

15P/203/4(i)

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

Roll No.

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

Day and Date .....

(Signature of Invigilator)

## INSTRUCTIONS TO CANDIDATES

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

1. Within 10 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 unfair means.*
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 : 40

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

**15P/203/4(i)**

**ROUGH WORK**  
**रफ़ कार्य**

**15P/203/4(i)**

**No. of Questions : 150**

**प्रश्नों की संख्या : 150**

**Time :  $2\frac{1}{2}$  Hours**

**Full Marks : 450**

**समय :  $2\frac{1}{2}$  घण्टे**

**पूर्णांक : 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.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न 3 (तीन) अंकों का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जायेगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

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

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

**01.** The value of  $\frac{9}{20} - \left[ \frac{1}{5} + \left\{ \frac{1}{4} + \left( \frac{5}{6} - \frac{1}{3} + \frac{1}{2} \right) \right\} \right]$  is equal to :

(1) 0

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

(3)  $\frac{9}{10}$

(4)  $\frac{9}{20}$

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02. The solution of simultaneous equation  $x + \frac{1}{y} = \frac{3}{2}$  and  $y + \frac{1}{x} = 3$  is :

(1)  $x = 1, y = \frac{1}{2}$

(2)  $x = \frac{1}{2}, y = 1$

(3)  $x = 1, y = 1$

(4)  $x = 1, y = -1$

03. If  $1, \omega, \omega^2, \dots, \omega^{n-1}$  are  $n^{\text{th}}$  roots of unity, then  $(1-\omega)(1-\omega^2)(1-\omega^3) \dots (1-\omega^{n-1})$  is equal to :

(1)  $n$

(2)  $1$

(3)  $0$

(4)  $n^2$

04. The value of  $7 \log \frac{16}{15} + 5 \log \frac{25}{24} + 3 \log \frac{81}{80}$  is equal to :

(1) Unity

(2) Zero

(3)  $\log 2$

(4)  $0.2$

05. The  $n^{\text{th}}$  term of the series

$2\frac{1}{2} + 1\frac{7}{13} + 1\frac{1}{9} + \frac{20}{23} + \dots$  is :

(1)  $\frac{20}{5n^2 + 3}$

(2)  $\frac{2}{5n - 3}$

(3)  $20(5n + 3)$

(4)  $\frac{20}{5n + 3}$

06. The number of subsets of a set containing  $n$  distinct object is :

(1)  ${}^n C_1 + {}^n C_2 + {}^n C_3 + \dots + {}^n C_n$

(2)  ${}^n C_0 + {}^n C_1 + {}^n C_2 + \dots + {}^n C_n$

(3)  $2^n - 1$

(4)  $2^n + 1$

07. In the binomial expansion of  $(a - b)^n$ ,  $n \geq 5$ , The sum of 5<sup>th</sup> and 6<sup>th</sup> terms is zero. Then  $\frac{a}{b}$  equals :

- (1)  $\frac{n-5}{6}$       (2)  $\frac{n-4}{5}$       (3)  $\frac{5}{n-4}$       (4)  $\frac{6}{n-5}$

08. If  $\Delta = \begin{vmatrix} 0 & c & b \\ c & 0 & a \\ b & a & 0 \end{vmatrix}$ , then  $\Delta =$

- (1)  $\begin{vmatrix} b^2+c^2 & 1 & 1 \\ 1 & a^2+b^2 & 1 \\ 1 & 1 & a^2+b^2 \end{vmatrix}$       (2)  $\begin{vmatrix} ab+bc & bc & ab \\ ab & bc+ca & bc \\ ca & ab & ca+ab \end{vmatrix}$
- (3)  $\begin{vmatrix} b^2+c^2 & a^2 & a^2 \\ b^2 & c^2+a^2 & b^2 \\ c^2 & c^2 & a^2+b^2 \end{vmatrix}$       (4) 0

09. If  $A \begin{bmatrix} -1 & 2 \\ 3 & 1 \end{bmatrix} = \begin{bmatrix} -4 & 1 \\ 7 & 7 \end{bmatrix}$ , then A equals to :

- (1)  $\begin{bmatrix} 1 & 1 \\ -2 & 3 \end{bmatrix}$       (2)  $\begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$
- (3)  $\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix}$       (4)  $\begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$

10. The equations :

$$3x + y + 2z = k$$

$$x + 2y + 3z = l$$

$$2x + 3y + z = m$$

- (1) have a unique solution
- (2) are inconsistent
- (3) have a trivial solution
- (4) have infinitely many non-trivial solutions.

11. If  $A = \{0, 1, 3, 5\}$ ,  $B = \left\{1, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}\right\}$  and  $C = \left\{\frac{1}{5}, 3\right\}$ , then the value of  $(A \cup B) \cup C$  is equal to :

(1)  $\left\{0, 1, 3, 5, \frac{1}{7}\right\}$

(2)  $\left\{0, 1, 3, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}\right\}$

(3)  $\left\{0, 1, 3, 5, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}\right\}$

(4)  $\left\{0, 3, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}\right\}$

12. For all sets A, B and C, if  $A \subseteq B$  and  $B \subseteq C$  and  $C \subseteq A$ , then :

- (1)  $B = C$       (2)  $B \neq C$       (3)  $A = 0$       (4)  $B = \phi$

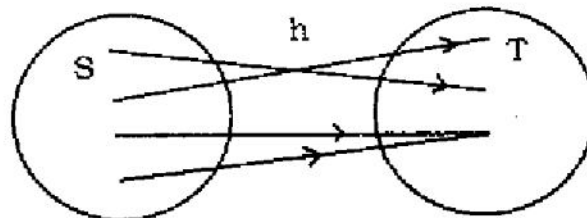
13. If  $A = \{1, 2, 3, 4\}$ ,  $B = \{2, 4, 6, 8\}$  and  $C = \{3, 4, 5, 6\}$ , then  $(A \cap B) \cap C$  is equal to :

- (1)  $\{2\}$       (2)  $\{4\}$       (3)  $\{6\}$       (4)  $\phi$

14. Which of the following statements is true ?

- (1)  $A \subset B \Rightarrow A \cup B = A$   
 (2)  $A \subset B \Rightarrow A \cap B = \phi$   
 (3) If  $A \subset B$ , then  $A \cap (A - B) = \phi$   
 (4)  $A \cap B = \phi$  implies either  $A = \phi$  or  $B = \phi$

15. The mapping  $h : S \rightarrow T$  in the following diagram is :



- (1) Many-one into  
 (2) One-one into  
 (3) One-one onto  
 (4) Many - one onto
16. If  $A = \{-2, -1, 0, 1, 2\}$  and the function  $f : A \rightarrow R$  be defined by the formula  $f(x) = x^2 + 1$ , then the range off is :
- (1)  $\{0, 5, 2, 1\}$   
 (2)  $\{5, 2, 1\}$   
 (3)  $\{0, 5, 2\}$   
 (4)  $\{0, 2, 1\}$
17. If  $A, B, C$  be sets and  $R \subseteq A \times B$  and  $S \subseteq B \times C$ , then the value of  $(SOR)^{-1}$  is equal to :

- (1)  $R^{-1} \circ S^{-1}$   
 (2)  $R^{-1} \circ A^{-1}$   
 (3)  $S^{-1} \circ B^{-1}$   
 (4)  $A^{-1} \circ C^{-1}$





22. The equation of the circle passing through  $(-1, 2)$  and concentric with

$$x^2 + y^2 - 2x - 4y - 4 = 0 \text{ is :}$$

- (1)  $x^2 + y^2 - 2x - 4y + 8 = 0$       (2)  $x^2 + y^2 - 2x - 4y + 4 = 0$   
 (3)  $x^2 + y^2 - 2x - 4y + 1 = 0$       (4)  $x^2 + y^2 - 2x - 2y + 2 = 0$

23. The angle between two straight lines represented by the equation

$$6x^2 + 5xy - 4y^2 + 7x + 13y - 3 = 0 \text{ is :}$$

- (1)  $\tan^{-1} \frac{3}{5}$       (2)  $\tan^{-1} \frac{5}{3}$       (3)  $\tan^{-1} \frac{2}{11}$       (4)  $\tan^{-1} \frac{11}{2}$

24. The focal distance of a point on the parabola  $y^2 = 8x$  is 4. Its ordinates are :

- (1)  $\pm 1$       (2)  $\pm 2$       (3)  $\pm 3$       (4)  $\pm 4$

25. The line  $y = mx + c$  touches the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ ,

if  $c$  is equal to :

- (1)  $\pm \sqrt{a^2 - m^2 b^2}$       (2)  $\pm \sqrt{a^2 m^2 + b^2}$   
 (3)  $\pm \sqrt{a^2 + m^2 b^2}$       (4)  $\pm \sqrt{a^2 m^2 - b^2}$

26. The line  $x \cos \theta + y \sin \theta = p$  will touch the hyperbola

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \text{ if :}$$

- (1)  $p^2 = a^2 \cos^2 \theta - b^2 \sin^2 \theta$       (2)  $p^2 = a^2 \sin^2 \theta - b^2 \cos^2 \theta$   
 (3)  $p^2 = a^2 \cos^2 \theta + b^2 \sin^2 \theta$       (4)  $p^2 = a^2 \sin^2 \theta + b^2 \cos^2 \theta$

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27. If  $x_1, x_2, x_3$  as well as  $y_1, y_2, y_3$  are in A.P., then the points  $(x_1, y_1), (x_2, y_2), (x_3, y_3)$  are :
- (1) concylic
  - (2) collinear
  - (3) Three vertices of a parallelogram
  - (4) The vertices of a triangle
28. If  $bx + ay = ab$  touches the circle  $x^2 + y^2 = r^2$ , then the point  $\left(\frac{1}{a}, \frac{1}{b}\right)$  lies on :
- (1) a circle
  - (2) an ellipse
  - (3) a straight line
  - (4) a parabola
29. The  $\lim_{x \rightarrow 0} [(1+x)^n - 1]$  is equal to :
- (1)  $\frac{1}{n}$
  - (2)  $-\frac{1}{n}$
  - (3)  $n^2$
  - (4)  $n$
30. The function  $f(x) = \frac{x-1}{1+e^{1/(x-1)}}$ ,  $x \neq 0$  is continuous for  $x = 1$  when  $f(1)$  equals :
- (1) -1
  - (2) 0
  - (3) 1
  - (4) 2
31. If  $\sin(x+y) = xy$ , then  $\frac{dy}{dx}$  is equal to :
- (1)  $\frac{x + \cos(x+y)}{\sin(x+y) + y}$
  - (2)  $\frac{x - \cos(x+y)}{\cos(x+y) - y}$
  - (3)  $\frac{x + \sin(x+y)}{\cos(x+y) + y}$
  - (4)  $\frac{x + \sin(x+y)}{\cos(x+y) - y}$

32. The equation of tangent to the curve  $y^2 = 2x^3 - x^2 + 3$  at the point (1, 4) is :

- (1)  $x = 2y$  (2)  $x = 4y$   
 (3)  $y = 2x$  (4)  $y = 4x$

33. Let  $f'(c) = 0 = f''(c) = \dots\dots\dots = f^{(n-1)}(c)$  and  $f^{(n)}(c) \neq 0$ . If  $n$  is even, then :

- (1)  $f(c)$  is not an extreme value  
 (2)  $f(c)$  is a minimum value if  $f^{(n)}(c) = 0$   
 (3)  $f(c)$  is a minimum value if  $f^{(n)}(c) > 0$   
 (4)  $f(c)$  is a maximum value if  $f^{(n)}(c) > 0$

34. The value of  $\int e^x \left( \frac{1+x \log x}{x} \right) dx$  is equal to :

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

35. The value of  $\int_0^{\pi/2} \log(\tan x) dx$  is equal to :

- (1) 0 (2)  $\frac{x}{4}$  (3)  $\frac{x}{2}$  (4)  $\pi$

36. The value of  $\int \frac{1}{e^x - 1} dx$  is equal to :

- (1)  $\log(e^x - 1) - x \log x$  (2)  $\log(e^x + x) + x \log x$   
 (3)  $\log(e^x - 1) - x$  (4)  $\log(e^x - 1) + x$

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37. The volume and surface of a spherical cap of height  $h$  cut off from a sphere of radius  $r$  are :

(1)  $\frac{2}{3}h^2 \left( r - \frac{1}{3}h \right); \frac{2}{3}rh$

(2)  $2h^2 \left( r - \frac{1}{3}h \right); 2rh$

(3)  $\frac{1}{3}h^2 \left( r - \frac{1}{3}h \right); \frac{1}{3}rh$

(4)  $\frac{1}{2}h^2 \left( r - \frac{1}{3}h \right); \frac{1}{2}rh$

38. If  $f(x)$  and all its derivatives upto the  $(n - 1)^{\text{th}}$  order be continuous in  $[a, a + h]$  and  $f^n(x)$  exists in  $]a, a + h[$ , then there exists a real number  $\theta, 0 < \theta < 1$ , such that :

(1)  $f(a + h) = f(a) + h f'(a) + \frac{h^2}{2!} f''(a) + \dots + \frac{h^{n-1}}{(n-1)!} f^{(n-1)}(a) + \frac{h^n}{(n-1)!} (1-\theta)^{n-1} f^n(a + \theta h)$

(2)  $f(a + h) = f(a) + h f'(a) + \frac{h^2}{2!} f''(a) + \dots + \frac{h^{n-1}}{(n-1)!} f^{(n-1)}(a) + \frac{h^n}{n!} f^n(a + \theta h)$

(3) either (1) or (2)

(4) Neither (1) nor (2)

39. The order of a differential equation is defined as :

(1) the power of highest derivative in the equation

(2) the power of lowest derivative in the equation

(3) the order of lowest derivative occurring in the equation

(4) the order of highest derivative occurring in the equation

40. The degree of the differential equation :

$$\left[ 3 + 4 \left( \frac{dy}{dx} \right)^2 + 5 \left( \frac{d^2y}{dx^2} \right) \right]^{2/3} = \left( \frac{d^3y}{dx^3} \right)^2$$

- (1) 6                      (2) 5                      (3) 4                      (4) 3

41. The auxiliary equation of the differential equation

$$3 \frac{d^3y}{dx^3} + 4 \frac{d^2y}{dx^2} - 3y = e^x + \sin^{-1}x \text{ is :}$$

- (1)  $3 \frac{d^3y}{dx^3} + 4 \frac{d^2y}{dx^2} - 3y = e^x$                       (2)  $3 \frac{d^3y}{dx^3} + 4 \frac{d^2y}{dx^2} - 3y = \sin^{-1}x$   
 (3)  $3 \frac{d^3y}{dx^3} + 4 \frac{d^2y}{dx^2} - 3y = 0$                       (4)  $3 \frac{d^3y}{dx^3} + 4 \frac{d^2y}{dx^2} - 3y = e^x \sin^{-1}x$

42. The general solution of the linear differential equation

$$a_n \frac{d^n y}{dx^n} + a_{n-1} \frac{d^{n-1} y}{dx^{n-1}} + a_{n-2} \frac{d^{n-2} y}{dx^{n-2}} + \dots + a_1 \frac{dy}{dx} + ay = x \text{ is given by :}$$

- (1)  $y = \text{complementary function (C. F.)}$   
 (2)  $y = \text{particular integral (P. I.)}$   
 (3)  $y = \text{C. F.} \times \text{P. I.}$   
 (4)  $y = \text{C. F.} + \text{P. I.}$

43. The particular integral of the differential equation

$$\frac{d^2y}{dx^2} - y \frac{dy}{dx} + 13y = 24 e^{2x} \sin 3x \text{ is given by :}$$

- (1)  $-8 e^{2x} \sin 3x$                       (2)  $-8 e^{2x} \cos 3x$   
 (3)  $-4 e^{2x} \cos 3x$                       (4)  $-4 x e^{2x} \sin 3x$

44. The solution of  $\frac{dy}{dx} = \frac{xy+y}{xy+x}$  is given by :

- (1)  $c y = x e^{y-x}$  (2)  $c x = y e^{y-x}$   
 (3)  $c y = x e^{x-y}$  (4)  $c x = y e^{x-y}$

45. Which one of the following differential equations is linear :

- (1)  $4y \left( \frac{dy}{dx} \right)^2 + \frac{d^2y}{dx^2} = \left( \frac{dy}{dx} \right)^4 + 3$  (2)  $\left( \frac{d^3y}{dx^3} \right)^2 + 2 \left( \frac{dy}{dx} \right)^4 + yx = 0$   
 (3)  $(2xy + 2x^3) \frac{dy}{dx} y^2 + 6x^2y = 0$  (4)  $\frac{d^2y}{dx^2} + x^2 \frac{dy}{dx} - y = 0$

46. Which one of the following provides a general solution of the differential equation  $\sec^2 x \tan y dx + \sec^2 y \tan x dy = 0$  ?

- (1)  $\tan x \tan y = c$  (2)  $\tan x + \tan y = c$   
 (3)  $\sec x \sec y = c$  (4)  $\sec x + \sec y = c$

47. Let the vectors  $\vec{a}, \vec{b}, \vec{c}$  be the position vectors of the vertices P, Q, R of a triangle respectively. Which of the following represents the area of triangle ?

