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School of Computer Science and Engineering
T. Y. B. Tech. CSE/AIDS/CSF
T.Y. Semester-VI (23-24) