexive, symmetric and negative
52. If  $A = \{1, 2\}$  and  $B = \{2\}$ , then  $A \times B$  is  
 A)  $\{1, 2, 4\}$                       B)  $\{(1,2), (2,2)\}$             C)  $\{2, 4\}$                       D)  $\{(2,1), (2,2)\}$
53. Determinant of  $\begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$  is  
 A) 0                                      B) 12                                      C) -1                                      D) 3
54. If A is a  $2 \times 3$  matrix and B is a  $3 \times 4$  matrix, how many columns does AB have ?  
 A) 2                                      B) 3                                      C) 4                                      D) 8
55. If  $A^T=A$ , then A is called a  
 A) square matrix                                      B) equal matrix  
 C) skew symmetric matrix                            D) symmetric matrix
56. If z and w are two complex numbers and superscript c represents the symbol for complex conjugate, then  
 A)  $(z + w)^c = z^c/w^c$                                       B)  $(z + w)^c = z^c \cdot w^c$   
 C)  $(z + w)^c = z^c + w^c$                                       D)  $(z + w)^c = z^c - w^c$
57. The reciprocal of non-zero complex number  $z = x + iy$  is  
 A)  $\frac{1}{z} = \frac{1}{x} + i\frac{1}{y}$                                       B)  $\frac{1}{z} = \frac{1}{x} - i\frac{1}{y}$   
 C)  $\frac{1}{z} = \frac{x}{x^2 + y^2} + i\frac{y}{x^2 + y^2}$                                       D)  $\frac{1}{z} = \frac{x}{x^2 + y^2} - i\frac{y}{x^2 + y^2}$
58.  $e^{ix}$  is  
 A)  $\cos x + i \sin x$                       B)  $i \log x$                                       C)  $\cos x - i \sin x$                       D)  $\log(ix)$
59. What is the solution of  $x^2 + 5x + 6 = 0$  ?  
 A)  $x = 3, x = 2$                                       B)  $x = 5, x = 6$   
 C)  $x = -3, x = -2$                                       D)  $x = i5, x = -i5$
60. The Gamma function is  
 A)  $\int_0^{\infty} e^{-x} x^{n-1} dx$                       B)  $\int_0^1 x^{m-1} (1-x)^{n-1} dx$                       C)  $\int_0^{\infty} x^{n-1} dx$                       D)  $\int_0^{\infty} e^{-x} (1-x)^{n-1} dx$



61.  $\int_0^{\infty} e^{-x} x^4 dx =$

- A) 4                      B) 5                      C) 24                      D) 5/4

62.  $f(z) = e^z$  is

- A) not analytic at origin  
B) not analytic everywhere in the complex plane  
C) derivative of  $f(z)$  does not exist  
D) analytic everywhere in the complex plane

63. If  $C$  is the circle  $|z - 1| = 2$ , then the value of  $\int_C (2z + 1) dz$  is

- A) 12                      B) 5                      C) 0                      D) 7

64. The Laurent's series expansion of  $f(z) = z^2 e^{1/z}$  about  $z = 0$ .

- A)  $z^2 + z + \frac{1}{2} + \frac{1}{3z} + \frac{1}{4z^2} + \dots + \infty$                       B)  $1 + (z-1) + (z-1)^2 + (z-1)^3 + \dots$   
C)  $\frac{1}{z} + \frac{1}{2z^2} + \frac{1}{3z^3} + \frac{1}{4z^4} + \dots + \infty$                       D)  $z^2 + z + \frac{1}{2} + \frac{1}{3!z} + \frac{1}{4!z^2} + \dots + \infty$

65. Taylor series expansion of  $\frac{1}{z-2}$  at  $z = 1$  is

- A)  $z^2 + z + \frac{1}{2} + \frac{1}{3z} + \frac{1}{4z^2} + \dots + \infty$                       B)  $1 + (z-1) + (z-1)^2 + (z-1)^3 + \dots$   
C)  $\frac{1}{z} + \frac{1}{2z^2} + \frac{1}{3z^3} + \frac{1}{4z^4} + \dots + \infty$                       D)  $z^2 + z + \frac{1}{2} + \frac{1}{3!z} + \frac{1}{4!z^2} + \dots + \infty$

