NADAR SARSWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

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Subject Code :MA8551	**Subject Name** :ALGEBRA AND NUMBER THEORY	Rev. No.	02
Unit No : II	**Unit Name**: FINIE FIELDS AND POLYNOMIALS	Date	30-09-2020

OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
1	A polynomial in R[x] with all coefficients zero is called ________ ***a) Zero polynomial*** b) Equal polynomials c)constant polynomial d) Monic polynomial	L3
2	A polynomial in which the leading coefficient is 1 is called ________ a) Zero polynomial b) constant polynomial c) Equal polynomials ***d) Monic polynomial***	L3
3	A polynomial of the form f(x) = a_0, where a_0 is a constant is called ______ a) Zero polynomial ***b) constant polynomial*** c) Equal polynomials d) Monic polynomial	L3
4	The number of polynomial are there of degree 2 in $Z_{11}[x]$ is ____ ***a) 1210*** b) 1211 c) 1212 d) 1223	L5
5	The number of polynomial are there of degree n in $Z_{12}[x]$ is _____ a) 11. 12 b) $11^n.12$ ***c) 11.12^n*** d) $(11.12)^n$	L4
6	The number of monic polynomials in $Z_7[x]$ have degree 5 is _____ a) 7 b) 7^2 c) 7^3 ***d) 7^5***	L4
7	If R is a ring with identity 1, the R[x} is a ring with identity is ______ a) 0 b) 2 c) -1 ***d) 1***	L3
8	If R is an integral domain, then deg[f(x) + g(x)] = __________ a) deg[f(x) - g(x)] b) deg[f(x) x g(x)] ***c) deg[f(x)] + deg[g(x)]*** d) deg[f(x)] - deg[g(x)]	L4
9	The degree of the polynomial f(x) = $6x^3 + 5x^2 + 3x - 2$ over Z_6 is ______ a) 6 b) 5 c) 3 ***d) 2***	L4

10	If $f(x) = 4x^2 + 3$ and $g(x) = 2x + 5$ be two polynomial over Z_8, then deg(f(x).g(x))is _______ a) 4 **b) 2** c) 8 d) 10	L4
11	The root of the polynomial $x^2 - 2$ over the real number R is ______ a) 2, -2 b) 3, -3 **c) $\sqrt{2}, -\sqrt{2}$** d) $\sqrt{2}$, -2	L5
12	One root of $f(x) = x^2 + 4$ in $Z_{12}[x]$ is _______ a) 1 b) 4 **c) 8** d) 10	L4
13	If $f(x) = 7x^4 + 4x^2 + 3x^2 + x + 4$ and $g(x) = 3x^3 + 5x^2 + 6x + 1$ belong to $Z_7[x]$, then f(x) + g(x) = _________ a) $7x^4 + 7x^2 + 8x^2 + 7x + 5$ b) $7x^4 + x^2 - 2x^2 + x + 3$ **c) $x^2 + 5$** d) $x^2 - 5$	L4
14	If $f(x) = 4x^2 + 3$ and $g(x) = 2x + 5$ be two polynomial over Z_8, then f(x).g(x) is _______ a) $8x^3 + 20x^2 + 6x + 15$ b) $8x^3 + 20x^2 - 6x + 15$ **c) $4x^2 + 6x + 7$** d) $20x^2 + 6x + 15$	L4
15	Divide $g(x) = x^3 - 3x^2 + 4x + 5$ by $f(x) = x - 2$ the quotient is ______ **a) $x^2 - x + 2$** b) $x^2 - x - 2$ c) $x^2 + x + 2$ d) $-x^2 - x + 2$	L5
16	If $f(x) = 2x^4 + 5x^2 + 2$, $g(x) = 4x^2 + 4$, then the quotient of $Z_7[x]$ is ______ **a) $5x^2 + 1$** b) $5x^2 - 1$ c) $x^2 + 5$ d) $x^2 - 5$	L5
17	If $f(x) = x^5 + 3x^4 + x^3 + x^2 + 2x + 2 \in Z_5[x]$ is divided by $x - 1$, then the remainder is ______ a) 3 b) 2 c) 1 **d) 0**	L5
18	Let F be a field, $a \in F$ and $f(x) \in F[x]$, Then f(a) is the remainder when f(x) is divided by _______ a) x + a **b) x – a** c) ax +1 d) ax -1	L3
19	Let F be a field, $a \in F$ and $f(x) \in F[x]$, Then a is a root of f(x) if and only if _______ is a factor of f(x)	L3

	a) x + a **b) x – a** c) ax +1 d) ax -1	
20	The remainder when $x^{100} + x^{90} + x^{80} + x^{50} + 1$ is divided by x – 1 in $Z_2[x]$ is ______ ***a) 0*** b) 1 c) -1 d) 2	L5
21	Let F be a field and f(x) $\in$ F[x] is of the degree ≥ 2. We call f(x) is reducible over F if there exist g(x), h(x) $\in$ F[x] such that f(x) = _______ a) g(x) + h(x) b) g(x) – h(x) ***c) g(x).h(x)*** d) g(x)/h(x)	L3
22	If $f(x) = x^3 + x^2 + x + 1 \in Z_2[x]$ is reducible, then the other factor is _____ a) x + 1 b) x – 1 c) $x^2 - 1$ ***d)$x^2 + 1$***	L4
23	The g.c.d of $x^4 + x^3 + 2x^2 + x + 1$ and $x^3 - 1$ over Q is ______ ***a) $x^2 + x + 1$*** b) $x^2 + x - 1$ c) $x^2 - x + 1$ d) $x^2 - x - 1$	L5
24	The ring (Z_3, + .) has characteristic is ______ a) 0 b) 1 c) 2 ***d) 3***	L3
25	In $Z_3[x]$, $s(x) = x^2 + x + 2$. The order of the field $\frac{Z_3[x]}{\langle s(x) \rangle}$ is ______ a) 3 b) 6 ***c) 9*** d) 12	L4