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O.M.R. Serial No. | | | | | | | | |

Question Booklet Number

M.A./M.Sc. (SEM.-IV)(NEP) (SUPPLE.) EXAMINATION, 2024-25
MATHEMATICS
(Advanced Abstract Algebra)

Paper Code							
B	0	3	1	0	0	1	T

Question Booklet Series
A

Time : 1 : 30 Hours **Max. Marks : 75**

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction :

(Remaining instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

1. $(Z,+,\cdot)$ be the ring of integers and $\langle n\rangle$ be the ideal generated by n then $\frac{Z}{\langle n\rangle}$ is isomorphic to :

(A) Z_n

(B) Z

(C) R

(D) None of the above

2. Order of the field $Z[i]/\langle 3\rangle$ is (where $\langle 3\rangle$ denotes ideal generated by 3) :

(A) 16 (B) 9

(C) 25 (D) 49

3. The number of elements in $Z[i]/\langle 1+2i\rangle$ will be :

(A) 5 (B) 25

(C) 9 (D) 16

4. If Q is the field of rational numbers then Q will be :

(A) A prime field

(B) Not an integral domain

(C) Not a prime field

(D) Not a field

5. $x^m - 1$ divides $x^n - 1$ over field F if and only if :

(A) $m > n$

(B) m/n

(C) $m = 2n$

(D) None of the above

6. The field $Q\left(\sqrt{2},\sqrt{3}\right)$ will be equal to:

(A) $Q(2)$

(B) $Q(3)$

(C) $Q\left(\sqrt{2}+\sqrt{3}\right)$

(D) None of these

7. If K is an extension of field F and $a \in K$ is algebraic over F, then $F(a)$ will be :

(A) A finite extension of F

(B) An infinite extension of F

(C) $F(a)$ will be a subfield of F

(D) None of the above

8. If K is an extension of a field F and $a \in K$ be algebraic of degree n over F then $[F(a):F]$ will be :

(A) 0 (B) 1

(C) n (D) $2n$

9. Let K be an extension of field F and $a \in K$ be algebraic over F. If a satisfies an irreducible polynomial $p(x) \in F[x]$, then $p(x)$ must be :

(A) A minimal polynomial for a over F

(B) $p(x)$ must be reducible

(C) $p(x)$ must be constant

(D) None of the above

10. If L is a finite extension of K and if K is a finite extension of F, then $[L:F]$ is :

(A) $[K:F]$

(B) $[L:K]$

(C) $[L:K][K:F]$

(D) None of the above

11. The basis of $Q\left(\sqrt{2},\sqrt{3}\right)$ over Q will be :

(A) $\{1,\sqrt{2}\}$

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

(C) $\{1,\sqrt{6}\}$

(D) $\{1,\sqrt{2},\sqrt{3},\sqrt{2}\sqrt{3}\}$

12. If C is the field of complex numbers and R is the field of real numbers then $[C:R]$ will be :

(A) 1 (B) 2

(C) 3 (D) 4

13. Let $a \in K$ be algebraic over F, then any two minimal monic polynomials for a over F will be :

(A) Equal

(B) Not equal

(C) Constant

(D) None of the above

14. Let K be an extension of a field F and $a \in K$ if $F(a)$ is a finite extension of F then :

(A) a will be algebraic over F

(B) a will be transcendental element

(C) a must be zero

(D) None of the above

15. If K be an extension of field F and if $a,b \in K$ are algebraic over F, then :

(A) $a+b$ will not be algebraic over F

(B) $a-b$ will not be algebraic over F

(C) ab will be algebraic over F

(D) None of the above

16. Let F be field and $F[x]$ be the ring of polynomials in x over F. Let $f(x) \in F[x]$ and $\deg f(x) = n$ and let $\langle f(x) \rangle$ be the ideal generated by $f(x)$ then $F[x]/\langle f(x) \rangle$ will be :

(A) n-dimensional vector space over F

(B) Not a vector space

(C) Not a n-dimensional vector space over F

(D) None of these

17. If $a,b \in K$ are algebraic over F of degrees m and n respectively and if $(m,n)=1$ then degree of $F(a,b)$ over F will be :