- (1)  $\frac{1}{2} |\vec{a} \times \vec{b}|$  (2)  $\frac{1}{2} |\vec{b} \times \vec{c}|$   
 (3)  $\frac{1}{2} |\vec{c} \times \vec{a}|$  (4)  $\frac{1}{2} |\vec{a} \times \vec{b} + \vec{b} \times \vec{c} + \vec{c} \times \vec{a}|$

48. If ABC is a triangle, then the value of  $\vec{AB} + \vec{BC} + \vec{CA}$  is equal to :

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

49. The value of  $\lambda$  so that the unit vectors  $\frac{2\hat{i} + \lambda\hat{j} + \hat{k}}{\sqrt{5 + \lambda^2}}$  and  $\frac{\hat{i} - 2\hat{j} + 3\hat{k}}{\sqrt{14}}$  are orthogonal is :

- (1)  $\frac{3}{7}$                       (2)  $\frac{5}{2}$                       (3)  $\frac{2}{5}$                       (4)  $\frac{2}{7}$

50. The vector  $(\vec{a} - \vec{b}) \times (\vec{a} + \vec{b})$  is equal to :

- (1)  $\frac{1}{2} (\vec{a} \times \vec{b})$                       (2)  $\vec{a} + \vec{b}$   
 (3)  $2 (\vec{a} \times \vec{b})$                       (4)  $2 (\vec{a} + \vec{b})$

51. If  $\vec{a}, \vec{b}, \vec{c}$  are non-coplanar vectors and  $\vec{d} = \lambda \vec{a} + \mu \vec{b} + \gamma \vec{c}$ , then  $\lambda$  is equal to :

- (1)  $\frac{[\vec{a} \vec{b} \vec{c}]}{[\vec{b} \vec{a} \vec{c}]}$                       (2)  $\frac{[\vec{b} \vec{c} \vec{d}]}{[\vec{b} \vec{c} \vec{a}]}$                       (3)  $\frac{[\vec{b} \vec{d} \vec{c}]}{[\vec{a} \vec{b} \vec{c}]}$                       (4)  $\frac{[\vec{c} \vec{b} \vec{d}]}{[\vec{a} \vec{b} \vec{c}]}$

52. The position vector of the points A, B, C and D are  $3\hat{i} - 2\hat{j} - \hat{k}$ ,  $2\hat{i} + 3\hat{j} - 4\hat{k}$ ,  $-\hat{i} + \hat{j} + 2\hat{k}$  and  $4\hat{i} + 5\hat{j} + \lambda\hat{k}$ . It is known that these points are coplanar, then  $\lambda$  is equal to :

- (1)  $-\frac{146}{17}$                       (2)  $-\frac{137}{17}$                       (3)  $-\frac{154}{17}$                       (4)  $-\frac{164}{17}$

53. The position vectors  $60\hat{i} + 3\hat{j}$ ,  $40\hat{i} - 8\hat{j}$ ,  $a\hat{i} - 52\hat{j}$  are collinear if :

- (1) 20                      (2) -20                      (3) 40                      (4) -40

54. The value of  $\vec{a} \times (\vec{b} \times \vec{c})$  is equal to :

(1)  $(\vec{a} \cdot \vec{b})\vec{a} + (\vec{a} \cdot \vec{c})\vec{c}$

(2)  $(\vec{b} \cdot \vec{c})\vec{a} - (\vec{b} \cdot \vec{a})\vec{c}$

(3)  $(\vec{a} \cdot \vec{c})\vec{b} - (\vec{a} \cdot \vec{b})\vec{c}$

(4)  $(\vec{c} \cdot \vec{a})\vec{a} - (\vec{b} \cdot \vec{a})\vec{c}$

55. The shortest distance between two straight lines whose vector equation are :

$$\vec{r} = \hat{i} + \hat{j} + \lambda(2\hat{i} - \hat{j} + \hat{k}) \text{ and}$$

$$\vec{r} = 2\hat{i} + \hat{j} - \hat{k} + \mu(3\hat{i} - 5\hat{j} + 2\hat{k}) \text{ is :}$$

(1)  $\frac{5}{\sqrt{59}}$

(2)  $\frac{10}{\sqrt{59}}$

(3)  $\frac{\sqrt{59}}{5}$

(4)  $\frac{\sqrt{59}}{10}$

56. The angle between straight line

$$\vec{r} = (\hat{i} + 2\hat{j} - \hat{k}) + \lambda(\hat{i} - \hat{j} + \hat{k})$$

and plane  $\vec{r} \cdot (2\hat{i} - \hat{j} + \hat{k}) = 4$  is :

(1)  $\sin^{-1}\left(\frac{2\sqrt{2}}{3}\right)$

(2)  $\cos^{-1}\left(\frac{2\sqrt{2}}{3}\right)$

(3)  $\sin^{-1}\left(\frac{3\sqrt{2}}{2}\right)$

(4)  $\cos^{-1}\left(\frac{3\sqrt{2}}{2}\right)$

57. The value of  $\frac{\tan A + \sec A - 1}{\tan A - \sec A + 1}$  is equal to :

(1)  $\frac{1 + \cos A}{\sin A}$

(2)  $\frac{1 - \cos A}{\sin A}$

(3)  $\frac{1 + \sin A}{\cos A}$

(4)  $\frac{1 - \sin A}{\cos A}$



58. The value of  $2 \sin^2 \beta + 4 \cos(\alpha + \beta) \sin \alpha \sin \beta + \cos 2(\alpha + \beta)$  is equal to :
- (1)  $\sin 2\alpha$       (2)  $\cos 2\alpha$       (3)  $1 + \sin \alpha$       (4)  $1 + \cos \alpha$

59. The value of  $\theta$  in the trigonometric equation  $\sin^2 \theta - \cos \theta = \frac{1}{4}$ , in the interval  $0 \leq \theta \leq 2\pi$  are :

(1)  $\frac{\pi}{4}, \frac{5\pi}{4}$       (2)  $\frac{3\pi}{4}, \pi$       (3)  $\frac{2\pi}{3}, \frac{4\pi}{3}$       (4)  $\frac{\pi}{3}, \frac{5\pi}{3}$

60. If  $\sin A = \sin B$  and  $\cos A = \cos B$ , then the values of  $A$  in terms of  $B$  is :

(1)  $A = 2n\pi - B$       (2)  $A = 2n\pi + B$   
 (3)  $A = n\pi - B$       (4)  $A = n\pi + B$

61. In any triangle  $ABC$ , the value of  $\frac{b^2 - c^2}{a^2}$  is equal to :

(1)  $\frac{\sin(B - C)}{\sin(B + C)}$       (2)  $\frac{\sin(B + C)}{\sin(B - C)}$   
 (3)  $\frac{\cos(B - C)}{\cos(B + C)}$       (4)  $\frac{\cos(B + C)}{\cos(B - C)}$

62. If  $p_1, p_2, p_3$  are the altitudes of a triangle from the vertices  $A, B, C$  and  $\Delta$ , the area of the triangle, then value of  $\frac{1}{p_1} + \frac{1}{p_2} + \frac{1}{p_3}$  is :

(1)  $\frac{ab}{(a + b + c)\Delta} \cos^2 C$       (2)  $\frac{ab}{(a + b + c)\Delta} \sin^2 C$   
 (3)  $\frac{2ab}{(a + b + c)\Delta} \cos^2 \frac{1}{2} C$       (4)  $\frac{2ab}{(a + b + c)\Delta} \sin^2 \frac{1}{2} C$

63. If in a  $\triangle ABC$ ,  $\angle C = 90^\circ$ ,  $a = 3$ ,  $b = 4$  and  $D$  is a point on  $AB$  so that  $\angle BCD = 30^\circ$ , then the length  $CD$  is equal to :

(1)  $\frac{5}{7}(3\sqrt{2} + 5)$

(2)  $\frac{5}{7}(3\sqrt{2} - 5)$

(3)  $\frac{8}{13}(4\sqrt{3} + 3)$

(4)  $\frac{8}{13}(4\sqrt{3} - 3)$

64. If  $a = 5$ ,  $b = 4$  and  $\cos(A - B) = \frac{31}{32}$ , then the third side  $C$  will be :

(1) 7

(2) 6

(3) 5

(4) 4

65. A person standing on the bank of a river observes that the angle subtended by a tree on the opposite bank is  $60^\circ$ , when he retires 40 feet from the bank he finds the angle to be  $30^\circ$ . The height of the tree and the breadth of the river are :

(1)  $20\sqrt{3}, 20$

(2)  $10\sqrt{3}, 10$

(3)  $20\sqrt{2}, 15$

(4)  $10\sqrt{2}, 15$

66. If  $\sin^{-1}\left(\frac{1}{3}\right) + \sin^{-1}\left(\frac{2}{3}\right) = \sin^{-1}x$ , then  $x$  is equal to :

(1)  $\frac{4+\sqrt{5}}{9}$

(2)  $\frac{4\sqrt{2}+\sqrt{5}}{9}$

(3)  $\frac{\sqrt{3}+1}{6}$

(4) 1

67. The chance of throwing an ace in the first only of two successive throws with an ordinary die is :

(1)  $\frac{1}{6}$

(2)  $\frac{5}{36}$

(3)  $\frac{1}{36}$

(4)  $\frac{25}{36}$

68. There are six letters and six addressed envelopes. What is the probability that all the letters are not dispatched in the right envelopes ?

- (1)  $\frac{5}{7}$                       (2)  $\frac{6}{7}$                       (3)  $\frac{713}{720}$                       (4)  $\frac{719}{720}$

69. The average of  $n$  number  $x_1, x_2, x_3, \dots, x_n$  is  $A$ . If  $x_n$  is replaced by  $(n+1)x_n$ , then the new average is :

- (1)  $\frac{(n-1)A + nx_n}{n}$                       (2)  $\frac{nA + (n+1)x_n}{n}$   
 (3)  $\frac{(n+1)A + nx_n}{n}$                       (4)  $A + x_n$

70. Secondary data :

- (1) should be used after careful scrutiny  
 (2) should be used without any scrutiny  
 (3) should be used after finding out its source  
 (4) should never be used

71. How many classes should be taken while forming a grouped frequency distribution ?

- (1) Five                                      (2) Less than five  
 (3) Between five and ten                      (4) Any number

72. A frequency distribution can be presented graphically by a :

- (1) pie diagram                                      (2) histogram  
 (3) pictogram                                      (4) cartogram

73. Which one of the following is not the measures of dispersions :

- (1) Range (2) Average deviation  
(3) Standard deviation (4) Complex number

74. The coefficients of skewness is equal to :

- (1)  $\frac{\text{Mean} - \text{Mode}}{\text{Standard deviation}}$  (2)  $\frac{\text{Mean} - \text{Median}}{\text{Standard deviation}}$   
(3)  $\frac{\text{Median} + \text{Mean}}{\text{Standard deviation}}$  (4)  $\frac{2(\text{Mean} + \text{Mode})}{\text{Standard deviation}}$

75. Normal curve  $y = y_0 e^{-x^2/2\sigma^2}$  is :

- (1) Symmetrical about the x-axis  
(2) Symmetrical about the y-axis. The mean, median and mode coincide at the origin  
(3) It is not a unimodal curve  
(4) The points of inflection of normal curve are equidistant for the mean

76. For Poission's distribution  $M \sigma r_1 r_2$  is :

- (1)  $< 1$  (2)  $> 1$  (3) 0 (4) 1

77. If  $8x - 10y + 66 = 0$  and  $40x - 18y = 214$  are two regression lines, then the coefficient of correlation between x and y is :

- (1) 0.6 (2) 0.8 (3) 0.45 (4) 0.3

78. If  $r$ ,  $\sigma_x$ ,  $\sigma_y$  have their usual meaning and  $\theta$  is the acute angle between the two regression lines in case of two variables  $x$  and  $y$ , then the value of  $\tan \theta$  is equal to :

$$(1) \frac{1+r^2}{r} \frac{\sigma_x \sigma_y}{\sigma_x + \sigma_y}$$

$$(2) \frac{1+r}{r} \frac{\sigma_x \sigma_y}{\sigma_x - \sigma_y}$$

$$(3) \frac{1-r^2}{r} \frac{\sigma_x \sigma_y}{\sigma_x^2 + \sigma_y^2}$$

$$(4) \frac{1-r}{r} \frac{\sigma_x \sigma_y}{\sigma_x^2 - \sigma_y^2}$$

79. In simplex method, when the number of non-zero variables is equal to the number of constraints, the set of values is said to form a :

(1) basic solution

(2) feasible solution

(3) iso-cost solution

(4) optimal solution

80. Solve the following linear programming problems by Simplex method :

Maximize  $P = 3x + 7y + 6z$  Subject to

$$2x + 2y + 2z \leq 8.$$

$$x + y \leq 3.$$

$$x, y, z \geq 0.$$

(1) 21

(2) 23

(3) 25

(4) 27

81. What is the symbolic form of the following statement ?

"If wind is from the North and there is halo round the moon, then there will be rains"

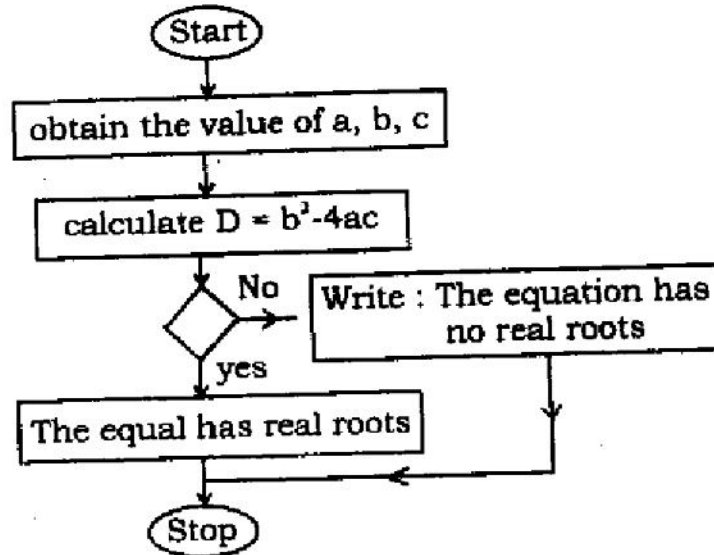
(1)  $(p \vee q) \Rightarrow r$

(2)  $p \wedge q \Rightarrow r$

(3)  $p \Rightarrow q \vee r$

(4)  $q \Rightarrow p \vee r$

82. In the following flow chart for finding the roots of the quadratic equation  $ax^2 + bx + c = 0$ ,  $a \neq 0$ , what should be written in the empty box to make the flow chart correct ?



- (1) is  $D = 0$       (2) is  $D \geq 0$       (3) is  $D \leq 0$       (4) is  $D = 1$

83. The base of the binary number system is :

- (1) 2                      (2) 16                      (3) 8                      (4) 10

84. A computer executes at a time :

- (1) millions of instructions      (2) only ten instructions  
 (3) only two instructions      (4) only one instruction

85. The WHILE -DO control structure executes the loop at least :

- (1) trice                      (2) twice  
 (3) once                      (4) None of these

86. ABCDE is a pentagon. Forces acting on a particle are represented in magnitude and direction by  $\vec{AB}$ ,  $\vec{BC}$ ,  $\vec{CD}$ ,  $2\vec{DE}$ ,  $\vec{AD}$  and  $\vec{AE}$ . Their resultant is given by :

- (1)  $\vec{AE}$                       (2)  $2\vec{AE}$                       (3)  $3\vec{AE}$                       (4)  $4\vec{AE}$

87. If the line of action of the resultant of two forces P and Q divides the angle between them in the ratio 1 : 2, then the magnitude of the resultant is :

- (1)  $\frac{P^2 - Q^2}{Q}$                       (2)  $\frac{P^2 - Q^2}{P}$                       (3)  $\frac{P^2 + Q^2}{Q}$                       (4)  $\frac{P^2 + Q^2}{P}$

88. P and Q are two parallel forces acting at A and B respectively. If they interchange position, then the point of application of the resultant is displaced along AB through a distance :

- (1)  $\frac{P+Q}{P-Q} AB$                       (2)  $\frac{P-Q}{P+Q} AB$                       (3)  $\frac{PQ}{P-Q} AB$                       (4)  $\frac{PQ}{P+Q} AB$

89. Two parallel forces not having the same line of action form a couple if they are :

- (1) like and unequal                      (2) like and equal  
(3) unequal and unlike                      (4) equal and unlike

90. Like parallel forces act at the vertices A, B, C of a triangle and are proportional to the lengths BC, CA and AB respectively. The centre of the forces is at the :

- (1) centroid                      (2) circum centre  
(3) in-centre                      (4) mid of one of the side

91. ABCD is a square. Equal forces P are acting along AB, CB, AD and DC. Their resultant is a force 2P acting :
- (1) along DC
  - (2) along AB
  - (3) along AC
  - (4) parallel to AB through the centre of square
92. If six forces of relative magnitudes 1, 2, 3, 4, 5 and 6 act along the sides of a regular hexagon taken in order, then the single equivalent force is of relative magnitude is :
- (1) 1
  - (2) 3
  - (3) 5
  - (4) 6
93. To a man walking at 2km/hr the rain appears to fall vertically, when he increases his speed to 4km/hr it appears to meet him at an angle of  $45^\circ$ . Then the actual velocity of the rain is :
- (1)  $2\sqrt{2}$  km/hr
  - (2)  $2\sqrt{3}$  km/hr
  - (3)  $\sqrt{2}$  km/hr
  - (4)  $\sqrt{3}$  km/hr
94. Displacement has :
- (1) magnitude only
  - (2) sense only
  - (3) both sense and magnitude
  - (4) absolute quantity





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100. If a particle is projected with a velocity  $u$  at an angle  $\alpha = 45^\circ$ , then :

- (1) the range is minimum
- (2) the range is maximum
- (3) the range is maximum and equals  $\frac{u^2}{2g}$
- (4) the time to the highest point is  $\frac{u}{g\sqrt{2}}$

101. How many such letter-pairs are there in the word MONKEY having same no. of letters left between them as they have in the series ?

- (1) 4
- (2) 3
- (3) 2
- (4) 1

102. Which is the 8<sup>th</sup> letter to the right of 15<sup>th</sup> letter your left in the following series ?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- (1) G
- (2) H
- (3) V
- (4) W

103. If KEDGY is coded as EKDYG then how will LIGHT be coded ?

- (1) ILHTG
- (2) ILGHT
- (3) ILGTH
- (4) THGIL

104. If Hand is coded as Leg, Leg is coded as car, car is coded as Nose, Nose is coded as Eyes, then by which part of body you walk on the earth ?

- (1) Nose
- (2) Leg
- (3) Hand
- (4) Ear

105. As 'House' is related to the 'Mason', similarly 'Furniture' is related to what ?  
 (1) Magician (2) Carpenter (3) Sailor (4) Tailor
106. Letters of which of the alternative answers when placed at the blank places one after another will complete the given letter series ?  
 a — bbc — aab — cca — bbcc  
 (1) acba (2) bacb (3) caba (4) abba
107. Ankita is at 25<sup>th</sup> place from one end in a group of 35 students. What is his position from the other end ?  
 (1) 10 (2) 11 (3) 12 (4) 15
108. Priya goes 25 km towards south from her fixed place. Then after turning to her right she goes 30 km and then again turning her left she goes 10 km. In the end after turning to her left she goes 30 km. How far is she from her starting point ?  
 (1) 30 km (2) 40 km (3) 35 km (4) 45 km
109. If 25 is related with 52 in the same way 29 is related to which of the following numbers ?  
 (1) 11 (2) 18 (3) 92 (4) 22

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110. In the following question two statements are given and four conclusions I, II, III and IV are given under them. The given statements may be contrary to the universal opinion, even then you have to assume them as true. Then decide which conclusion on the basis of given statement is logically valid.

Statements : All kings are beggars.

All beggars are monks.

Conclusions : I. All beggars are kings.

II. All kings are monks.

III. Some monks are beggars

IV. No monk is beggar

(1) only I

(2) All come

(3) only III and IV

(4) only II and III come

111. Introducing Priyanka. Saroj says that her mother is the only daughter of my mother. How is Saroj related to Priyanka ?

(1) Mother

(2) Sister

(3) Daughter

(4) Aunt

112. If + means  $\times$ ,  $\times$  mean  $-$ ,  $-$  means  $\times$  and  $\times$  means  $+$ , then the value of

$48 + 16 - 4 - 2 \times 8$  is :

(1) 3

(2) 6

(3) -28

(4) 112

**113. Directions.** In the following question a statement is followed by two assumptions. On the basis of the statement choose which is/are implicit.

**Statement.** "Please issue a circular to all the officers to assemble in the conference Hall for attending a notice." Director tells his secretary.

**Assumptions.** (I) All the officers will follow the instruction.

(II) Some officers may not attend the meeting.

- (1) Only assumption II is implicit
- (2) Only assumption I is implicit
- (3) Either I or II is implicit
- (4) Both II and I are implicit

**114. Direction.** In the following question, four alternatives are given. One of these four shows the most essential component. Hence find out the correct answer. In the desert it is necessary :

- |                |          |
|----------------|----------|
| (1) camel      | (2) sand |
| (3) watermelon | (4) wind |

**115.** Four person P, Q, R and S read a book turn by turn. R reads just before P, Q reads after P but before S. Who does read first ?

- |       |       |       |            |
|-------|-------|-------|------------|
| (1) P | (2) Q | (3) R | (4) Q or R |
|-------|-------|-------|------------|

**116.** As 'class' is related to 'student' in the same way 'Train' is related to

- |               |            |
|---------------|------------|
| (1) Wheel     | (2) Rails  |
| (3) Passenger | (4) Driver |

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117. The following letter-series which one of the following alternative would replace the question - mark ?

BE, DG, FI, HK, ?

- (1) KM                      (2) KN                      (3) LO                      (4) JM

**Directions. Q 118-122 :** Data on the candidates, who took an examination in Social Sciences, Mathematics and Science are given below :

Passed in all subjects 167	Failed in all subjects 60
Failed in Social Sciences 175	Failed in Mathematics 199
Failed in Science 199	Passed in Social Science only 62
Passed in Mathematics only 48	Passed in Science only 52

Answer the following questions based on above data :

118. How many failed in one subject only ?

- (1) 56                      (2) 61                      (3) 144                      (4) 152

119. How many failed in two subject only ?

- (1) 56                      (2) 61                      (3) 144                      (4) 162

120. How many failed in social sciences only ?

- (1) 15                      (2) 21                      (3) 30                      (4) 42

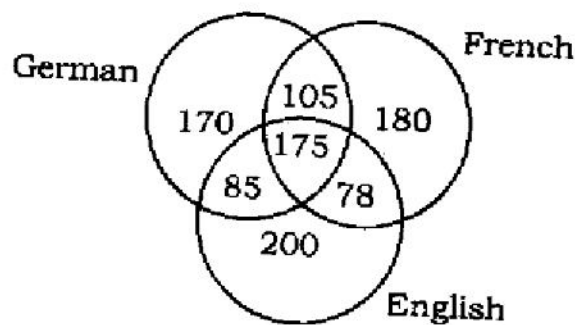
121. How many passed at least in one subject ?

