

M. C. A. ENTRANCE

Test Code: MTJNU-II

Total Questions:100
Max. Time: 150 Min.

1. There are how many integral roots of $x^8 - 24x^7 - 18x^5 + 39x^2 + 1155 = 0$
 - (a) 0
 - (b) 1
 - (c) 2
 - (d) 4
2. If in a triangle ABC, $\frac{\cos A}{a} = \frac{\cos B}{b} = \frac{\cos C}{c}$, then the triangle is
 - (a) equilateral
 - (b) isosceles
 - (c) right angled
 - (d) none of these
3. If $f(t)$ is an even function, $\int_a^x f(t)dt$ is
 - (a) necessarily even
 - (b) necessarily odd
 - (c) odd if $\int_0^a f(t)dt = 0$
 - (d) none of these
4. $12! + 1$ is divisible by
 - (a) 12
 - (b) 13
 - (c) 14
 - (d) 15
5. How many integral solutions, the following equation is having $7x + 98y = 1000$?
 - (a) infinite
 - (b) unique
 - (c) no solution
 - (d) none of these
6. Last digit of 3^{4798} is
 - (a) 1
 - (b) 3
 - (c) 9
 - (d) 12
7. How many zeros end the number $2^{300} \cdot 5^{600} \cdot 4^{400}$?
 - (a) 400
 - (b) 500
 - (c) 600
 - (d) none of these
8. What is the number of distinct positive whole number divisors of $(30)^4 = 810000$?
 - (a) 25
 - (b) 125
 - (c) 250
 - (d) 500
9. To number the pages of a large book, the printer uses 1890 digits. How many pages are in the book?
 - (a) 1890
 - (b) 945
 - (c) 890
 - (d) 740
10. For how many values of k is 12^{12} the least common multiple of the positive integers $6^6, 8^8$ and k ?
 - (a) 10
 - (b) 20
 - (c) 25
 - (d) 35
11. Stored program computer concept was first proposed by
 - (a) Turing
 - (b) Pascal
 - (c) Von-Neumann
 - (d) Dennis Ritchie
12. The greatest value of $2 \sin \theta \cos \theta$ is
 - (a) -1
 - (b) 1
 - (c) $-1/2$
 - (d) $1/2$
13. If λ is an eigen value of a matrix A , then it is a solution to
 - (a) $(A - \lambda I) = 0$
 - (b) $|A - \lambda I| = 0$
 - (c) $|A - I| = 0$
 - (d) none of these
14. A polygon has 44 diagonals. Then it has
 - (a) 15 sides
 - (b) 13 sides
 - (c) 11 sides
 - (d) 14 sides
15. A cube is expanding in such a way that its edge is changing at a rate of 5 cm/sec. If its edge is 4 cm long, then the rate of change of its volume is
 - (a) $100 \text{ cm}^3/\text{sec}$
 - (b) $120 \text{ cm}^3/\text{sec}$
 - (c) $180 \text{ cm}^3/\text{sec}$
 - (d) $240 \text{ cm}^3/\text{sec}$
16. If in a group $a^5 = e, aba^{-1} = b^2, a, b \in G$ then $O(b)$
 - (a) 5
 - (b) 10
 - (c) 25
 - (d) 50

(a) 5
(c) 29

(b) 7
(d) 31

(a) No
(c) 2

(b) 1
(d) 3

17. If $1! + 2! + \dots + 95! = x \pmod{15}$, then one possible value of x is

(a) 14
(c) 1

(b) 3
(d) 5

18. A continuous function f from a bounded closed interval $[a, b]$ to R

- (a) is always unbounded
(b) may be bounded or unbounded
(c) always bounded but may or may not attain its bounds
(d) is always bounded and attains its bounds

19. If $f(x) =$

$(\cos x + i \sin x)(\cos 3x + i \sin 3x) \dots \cos((m-1)x + i \sin((m-1)x))$ then $f''(x)$ is

(a) $x^2 f(x)$
(c) $-x^2 f(x)$

(b) $-x^4 f(x)$
(d) $x^4 f(x)$

20. The geometrical interpretation of the graph of the differential equation $\frac{dy}{dx} = \frac{-x}{y}$ is a family of