66. Laplace transform of 1 is

- A) 1                      B)  $1/s$ , where  $s > 0$   
C)  $1/(s + a)$ , where  $s > -a$                       D)  $1/(s - a)$ , where  $s > a$

67.  $1/s^2$  is the Laplace transform of

- A) 1                      B)  $t^2$                       C)  $t$                       D)  $e^{-at}$





68. Find the order and degree of the differential equation  $\frac{d^3y}{dx^3} - \left[1 + \left(\frac{dy}{dx}\right)^2\right]^{3/2} = 0$ .
- A) 3, 2                      B) 1, 3                      C) 2, 3                      D) 3, 1
69. The solution of the differential equation  $x\sqrt{1+y^2}dx + y\sqrt{1+x^2}dy = 0$  is
- A)  $\sqrt{1+y^2}dx + \sqrt{1+x^2}dy = 0$                       B)  $xdx + ydy = 0$   
 C)  $x\sqrt{1+y^2} + y\sqrt{1+x^2} = c$                       D)  $\sqrt{1+y^2} + \sqrt{1+x^2} = c$
70. The solution of the differential equation  $\frac{dy}{dx} + \frac{x}{y} = 0$  is
- A)  $x + y = c$                       B)  $x/y = c$                       C)  $x^2 + y^2 = c^2$                       D)  $x = 0$
71.  $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} =$
- A)  $\infty$                       B) 4                      C) 2                      D) 1
72.  $\lim_{\theta \rightarrow 0} \frac{\tan \theta}{\theta} =$
- A)  $\infty$                       B) 45                      C) 2                      D) 1
73. The differentiation of  $e^x$  is
- A)  $x$                       B) 1                      C)  $e^x$                       D)  $\log x$
74. The differentiation of  $\sec x$  is
- A)  $x$                       B)  $1/x$                       C)  $\tan x$                       D)  $\sec x \tan x$
75.  $\int \operatorname{cosec} x \cot x \, dx =$
- A)  $\cot x + c$                       B)  $-\operatorname{cosec} x + c$                       C)  $\tan x + c$                       D)  $\operatorname{cosec} x \cot x + c$
76.  $\int \frac{dx}{\sqrt{1-x^2}} =$
- A)  $x + c$                       B)  $\frac{-1}{\sqrt{1-x^2}} + c$                       C)  $\tan x + c$                       D)  $\sin^{-1}x$
77. If  $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$  and  $S = \{4, 5, 6, 7, 8\}$  then  $S^c$  (Complement of S) is
- A)  $\{4, 5, 6, 7, 8\}$                       B)  $\{\}$                       C)  $\{1, 2, 3\}$                       D)  $\{1, 2, 3, 4, 5, 6, 7, 8\}$



78. If  $-12 + 31i$  is a root of the polynomial equation  $p(x) = 0$ , then another root is

- A)  $12 + 31i$
- B)  $12 - 31i$
- C)  $-12 - 31i$
- D)  $31 - 12i$

79. The 20<sup>th</sup> term of the arithmetic sequence  $-3, 2, 7, 12, \dots$  is

- A) 92
- B) 95
- C) 100
- D) 85

80. Evaluate the combination,  ${}^{15}C_{15}$

- A) 15
- B) 225
- C) 30
- D) 1

81. Evaluate the permutation,  ${}^{10}P_3$

- A) 30
- B) 120
- C) 720
- D)  $10/3$

82. The Fourier transform of a continuous function  $f(t)$  of a continuous variable  $t$  is

- A)  $\int_{-\infty}^{\infty} f(t)e^{j2\pi ut} dt$
- B)  $\int_{-\infty}^{\infty} f(t)e^{-j2\pi ut} dt$
- C)  $1/t$
- D)  $t$

83. Which one of the following is the beta function ?

- A)  $\int_{-\infty}^{\infty} f(t)e^{-j2\pi ut} dt$
- B)  $\int_0^{\infty} e^{-x}(1-x)^{n-1} dx$  for  $n > 0$
- C)  $1/t$
- D)  $\int_0^1 x^{m-1}(1-x)^{n-1} dx$  for  $m > 0, n > 0$

84. Differentiation of  $\sin(x^2 + 3)$  is

- A)  $2x \cos(x^2 + 3)$
- B)  $-2x \sin(x^2 + 3)$
- C)  $2x \cos(x)$
- D)  $2x \cos(x)\sin(x)$

85.  $\int x^{n+1} dx =$

- A)  $n+1$
- B)  $\frac{x^{n+2}}{n+2} + c$
- C)  $\frac{x^n}{n} + c$
- D) 0

86. What would be the equivalent pointer expression for referring the array element  $a[i][j][k][l]$  ?

- A)  $((((a + i) + j) + k) + l)$
- B)  $*(*(*(* (a + i) + j) + k) + l)$
- C)  $((((a + i) + j) + k + l)$
- D)  $((a + i) + j + k + l)$

87. The operator used to get value at address stored in a pointer variable is

- A)  $\&$
- B)  $*$
- C)  $\&\&$
- D)  $\|$



88. What will be the output of the program ?

```
#include<stdio.h>
int main( )
{
inti=3, *j, k;
  j = &i;
printf(“%d\n”, i**j*i + *j);
  return 0;
}
```

- A) 3                      B) 9                      C) 27                      D) 30

89. What will be the output of the program ?

```
#include<stdio.h>
int main()
{
charstr[20] = “Hello”;
char *const p=str;
  *p= ‘M’;
printf(“%s\n”, str);
return0;
}
```

- A) Hello                      B) Mello                      C) M                      D) MHello

90. What is right way to initialize array ?

- A) `intnum[6] = { 2, 4, 12, 5, 45, 5 };`                      B) `int n{ } = { 2, 4, 12, 5, 45, 5 };`  
C) `int n{6} = { 2, 4, 12 };`                      D) `int n(6) = { 2, 4, 12, 5, 45, 5 };`

91. What will happen if in a C program you assign a value to an array element whose subscript exceeds the size of array ?

- A) The element will be set to 0  
B) The compiler would report an error  
C) The program may crash if some important data gets overwritten  
D) The array size would appropriately grow

92. What does the following declaration mean ?

```
int (*ptr)[10];
```

- A) *ptr* is a pointer to an array of 10 integers  
B) *ptr* is a integer variable  
C) Syntax error  
D) Compiler error



93. What is the chance that a leap year selected at random will contain 53 Sundays ?  
A) 2                      B) 1/7                      C) 1                      D) 2/7
94.  $\int_0^{\pi} \frac{dx}{5 + 4 \cos x} =$   
A)  $\pi/3$                       B)  $\cos x$                       C)  $\sec x$                       D) 2/5
95. The determinant of  $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$  is  
A) 0                      B) not defined                      C) 32                      D) 8
96. Two main measures for the efficiency of an algorithm are  
A) Processor and memory                      B) Complexity and capacity  
C) Time and space                      D) Data and space
97. The complexity of linear search algorithm is  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
98. The complexity of Bubble sort algorithm is  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
99. Which of the following data structure is linear data structure ?  
A) Trees                      B) Graphs                      C) Arrays                      D) None of above
100. What is the output of this C code ?  
#include <stdio.h>  
void main( )  
{  
int x = 3;  
{  
    x = 4;  
printf(“%d”, x);  
}  
}
- A) 4                      B) 3                      C) 0                      D) Garbage
-



---

**SPACE FOR ROUGH WORK**