(A) m (B) n

(C) mn (D) $m-n$

18. Let K be an extension of field F and let $a \in K$ is algebraic over F, then $F[x]/V$ (Where V is the ideal of $F[x]$ generated by the minimal polynomial for a over F) is isomorphic to :

(A) F

(B) $F(a)$

(C) $F-\{0\}$

(D) None of the above

19. Let F be any field and let $p(x) \in F[x]$, then an element a lying in some extension field of F is a root of $p(x)$ if :

(A) $p'(x) = 0$

(B) $p(a) = 0$

(C) $p(a) > 0$

(D) $p(a) < 0$

20. If $p(x) \in F[x]$ and if K is an extension of F, then for any $c \in K$, $p(x) = (x-c)q(x) + p(c)$ where $q(x) \in K[x]$, then $\deg q(x)$ will be:

(A) $\deg p(x)$

(B) $\deg p(x) - 1$

(C) $\deg q'(x)$

(D) None of the above

21. If Q is the field of rational numbers then $\left[Q\left(\sqrt{3}, \sqrt{5}\right) : Q\right]$ is :

(A) 2

(B) 3

(C) 4

(D) 5

22. If Q is the field of rational numbers then $\left[Q\left(\sqrt{7}, \sqrt{11}\right) : Q\right]$ is :

(A) 2

(B) 3

(C) 4

(D) 9

23. If Q is the field of rational numbers then $\left[Q\left(2^{1/2}, 2^{1/4}, 2^{1/8}\right) : Q\right]$ is :

(A) 2

(B) 6

(C) 7

(D) 8

24. A field may has :

(A) 48 elements

(B) 25 elements

(C) 24 elements

(D) 52 elements

25. Characteristic of a finite field is :

(A) Non-zero and prime

(B) Zero

(C) Composite

(D) None of the above

26. If a finite field has 25 elements, then each element of this field satisfies the equation :

(A) $x^{25} = 1$

(B) $x^{25} = x$

(C) $x^{25} = x^2$

(D) $x^{25} = x^3$

27. A general polynomial is not solvable by radicals if :

(A) The degree of polynomial is 2

(B) The degree of polynomial is 3

(C) The degree of polynomial is 4

(D) The degree of polynomial is 5

28. Which is true?

(A) $\left(\sqrt{2}+\sqrt{\pi}\right)$ is algebraic over $Q(\pi)$

(B) R is a finite extension of Q

(C) $\left[Q\sqrt{2}:Q\right]=6$

(D) $\sin^{-1}\frac{1}{2}$ is algebraic over Q

29. $Q\left(\sqrt{7},\sqrt{11}\right)$ will be equal to :

(A) $Q\left(\sqrt{77}\right)$

(B) $Q\left(\sqrt{7}+11\right)$

(C) $Q\left(7+\sqrt{11}\right)$

(D) $Q\left(\sqrt{7}+\sqrt{11}\right)$

30. Basis of $Q\left(\sqrt{5},\sqrt{7}\right)$ over Q will be :

(A) $\left\{\sqrt{5},\sqrt{7}\right\}$

(B) $\left\{1,\sqrt{5}\right\}$

(C) $\left\{1,\sqrt{7}\right\}$

(D) $\left\{1,\sqrt{5},\sqrt{7},\sqrt{5}\sqrt{7}\right\}$

31. Basis of $Q\left(2^{1/3},2^{1/2}\right)$ over Q will be:

(A) $\left\{1,2^{1/3},2^{2/3},2^{1/2},2^{1/6},2^{5/6}\right\}$

(B) $\left\{1,2^{1/3},2^{2/3}\right\}$

(C) $\left\{1,2^{1/2},2^{1/3}\right\}$

(D) None of the above

32. $\left[Q\left(2^{1/2}\right):Q\right]$ is :

(A) 1

(B) 2

(C) 4

(D) 5

33. If R is the field of real numbers, then $\dfrac{R[x]}{\left\langle x^2+1\right\rangle}$ is isomorphic to:

(A) Q

(B) R

(C) $\mathbb{C}$

(D) $R[x]$

34. If $a\in K$ algebraic over F and $p(x)$ is the minimal polynomial for a over F, then :

(A) $\left[F(a):F\right]=\deg p(x)$

(B) $\left[F(a):F\right]>\deg p(x)$

(C) $\left[F(a):F\right]<\deg p(x)$

(D) None of the above

35. Which of the following is true?

(A) $\sin 7^\circ$ is algebraic over Q

(B) $\sin 13^\circ$ is not algebraic over Q

(C) $\sin^{-1}1$ is algebraic over Q

(D) $\sin^{-1}\left(\dfrac{\sqrt{3}}{2}\right)$ is algebraic over Q

36. Degree of the extension $Q\left(2^{\frac{1}{2}}+2^{\frac{1}{3}}\right)$ over $Q\left(\sqrt{2}\right)$ is :

(A) 1

(B) 2

(C) 3

(D) 4

37. Basis of $Q\left(\sqrt{13},\sqrt{17}\right)$ over Q will be:

(A) $\left\{1,\sqrt{13}\right\}$

(B) $\left\{1,\sqrt{17}\right\}$

(C) $\left\{\sqrt{13},\sqrt{17}\right\}$

(D) $\left\{1,\sqrt{13},\sqrt{17},\sqrt{13}\sqrt{17}\right\}$

38. The minimal polynomial for $\sqrt{2}$ over Q will be :

(A) x^2-2

(B) $x-2$

(C) x^4-2

(D) x^6-2

39. $\left[Q\left(2^{\frac{1}{3}},3^{\frac{1}{4}}\right):Q\right]$ is :

(A) 5

(B) 10

(C) 12

(D) 14

40. Find $\left[Q\left(2^{\frac{1}{3}},2^{\frac{1}{2}}\right):Q\left(2^{\frac{1}{2}}\right)\right]$

(A) 3

(B) 4

(C) 5

(D) 6

41. Basis of $Q\left(2^{\frac{1}{3}}\right)$ over Q is :

(A) $\left\{1,2^{\frac{1}{3}}\right\}$

(B) $\left\{1,2^{\frac{2}{3}}\right\}$

(C) $\left\{1,2^{\frac{1}{3}},2^{\frac{2}{3}}\right\}$

(D) None of the above

42. Inverse of $3-\sqrt{2}$ in $Q\left(\sqrt{2}\right)$ is :

(A) $\frac{1}{7}\left(\sqrt{2}+3\right)$

(B) $\frac{1}{7}\left(\sqrt{2}-\sqrt{3}\right)$

(C) $\frac{1}{7}\left(\sqrt{2}-3\right)$

(D) $\frac{1}{7}\left(\sqrt{2}-\sqrt{5}\right)$

43. If $x^2-2x+2\in Z_3[x]$ and let α is a root of the given polynomial, then $Z_3(\alpha)$ will have :

(A) 9 elements

(B) 10 elements

(C) 11 elements

(D) 12 elements

44. A polynomial of degree n over a field can have at most :

(A) n roots

(B) $2n$ roots

(C) n^2 roots

(D) n^3 roots

45. The field $\dfrac{Q[x]}{\langle x^6-2\rangle}$ is isomorphic to :

(A) Q (B) $Q\left(2^{1/2}\right)$

(C) $Q\left(2^{1/3}\right)$ (D) $Q\left(2^{1/6}\right)$

46. Consider the polynomial $x^2+x+1 \in Z_2[x]$, if α is a root of this polynomial, then the field $Z_2(\alpha)$ will have:

(A) 4 elements

(B) 6 elements

(C) 8 elements

(D) 25 elements

47. Let $x^2+1 \in Q[x]$ then the extension field at which x^2+1 has a root will be:

(A) $\dfrac{Q[x]}{\langle x^2+1\rangle}$

(B) $Q[x]$

(C) Q

(D) None of the above

48. Let $p(x)$ is a polynomial in $F[x]$ of degree 17 and it is irreducible over *F*, then the extension field *E* of *F*, in which $p(x)$ has a root, then $[E:F]$ must be :