(a) Hyperbola
(c) Parabola

(b) Ellipse
(d) none of these

21. A point is picked uniformly at random from the perimeter of a unit circle. Find the probability density of X , the x-coordinate of the point, given that the equation of the circle is $x^2 + y^2 = 1$

(a) $\frac{1}{\sqrt{1-x^2}}$

(b) $\frac{\pi}{\sqrt{1-x^2}}$

(c) $\frac{1}{\pi\sqrt{1-x^2}}$

(d) $\frac{\pi^2}{\sqrt{1-x^2}}$

22. The solution of $y_{k+2} \cdot y_k^2 = y_{k+1}^3$ with initial values $y_1 = 2$ and $y_2 = 1$, is

(a) $\log y_k = 2 \log 2 - 2^{k-1} \log 2$

(b) $y_k = 2 \log 2 - 2^{k-1} \log 2$

(c) $\log y_k = 2^k \log 3 - 2^{k-1} \log 3$

(d) $y_k = \log 2 - 2 \log 2^{k-1}$

23. How many different prime numbers are factors of N if $\log_2 [\log_3 (\log_5 (\log_7 N))] = 11$?

24. If $x = \sqrt{1 + \sqrt{1 + \sqrt{1 + \dots}}}$, Then

(a) $0 < x < 1$
(c) $2 < x < 3$

(b) $1 < x < 2$
(d) $x > 4$

25. Locus of $|z-1| = |z+2|$ is

(a) straight line
(c) ellipse

(b) circle
(d) parabola

26. If $|Z_1 + Z_2| = |Z_1| + |Z_2|$ then $\arg(Z_1) - \arg(Z_2) =$

(a) π
(c) 0

(b) $-\pi$
(d) $\pi/2$

27. Consider a circle $x^2 + y^2 = r^2$. If the line $ax + by + c = 0$ is a normal to the circle, then

(a) $c = 0$
(c) $c = -r$

(b) $c = r$
(d) $c = 1$

28. Which one of the following statements is correct?

- (a) There is no vector space of dimension 1
(b) Any three vectors of a vector space of dimension 3 are linearly independent
(c) There is one and only one basis of a vector space of finite dimension
(d) If a non-zero vector space V is generated by a finite set S , then V can be generated by a linearly independent subset of S .

29. Which of the following statements associated with a first order non-linear differential equation

$f\left(x, y, \frac{dy}{dx}\right) = 0$ are correct?

- (1) Its general solution must contain only one arbitrary constant
(2) Its singular solution can be obtained by substituting particular value of the arbitrary constant in its general solution.
(3) Its singular solution is an envelope of its general solution which also satisfies the equation.

Select the correct answer using the codes given below-

(a) 1, 2 and 3
(c) 1 and 3

(b) 1 and 2
(d) 2 and 3

30. The series $1 + \frac{2}{6} + \frac{2.5}{6.12} + \frac{2.5.8}{6.12.18} + \dots$ is

(a) Divergent
(c) Oscillates finitely

(b) Convergent
(d) Oscillates infinitely

31. The double point on the curve $(x-2)^2 = y(y-1)^2$ is

- (a) (1, 2) (b) (3, 4)
(c) (4, 3) (d) (2, 1)

32. The equation $fyz + gzx + hxy = 0$ represents a

- (a) sphere (b) cone
(c) cylinder (d) pyramid

33. All the roots of the equation $3 \left| x^2 - 2 \right| x = 0$ are

- (a) $0, \frac{2}{3}$ (b) $0, \frac{2}{3}, -\frac{2}{3}$
(c) $0, -\frac{2}{3}$ (d) 0

34. The equation, in the set of integers, $2x \equiv 3 \pmod{20}$ has

- (a) a unique solution (b) no solution
(c) infinite number of solutions (d) only 2 solutions

35. The circles $\gamma = a \cos(\theta - \alpha)$ and $\gamma = b \sin(\theta - \alpha)$ cut each other at an angle of

- (a) 90° (b) 60°
(c) 45° (d) 30°

36. If (r, θ) are polar coordinates, then $\frac{1}{r} = 3 \sin \theta + 4 \cos \theta$ and $\frac{2}{r} = 3 \cos \theta - 4 \sin \theta$ are equations of-

- (a) Lines perpendicular to each other
(b) Ellipses cutting each other orthogonally
(c) Lines parallel to each other
(d) An ellipse and a hyperbola respectively

37. If $u_n = \sqrt{n+1} - \sqrt{n}$, $v_n = \sqrt{n^4+1} - n^2$, then

- (a) $\sum_{n=1}^{\infty} u_n$ converges but $\sum_{n=1}^{\infty} v_n$ diverges
(b) $\sum_{n=1}^{\infty} u_n$ diverges but $\sum_{n=1}^{\infty} v_n$ converges
(c) $\sum_{n=1}^{\infty} u_n$ and $\sum_{n=1}^{\infty} v_n$ both converges
(d) $\sum_{n=1}^{\infty} u_n$ and $\sum_{n=1}^{\infty} v_n$ both diverge

38. The area bounded by the curve $x = a \cos^3 t$, $y = a \sin^3 t$ equals-

- (a) $\frac{1}{2} \pi a^2$ (b) $\frac{1}{3} \pi a^2$
(c) $\frac{3}{4} \pi a^2$ (d) $\frac{3}{8} \pi a^2$

39. The value of $\sqrt{3} \sin x + \cos x$ will be greatest when x is equal to

- (a) $\pi/2$ (b) $\pi/4$
(c) $\pi/3$ (d) $\pi/6$

40. If $T: R^2 \rightarrow R$ is a linear map for which $T(1, 1) = 3$ and $T(0, 1) = -2$, then $T(a, b)$ is equal to

- (a) $5a - 2b$ (b) $2a - 5b$
(c) $2a + 5b$ (d) $5a + 2b$

41. The set $\{2, 4, 6, 8\}$ is a group with binary operation \otimes_{10} , multiplication modulo 10. The identity element of this group is

- (a) 2 (b) 4
(c) 6 (d) 8

42. The expression $(27 + \sqrt{756})^{1/3} + (27 - \sqrt{756})^{1/3}$ is equivalent to

- (a) 3 (b) 9
(c) 18 (d) 27

43. $\sqrt{2}$ and $\sqrt{3}$ are algebraic over Z . A polynomial satisfied by $\sqrt{2} + \sqrt{3}$ over Z is

- (a) $x^4 - 5x^2 + 6 = 0$ (b) $x^4 - 3x^2 + 5x - 6 = 0$
(c) $x^4 + 2x^2 + 3x + 6 = 0$ (d) $x^4 - 10x^2 + 1 = 0$

44. If α, β, γ are the roots of $x^3 + qx + r = 0$, then

- $\sum \frac{\alpha}{\beta + \gamma}$ is
(a) 3 (b) $q + r$
(c) q/r (d) -3

45. If A is a 2×2 non-singular square matrix, then $Adj(adj.A)$ is

- (a) A^2 (b) A
(c) A^{-1} (d) none of these

46. If the angle between the lines joining the end points of minor axis of an ellipse with its foci is $\pi/2$, then the eccentricity of the ellipse is

- (a) $1/2$ (b) $1/\sqrt{2}$
 (c) $\sqrt{3}/2$ (d) $1/2\sqrt{2}$

47. The straight line $2x + y - 9 = 0$ is a normal to the parabola

- (a) $y^2 = \frac{4}{3}x$ (b) $y^2 = 4x$
 (c) $y^2 = \frac{16}{3}x$ (d) $y^2 = 3x$

48. The equation of the right circular cylinder with axis, $x = 2y = -z$ and radius 4 is

- (a) $5x^2 + 8y^2 + 8z^2 - 4xy + 2yz + 4xz = 0$
 (b) $5x^2 + 8y^2 + 8z^2 - 4xy + 2yz - 4xz = 0$
 (c) $5x^2 + 8y^2 + 5z^2 - 4xy - 4yz - 8zx - 144 = 0$
 (d) $5x^2 + 8y^2 + 5z^2 + 4yz + 8zx - 4xy - 144 = 0$

49. If λ and μ are the greatest lower bound and the least upper bound respectively of the set

$$\left\{1, \frac{1}{2}, \frac{1}{3}, \dots, \frac{1}{n}, \dots\right\}$$

then the value of $\lambda + \mu$ is

- (a) 0 (b) 1
 (c) ∞ (d) 2

50. The series $\sum_{n=2}^{\infty} \frac{1}{n(\log n)(\log \log n)^p}$

- (a) Converges if $p > 1$ and diverges if $p \leq 1$
 (b) Converges if $p \geq 1$ and diverges if $p < 1$
 (c) Converges if $p \leq 1$ and diverges if $p > 1$
 (d) Converges if $p < 1$ and diverges if $p \geq 1$

51. The direction cosines of the line equally inclined to the coordinate axes are

- (a) $(1, 1, 1)$ (b) $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$
 (c) $\left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right)$ (d) $\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$

52. If the cone $x^2 + y^2 - z^2 \tan^2 \alpha = 0$ has three mutually perpendicular generators, then α equals

- (a) $\pi/3$ (b) $\pi/4$
 (c) $\tan^{-1}(\sqrt{2})$ (d) $\pi/2$

53. If \vec{a} and \vec{b} are two unit vectors inclined at an angle of 60° to each other, then-

- (a) $|\vec{a} + \vec{b}| > 1$ (b) $|\vec{a} + \vec{b}| < 1$
 (c) $|\vec{a} - \vec{b}| > 1$ (d) $|\vec{a} - \vec{b}| < 1$

54. The number of real solutions of the equation $\cos(e^x) = 2^x + 2^{-x}$ is

- (a) 0 (b) 1
 (c) 2 (d) Infinite

55. The locus of the complex number z satisfying $\arg \frac{z-1}{z+1} = \frac{\pi}{3}$ is a

- (a) Straight line (b) Circle
 (c) Parabola (d) Hyperbola

56. The real part of $\exp(\exp i\theta)$ is

- (a) $e^{\cos \theta}$ (b) $e^{\cos \theta} \sin(\sin \theta)$
 (c) $e^{\cos \theta} \cos(\sin \theta)$ (d) $e^{\cos \theta} \cos(\cos \theta)$

57. If ω is a complex root of unity then the determinant

$$\begin{vmatrix} 1 & 1+i+\omega^2 & \omega^2 \\ 1-i & -1 & \omega^2-1 \\ -i & -i+\omega-1 & -1 \end{vmatrix}$$
 is equal to

- (a) ω (b) i
 (c) -1 (d) 0

58. The system of equations

$$2x + 2y - 3z - 1 = 0, \quad 4x + 4y + z - 2 = 0, \\ 6x + 6y - z - 3 = 0$$
 has

- (a) A unique solution (b) Infinite solutions
 (c) No solution (d) Two solution

59. The domain of definition of the function

$$f(x) = \sin^{-1} \log_2 \frac{x}{3}$$
 is

- (a) $(6, 12)$ (b) $(3, 12)$
 (c) $\left(\frac{3}{2}, 6\right)$ (d) $\left[\frac{3}{2}, 6\right]$

60. If $u = \tan^{-1} \frac{x^3 + y^3 + x^2y - xy^2}{x^2 - xy + y^2}$, the value of

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} \text{ is}$$

- (a) $\frac{1}{2} \sin 2u$ (b) $\sin 2u$
(c) $\sin u$ (d) 0

61. The integral $\int \cos(\log x) dx$

- (a) $x \sin(\log x) + c$
(b) $x \cos(\log x) + c$
(c) $\frac{x}{2} \{ \sin(\log x) + \cos(\log x) \} + c$
(d) $\frac{x}{2} \{ \sin(\log x) - \cos(\log x) \} + c$

62. The Lagrange's mean value theorem is applicable to

$$f(x) = \sin \frac{1}{x} \text{ in the interval}$$

- (a) $[-3, 3]$ (b) $[-2, 5]$
(c) $[2, 3]$ (d) $[-1, 4]$

63. If α, β, γ are the cube roots of $(1+i)$, then $\alpha + \beta + \gamma$ is equal to

- (a) 0 (b) 1
(c) i (d) $1+i$

64. The number of generators of cyclic group of order 10

- (a) 2 (b) 3
(c) 4 (d) 9

65. $\lim_{x \rightarrow \infty} \left(1 - \frac{1}{x}\right)^x$ is equal to

- (a) 0 (b) 1
(c) e^{-1} (d) e

66. $\lim_{n \rightarrow \infty} \left\{ \sum_{r=1}^{2n} \left(\frac{r^2}{r^3 + n^3} \right) \right\}$ is equal to

