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	Reg. No. :
	Question Paper Code: 20819
	B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.
	Fifth Semester
	Computer Science and Engineering
	MA 8551 — ALGEBRA AND NUMBER THEORY
(C	ommon to Computer and Communication Engineering/Information Technology)
	(Regulations 2017)
Tim	e: Three hours Maximum: 100 marks
	Answer ALL questions.
	PART A — $(10 \times 2 = 20 \text{ marks})$
1.	Define Cyclic group and find all the generators of (\mathbb{Z}_{18},\oplus) .
2.	Determine all the units of Gaussian integer $\mathbb{Z}[i] = \{a+ib \mid a,b \in \mathbb{Z}\}$
3.	Check whether the polynomial $x^4 + 2x + 2$ is irreducible or not over the field orational.
4.	Define irreducible polynomial with example
5.	Find the number of positive integers ≤ 3000 and divisible by 3, 5, or 7.
6.	Evaluate $1011_{two} \times 101_{two}$.
7.	Determine whether the LDEs: $12x + 18y = 30, 2x + 3y = 4$, and $6x + 8y = 25$ are solvable.
8.	Find the remainder when 16 ⁵³ is divided by 7.
9.	Computer: $\phi(16)$ and $\phi(28)$.
10.	Solve the linear congruence. $25x = 13 \pmod{18}$.

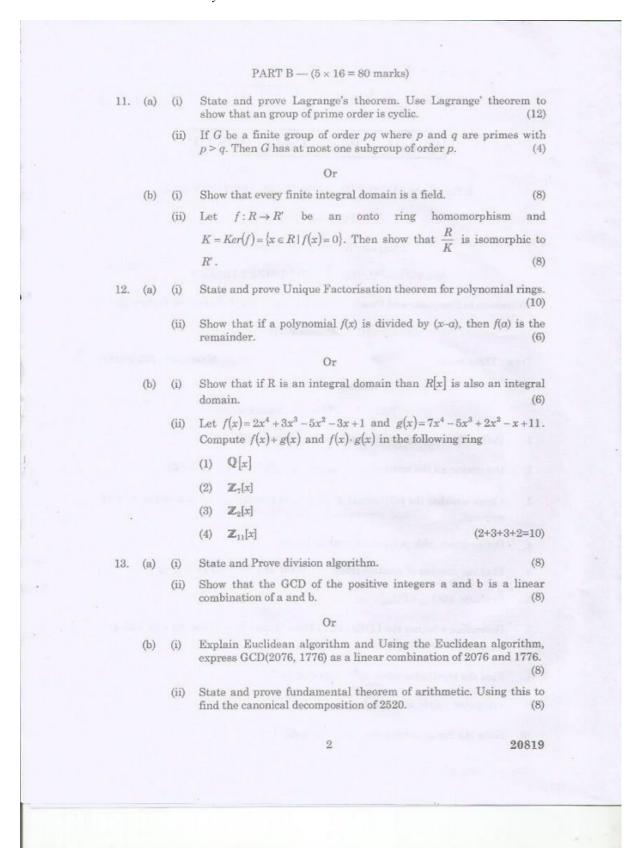
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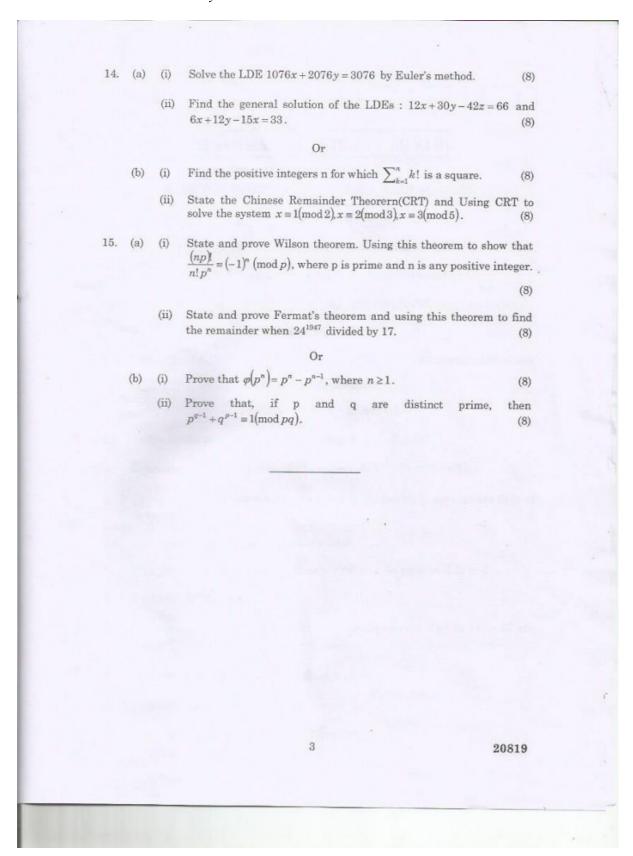
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