(A) 1

(B) 5

(C) 12

(D) 17

49. If $f(x) \in F[x]$, then there is a finite extension *E* of *F*, in which $f(x)$ has a root then :

(A) $[E:F] \le \deg f(x)$

(B) $[E:F] < \deg f(x) - 4$

(C) $[E:F] = 0$

(D) None of the above

50. Let *F* be a finite field of characteristic 7 then *F* has :

(A) 49 elements

(B) 47 elements

(C) 48 elements

(D) 100 elements

51. Let *F* be a finite field of 7 elements and let *K* be a finite extension of *F* such that $[K:F]=3$ then *K* has :

(A) 7 elements

(B) 7^2 elements

(C) 7^3 elements

(D) 7^4 elements

52. If the finite field *F* has 7 elements then every $a \in F$ satisfies :

(A) $a^7 = a$

(B) $a^7 = a^2$

(C) $a^7 = a^3$

(D) $a^7 = a^4$

53. Which statement is true?

(A) A general polynomial of degree 4 is not solvable by radicals

(B) Let F be a field of characteristic zero containing all nth roots of unity for every integer n. If $p(x) \in F[x]$ is solvable by radicals over F, then the Galois group over F of $p(x)$ is a solvable group

(C) A regular hexagon is not constructible

(D) The polynomial $8x^3 - 6x - 1$ is reducible over Q

54. Which statement is not true?

(A) The Galois group of a polynomial over a field is isomorphic to a group of permutations of its roots

(B) K is a normal extension of field F of characteristic 0 if and only if K is the splitting field of some polynomial over F

(C) Let K be a normal extension of field F of characteristic 0. If T is a subfield of K containing F, then T is a normal extension of F if only if

$$\sigma(T) \subseteq T, \forall \sigma \in G(K,F)$$

(D) If K is a finite extension of field F then

$$O(G(K,F)) \geq [K:F]$$

55. If K is a finite extension of field F of characteristic zero and H is a subgroup of $G(K,F)$. Let K_H be the fixed field of H, then which statement is true?

(A) $[K:K_H] = 0(H)$

(B) $[K:K_H] \geq 0(H)$

(C) $0(H) > [K:K_H]$

(D) None of the above

56. Let F be a field of characteristic p and K be extension field F then $a \in K$ algebraic over F, is separable over F if and only F:

(A) $F(a^p) > F(a)$

(B) $F(a^p) < F(a)$

(C) $F(a^p) = F(a)$

(D) None of the above

57. Let char $F = p$ then for $n \geq 1$ and $a, b \in F$:

(A) $(a+b)^{p^n} = a^{p^n} + b^{p^n}$

(B) $(a+b)^{p^n} = a^{p^n}$

(C) $(a+b)^{p^n} = b^{p^n}$

(D) $(a+b)^{p^n} > a^{p^n} + b^{p^n}$

58. Which statement is true?

(A) $Q\left(2^{1/3}\right)$ is not a radical extension of Q

(B) $Q\left(2^{1/4}\right)$ is not a radical extension of Q

(C) $Q\left(2^{1/3}, 3^{1/2}\right)$ is a radical extension of Q

(D) None of the above

59. Which statement is not true?

(A) If the field F contains all nth roots of unity and a is a non-zero element of F and let K be the splitting field of $x^n - a$ then $K = F(u)$, where u is any root of $x^n - a$

(B) $Q\left(2^{1/3}\right)$ is a radical extension of Q

(C) $f(x) = x^2 + ab + b \in Q[x]$, $f(x)$ is solvable by radicals

(D) $Q\left(3^{1/4}\right)$ is not a radical extension of Q

60. Which statement is not true?

(A) The general polynomial of degree $n \geq 5$ is not solvable by radicals

(B) If the Galois group of $p(x)$ over F is solvable then $p(x)$ is solvable by radicals over F

(C) Doubling of a cube is possible

(D) Trisecting of an angle is impossible

61. Let F be a finite field having q elements then which statement is true?

(A) char F is p, where p is some prime number

(B) If char $F = p$, then $q = p^n - p$

(C) Char F is a composite number

(D) None of the above

62. If K is splitting field of $x^4 - 2 \in Q[x]$ then $0(G(K,Q))$ is:

(A) 2

(B) 4

(C) 8

(D) 16

63. $\left[Q\left(2^{1/4}\right) : Q\right]$ is :