- (a) $\frac{1}{3} \log_e 2$ (b) $\frac{1}{3} \log_e 3$
(c) $\frac{2}{3} \log_e 3$ (d) $2 \log_e 3$

67. The solution of the differential equation

$$x^2 \frac{dy}{dx} + y^2 = xy \text{ is}$$

- (a) $\frac{x}{y} - \log_e x = C$ (b) $\frac{x}{y} + \log_e x = C$
(c) $\frac{y}{x} + \log_e x = C$ (d) $\frac{y}{x} - \log_e x = C$

68. The eccentricity of the curve $\frac{x^2}{5} + \frac{y^2}{9} = 1$ is

- (a) $4/5$ (b) $4/9$ (c) $2/\sqrt{5}$ (d) $2/3$

69. The determinant $\begin{vmatrix} 1 & 0 & 0 \\ 2 & a & a \\ 2 & 1 & 1 \end{vmatrix}$ is zero for

- (a) Every value of a (b) $a = 1$ only
(c) $a = 0$ only (d) $a = 0, 1$ only

70. The value of the scalar λ for which the vectors $\hat{i}, \hat{j} + \hat{k}, \hat{i} + \hat{j} + \lambda \hat{k}$ are coplanar is

- (a) -2 (b) -1 (c) Zero (d) 1

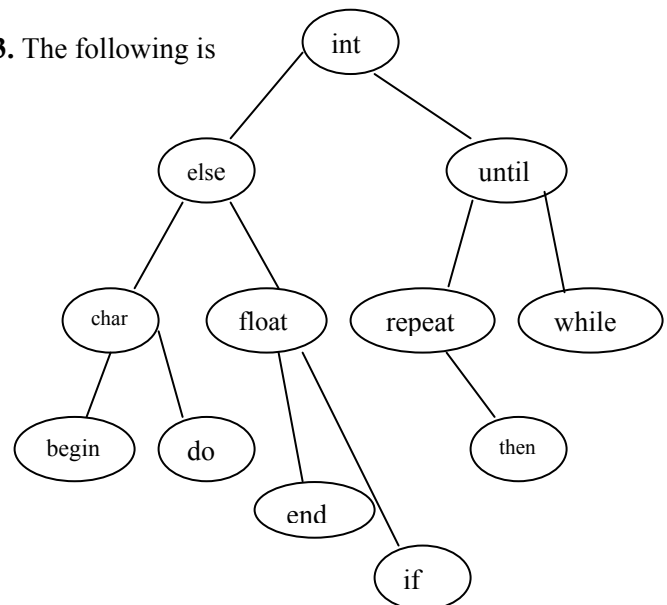
71. The coefficient of correlation between the variables x_i and y_i is positive, then the curve passing through (x_i, y_i)

- (a) slopes downwards to the right
(b) rises upwards to the right
(c) rises upwards to the left
(d) none of these

72. The variable that has its scope limited to a function and life-time for the entire execution of the program is known as

- (a) global variable (b) local variable
(c) static variable (d) extern variable

73. The following is



- (a) Heap (b) Binary search tree
(c) Complete binary tree (d) none of these

74. In the following code fragment

```
i = 0;
while (.....)
{
printf ("hello/n");
i++;
}
```

the condition for the while loop to execute 50 times is

- (a) $i < 50$ (b) $i \leq 50$
(c) $i > 50$ (d) $i = 50$

75. Multiplication of 47_8 by 52_8 is

- (a) 3144_8 (b) 4147_8
(c) 3184_8 (d) 3146_8

76. The postfix notation of the arithmetic expression $a * ((c + d) / a)$ is

- (a) $*a / + cda$ (b) $acd * + /$
(c) $acd + *a /$ (d) $acd + a / *$

77. What will be the value of x and y after execution of the following (C language) statement?

$n = 5; x = n + +; y = --x;$

- (a) 6, 5 (b) 4, 4
(c) 6, 6 (d) 5, 5

78. Initialization cannot be part of the definition if the storage class of an array is

- (a) static (b) external
(c) automatic (d) both (a) & (b)