- (1) 167                      (2) 304                      (3) 390                      (4) 450

122. How many passed in Mathematics and at least in one more subject ?

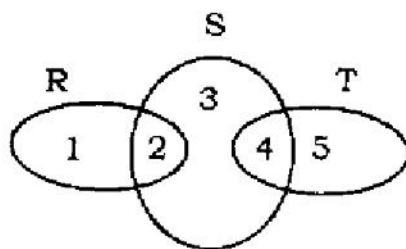
- (1) 94                      (2) 170                      (3) 203                      (4) 210

123. A survey was conducted on a sample of 1000 persons with reference to their knowledge of English, French and German. The result is presented in the Venn diagram. The ratio of the number of persons who do not know the three languages to those who know all the three languages is :



- (1)  $\frac{1}{27}$                       (2)  $\frac{1}{25}$                       (3)  $\frac{7}{550}$                       (4)  $\frac{175}{1000}$

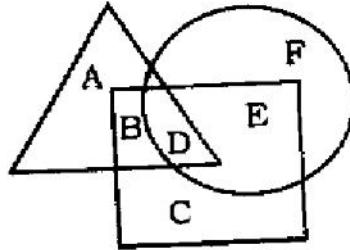
124. In the following diagram, R represents businessmen, S represents rich men, T represents honest men. Which number will represent honest rich men ?



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

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125. In the given figure, the triangle represents sports persons and circle represents coaches. The portion in the figure which represents girls who are sports persons but not coaches is labelled :



- (1) A                      (2) B                      (3) D                      (4) E

**Directions : Q. 126-130.** In each of the questions from 126 to 130, four alternatives are given. One of these four shows the most essential component. Hence find out the correct answer :

126. In a desert it is necessary -

- (1) camel              (2) sand              (3) watermelon      (4) wind

127. In a man it is necessary -

- (1) Heart              (2) Teeth              (3) Fingers              (4) Eyes

128. In a tree it is necessary -

- (1) Leaves              (2) Fruits              (3) Flowers              (4) Roots



129. In a country it is necessary -

- (1) Prime Minister                      (2) Army  
(3) Area                                      (4) Industry

130. The most essential for a hospital is -

- (1) Air                      (2) Nurse                      (3) Telephone                      (4) Doctor

**Directions Q. 131-132 :** In the questions 131 and 132, choose the word, which is most nearly the same in meaning to the **bold** word and mark it.

131 His style is quite **transparent** :

- (1) verbose                      (2) involved                      (3) lucid                      (4) witty

132. **High** :

- (1) Tall                      (2) Short                      (3) Fat                      (4) Thin

**Directions. Q. 133-134 :** In the questions 133 and 134, choose the word which is most nearly the **OPPOSITE** in meaning to the **bold** word and mark it.

133. Lucy is a **smart** girl.

- (1) active                      (2) indecent                      (3) casual                      (4) lazy

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**134. Day :**

- (1) year                      (2) month                      (3) night                      (4) hour

**Direction. Q. 135 :** In the following questions **135**, sentences are given with blanks to be filled in with appropriate words. Choose correct alternative out of the four and mark it.

**135.** He granted the request because he was.....to.....his friend :

- (1) sure, displeasure                      (2) unwilling, please  
(3) reluctant, disappoint                      (4) bound, hurt

**136.** The heart and the nerve centre of a computer is its :

- (1) C.P.U.                      (2) memory  
(3) output unit                      (4) input unit

**137.** A finite sequence of steps needed to solve a problem is called a/an :

- (1) method of solution                      (2) process  
(3) algorithm                      (4) flow-chart

**138.** Main memory unit of a computer :

- (1) performs arithmetic  
(2) stores a small amount of data and instructions  
(3) stores bulk of data and instructions  
(4) supervises the working of all the units

139. The symbolic statement  $i = i + a$  is true, if here  $i$  stands for multiplicative identity.

- (1) not true in any algebra
- (2) in both the algebras
- (3) only in ordinary algebra
- (4) only in Boolean algebra

140. If  $a, b, c$  are elements of a Boolean algebra, then  $ab + c(a' + b')$  will be equal to :

- |              |               |
|--------------|---------------|
| (1) $a + bc$ | (2) $ab + c$  |
| (3) $ac + b$ | (4) $a' + bc$ |

141. A CPU consist of :

- (1) input, output unit
- (2) memory unit
- (3) arithmetic and logical unity control unit
- (4) back-up devices

142. C is a :

- |                           |                         |
|---------------------------|-------------------------|
| (1) Middle level language | (2) High level language |
| (3) Low level language    | (4) None of the above   |

143. Which of the following shows the correct hierarchy of arithmetic operations in C :

- |   |   |
|---|---|
| (1) $()$ , $**$ , $*$ or $/$ , $+$ or $-$ | (2) $()$ , $**$ , $*$ , $/$ , $+$ , $-$ |
| (3) $()$ , $**$ , $/$ , $*$ , $+$ , $-$   | (4) $()$ , $/$ or $*$ , $-$ or $+$      |

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**144.** Which of the following is a storage class specification of C ?

- (1) Automatic
- (2) External
- (3) Internal
- (4) All of the above

**145.** In C, structure values can be passed as arguments to functions by :

- (1) passing each member of the structure as an actual argument of function code
- (2) passing a copy of the entire structure to the called function
- (3) passing the structure as an argument using pointers
- (4) All of the above

**146.** Which newspaper has the motto..... Journalism of courage ?

- (1) The Hindustan Times
- (2) The Washington Post
- (3) The Indian Express
- (4) The Guardian

**147.** The Indian Railways is one of the largest railway systems with an extensive network of over 63,000 route kilometers. Approximately.....of the network is electrified.

- (1) 50%
- (2) 25%
- (3) 45%
- (4) 60%

**148.** The National Literacy Mission (NLM) seeks to achieve full literacy i.e. a sustainable threshold level of 75% literacy by year :

- (1) 2005
- (2) 2010
- (3) 2015
- (4) 2020

149. Who appointed the Governor of a State ?

- (1) The President of India
- (2) Chief Justice of India
- (3) Prime Minister of India
- (4) Vice-President of India

150 Bhopal gas tragedy is associated with the leakage of :

- (1) ethylcyanide
- (2) phenyl isocyanate
- (3) methyl isocyanate
- (4) methyl isocyanide

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**ROUGH WORK**  
रफ़ कार्य

15P/203/4(i)

**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 10 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 जावेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जावेगा।
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 जावेगा।
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 जावेगा।
10. ध्यान दें कि एक बार स्वाही 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।