(A) 4

(B) 6

(C) 8

(D) 16

64. Let $K = Q\left(2^{1/3}\right)$ then the Galois group of K over F, $G(K,Q)$ have :

(A) 1 element

(B) 2 elements

(C) 3 elements

(D) 4 elements

65. If $K = Q\left(2^{1/3}\right)$, then $G(K,Q)$ have:

(A) Identity automorphism

(B) Two automorphism

(C) Four automorphism

(D) None of the above

66. If K be the field of complex numbers and let $(F,+,\cdot)$ be the field of real numbers then $G(K,F)$ is :

(A) $\{\sigma_1\}$

(B) $\{\sigma_1, \sigma_2\}$

(C) $\{\sigma_1, \sigma_2, \sigma_3\}$

(D) $\{\sigma_1, \sigma_2, \sigma_3, \sigma_4\}$

(Here σ_i represents automorphism on K)

67. The Galois group of the equation $x^3 - 2 = 0$ over Q has :

(A) 4 elements

(B) 6 elements

(C) 8 elements

(D) 10 elements

68. A finite extension K of a field F is said to be a normal extension of F if the fixed field of $G(K,F)$ is :

(A) K (B) F

(C) Q (D) None of the above

69. Let $f(x)$ be irreducible over F and if char $F = p$ then $f(x)$ has multiple roots if $g(x) \in F[x]$ such that :

(A) $f(x) = g(x)$

(B) $f(x) = g(x^p)$

(C) $f(x) < g(x)$

(D) $g(x) > f^2(x)$

70. An irreducible polynomial $f(x) \in F[x]$, where F is a field, is said to be separable over F if :

(A) Roots of $f(x)$ in its splitting field are all simple

(B) All roots of $f(x)$ are equal

(C) All roots of $f(x)$ are zero

(D) None of the above

71. Which statement is not true?

(A) A field is called perfect if all finite extensions of F are separable

(B) Every field of characteristic zero is perfect

(C) Every finite field is perfect

(D) Every field with a non-zero characteristic is perfect

72. Which statement is not true?

(A) If L is a normal extension of F and K is an intermediate field then L is also normal extension over K

(B) If L is a normal extension of F and K is an intermediate field then K is also normal extension of F

(C) K is a normal extension of a field F of characteristic zero if and only if K is the splitting field of some polynomial over F

(D) Every field of characteristic zero is perfect

73. Which statement is not true?

(A) Let α, β be separable over field F then $F(\alpha, \beta)$ is a simple extension of F

(B) Galois group of a polynomial is a group of permutations of its roots

(C) Every field with a non-zero characteristic is perfect

(D) Every finite field is perfect

74. Which statement is not true?

(A) A finite extension K of a field F is said to be normal extension of F if the fixed field of $G(K, F)$ is F

(B) If K is a normal extension over F and $\alpha \in K$ and if $f(x)$ is the minimal polynomial of α over $F[x]$ then $f(x)$ can be expressed as a product of linear factors in $K[x]$

(C) K is a normal extension of F if fixed field of $G(K, F)$ is F

(D) K is a normal extension of F if fixed field of $G(K, F)$ is K

75. If $K = Q(\sqrt{2}, \sqrt{3})$, then order of $G(K, Q)$ is :

(A) 2

(B) 4

(C) 6

(D) 8

76. Basis of $Q(\sqrt{3}, \sqrt{5})$ over Q will be :

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

(B) $\{1, \sqrt{5}\}$

(C) $\{1, \sqrt{3}, \sqrt{5}, \sqrt{15}\}$

(D) None of the above

77. If a is a root of multiplicity of m of $p(x)$ then $(x-a)^m / p(x)$ then :

(A) $p(x) = (x-a)^m g(x)$ for some $g(x)$

(B) $p(x) = (x-a)$

(C) $p(x) = (x-a)^2$

(D) $p(x) = (x-a)^m$

78. Let $p(x)$ be a non-zero, non-constant irreducible polynomial of degree n in $F[x]$ and if K is an extension of F and if K has a root of $p(x)$ then :

(A) $[K:F] < n-1$

(B) $[K:F] = n$

(C) $[K:F] = 2$

(D) $[K:F] = 0$

79. Let $f(x) \in F[x]$ be of degree $n \geq 1$, then the extension field K of F in which $f(x)$ has n roots then $[K:F]$ must be :