79. The worst case search time for as insertion sort is

- (a) $O(n^2)$ (b) $O(n \log n)$
(c) $O(\log n)$ (d) $O(n^3)$

80. The output of the following program is

```
void incr( )
{
static int i;
printf ("%d", ++i);
}
void decr( )
{
static int i;
printf ("%d", i--);
}
void main ( )
{
```

```
incr( ); decr( ); incr( );
}
```

- (a) 1 1 1 (b) 1 0 1
(c) 1 0 2 (d) garbage

81. Third Generations Computers

- (a) were the first to use built-in-error detecting devices.
(b) used transistors instead of vacuum tubes.
(c) were the first to use neural network.
(d) none of these

82. The primary memory of a personal computer consists of

- (a) ROM only (b) Both RAM & ROM
(c) RAM only (d) Memory Module

83. I/O redirection

- (a) implies changing the name of a file.
(b) can be employed to use an existing file as input for a program.
(c) implies connecting 2 programs through a Pipe.
(d) none of these

84. The maximum level, l_{\max} , of any vertex in a binary tree is called the height of the tree. The minimum possible height of an n -vertex binary tree is

- (a) $\log_2 n$ (b) $n - 1$
(c) $\lceil \log_2(n + 1) - 1 \rceil$ (d) $\lceil \log_2 n \rceil$

85. The worst case search time using a bubble sort could be

- (a) $O(\log_2 n)$ (b) $O(\log_e n)$
(c) $O(n)$ (d) $O(n^2)$

86. Array elements can be accessed using

- (a) subscripts (b) pointers
(c) both (a) & (b) (d) none of these

87. Tick the correct statement:

In *switch-case* statement in C programming

- (a) only relational operators are allowed
(b) only logical operators are allowed
(c) both relational and logical operators are allowed
(d) neither relational nor logical operators are allowed

88. Any Boolean expression can be expressed using which of the following gates

- (a) AND (b) NOT
(c) OR (d) NAND

89. The disjunctive normal form of the Boolean function $x.y' + x.z + x.y$ in minimum number of variables is

- (a) x (b) y
(c) z (d) 1

90. Dynamic memory allocation cannot be used in 'C' language without

- (a) Arrays (b) Unions
(c) Pointers (d) Structure

91. The variance of first n natural numbers is

- (a) $\frac{n^2 + 1}{12}$ (b) $\frac{n^2 - 1}{12}$
(c) $\frac{n(n+1)(2n+1)}{6}$ (d) $\frac{n(n+1)}{2}$

92. If x is a Poisson variate such that $P(2) = 9P(4) + 90P(6)$ then mean of $x =$

- (a) ± 1 (b) ± 2
(c) ± 3 (d) ± 4

93. In a Poisson distribution

- (a) mean and variance are equal
(b) mean is greater than variance
(c) mean is smaller than variance
(d) no relation between mean and variance

94. Which number faces opposite to 3 in the following figure?



- (a) 2 (b) 1
(c) 4 (d) 5

95. Which of the following number will complete the matrix

| | | |
|----|----|---|
| 14 | 9 | 4 |
| 12 | 7 | 2 |
| 10 | 5 | 0 |
| 6 | 11 | ? |

- (a) 9 (b) 6
(c) 3 (d) 7

96. Find out the wrong number in the following series

3, 9, 36, 72, 216, 864, 1728, 3468

- (a) 3468 (b) 1728
(c) 864 (d) 216

97. Complete the series

895, 870, 821, 740, 619, ----

- (a) 440 (b) 445
(c) 450 (d) 455

98. A variable has Poisson distribution with mean m . The probability that the variable takes any of the values 0 or 2 is

- (a) $e^{-m} \left(1 + m + \frac{m^2}{2!} \right)$ (b) $e^m \left(1 + m + \frac{m^2}{2!} \right)$
(c) $e^{-m} \left(1 + \frac{m^2}{2!} \right)$ (d) $e^m \left(1 + \frac{m^2}{2} \right)$

99. In a hurdle race, an athlete has to cross 10 hurdles. The probability that he clears a hurdle is $\frac{5}{6}$. The probability that he knocks down fewer than 2 hurdles is