(A) $[K:F] \leq n!$

(B) $[K:F] = 1$

(C) $[K:F] = 2$

(D) $[K:F] = 0$

80. Let F be a field of characteristic p. Let b be a root of

$f(x) = x^p - x - a \in F[x]$ then the splitting field of $f(x)$ over F is :

(A) $F(a)$

(B) $F(b)$

(C) F

(D) None of the above

81. If K is the splitting field of $x^3 - 2 \in Q[x]$ then $[K:Q]$ is :

(A) 2 (B) 4

(C) 6 (D) 8

82. Splitting field of $x^4 + 1$ over Q is :

(A) $Q(\sqrt{2})$

(B) $Q(i)$

(C) $Q(\sqrt{2}, i)$

(D) None of the above

83. Degree of a minimal splitting field of $x^6 + 1$ over Q is :

(A) 2 (B) 4

(C) 6 (D) 8

84. Degree of a minimal splitting field of $x^4 + 2$ over Q :

(A) 2 (B) 4

(C) 6 (D) 8

85. The degree of a minimal splitting field of $x^6 + 1$ over Z_2 is :

(A) 2 (B) 4

(C) 6 (D) 8

86. Let M be the prime subfield of field F, then :

(A) $m \cong Q$ or $m \cong Z_p$, p is some prime

(B) $M = R$

(C) $M = \mathbb{C}$

(D) None of the above

87. Let F be a field of characteristic p, then $(a+b)^p$ is equal to, where $a, b \in F$, :

(A) $a^{p-1} + b^{p-1}$ (B) $a^p + b^p$

(C) $a + b$ (D) $a^2 + b^2$

88. Let $f \in F[x]$, and if roots of f are simple then :

(A) $f = 0$

(B) $f' = 0$

(C) f and f' are relatively prime

(D) None of the above

89. Algebraic closure of a countable field is :

(A) Finite

(B) Countable

(C) Uncountable

(D) None of the above

90. A primitive element for $Q\left(i, 2^{1/2}\right)$ over Q is :

(A) i (B) $2^{1/2}$

(C) $i + 2^{1/2}$ (D) $2^{1/3}$

91. A finite subgroup of multiplicative group of a field is :

(A) Cyclic (B) Non-abelian

(C) Zero (D) Trivial

92. Let F be a field with p^n elements, then F has a subfield M with p^m elements then :

(A) $m = n$

(B) m divides n

(C) $m > n$

(D) None of the above

93. Let $f(x) = x^3 + 2x + 2 \in Z_3[x]$ then the field $Z_3[x] / \langle f(x) \rangle$ has :

(A) 9 elements

(B) 27 elements

(C) 81 elements

(D) 16 elements

94. Every additive abelian group G is a module :

(A) Over the ring of integers

(B) Over the set of natural numbers

(C) Over the set of complex numbers

(D) None of the above

95. An R-module M is said to be irreducible if :

(A) Its submodules are (0) and M

(B) Its submodule is only (0)

(C) Its submodule is only M

(D) None of the above

96. A module is a generalization of :

(A) Group (B) Ring

(C) Field (D) Vector space

97. The submodule $M + N$ is generated by :

(A) $M \cup N$ (B) $M \cap N$

(C) M^c (D) N

98. If a field regarded as a module over itself then it is a :

(A) Simple module

(B) Artinian module

(C) Northerian module

(D) None of the above

99. Let f be a non-zero homomorphism from R-modules A to B and B is simple then :

(A) $f(A) = \{0\}$

(B) $f(A) = B$

(C) $f(A) = A$

(D) None of the above

100. Any unital irreducible R-module is :

(A) Cyclic

(B) Field

(C) Vector space

(D) None of the above

Rough Work

Example :

Question :

Q.1 Ⓐ ● Ⓒ Ⓓ

Q.2 Ⓐ Ⓑ ● Ⓓ

Q.3 Ⓐ ● Ⓒ Ⓓ

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

उदाहरण :

प्रश्न :

प्रश्न 1 Ⓐ ● Ⓒ Ⓓ

प्रश्न 2 Ⓐ Ⓑ ● Ⓓ

प्रश्न 3 Ⓐ ● Ⓒ Ⓓ

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्णः प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।