- (a) $\left(\frac{5}{6} \right)^9 \times \frac{15}{6}$ (b) $\left(\frac{5}{6} \right)^{10} \times \frac{15}{6}$
(c) $\left(\frac{15}{6} \right)^9 \times \frac{5}{6}$ (d) $\left(\frac{15}{6} \right)^{10} \times \frac{5}{6}$

100. Memory allocation at the time of running a program

- (a) Paging
(b) Static memory allocation
(c) Dynamic memory allocation
(d) Segmentation

****NOTE:** The actual JNU Paper is likely to be of 3 hours duration with 120 questions.

Additional Problems

1. What is the output of the following program?

```
int arr[ ] = {1, 2, 3, 4};
```

```
main ( )
```

```
{
    int a, *ptr, b, c;
    a=53%28;
    ptr=&a;
    a+=2;
    b=arr[1]+a;
    c=*ptr +b;
    printf("%d%d%d",a,b,c);
}
```

- (a) 252752 (b) 272952
(c) 272954 (d) 272956

Sol. (d)

2. Consider the following declarations.

```
union id
{ char color;
```

```

    int size;
}
struct
{
    char country;
    int date;
    union id;
} flag;

```

To assign a color to a flag, the correct statement would be

- (a) flag.color = 'W'; (b) flag.id.color = 'W';
 (c) flag.color = 'White'; (d) flage.id.color = 'White';

Sol. (b) Union id is call by object of struct.

3. What will be the output of the following program segment?

```

main()
{
    int x=3, z;
    z=x++ + x++;
    printf("x=%d z=%d",x, z);
}

```

- (a) x = 6 z = 5 (b) x = 6 z = 6
 (c) x = 5 z = 6 (d) x = 5 z = 5

Sol. (c)

4. What will be the output of the following program segment?

```

main()
{
    int a=500, b=100, c;
    if (!a>=400)
        b=300;
        c=200;
    printf("b=%d c=%d",b,c);
}

```

- (a) b = 200 c = 100 (b) b = 100 c = 200
 (c) b = 200 c = 300 (d) b = 300 c = 200

Sol. (b) $a \geq 400$ is True and ! makes it false so $b = 300$ is not executed.

5. What will be the output of the following program

```

main()
{
    int i=32, j=65, k;
    k=j^32;
    printf("k=%d",k);
    k=j<<2;
    printf("k=%d",k);
    k=i>>5;
    printf("k=%d",k);
}

```

- (a) k = 97 k = 260 k = 1 (b) k = 7 k = 15 k = 1
 (c) k = 95 k = 210 k = 7 (d) k = 3 k = 15 k = 2

Sol. (a)

6. int ar[]={1,2,3,4};
 int count;

```

incr() {return ++count;}
main()
{
    ar[count++]=incr();
    printf("%d",ar[count]);
}

```

The value printed by the above program is

- (a) 1 (b) 2
 (c) 3 (d) none of these

Sol. (c)

7. Find the output of following code

```

main()
{
    clrscr();
    int i;
    printf("%d",i);
}

```

- (a) Garbage value (b) -32768
 (c) 32767 (d) error

Sol. (d) error because variable declaration must be first statement in 'C' language.

8. What is the output of following code

```

int i
main()
{
    int i
    printf("%d%d",i,i);
}

```

- (a) Garbage value (b) 0 0
 (c) - 32767, 32768 (d) error

Sol. (a) Local variable precedence is greater than global variable in block.

9. What is the output of following code

```

Swap (int a, int b)
{
    int z
    z = a;
    a = a + b
    b = a - b
    a = a - b
}

```

if a = 3, b = 4

- (a) Swap the value
 (b) Increase each value by 1
 (c) No change
 (d) Initialize the value of a in b

Sol. (a) Swapping of two numbers without third number.

10. What is the value of k in following segment?

```

void main()
{
    static int a [ ] = {1, 3, 5, 6};
}

```



```
int k;  
swap (&a [3]);  
k = a[3];  
printf(“%d”, k);  
}  
swap (int *b)  
{  
static int z [ ]= {6, 5, 3, 1};  
z [1] = *b;  
*b = z [3];  
b = &z [0];  
*b = 4;  
}
```

(a) 3

(b) 6

(c) 1

(d) 5

Sol. (c)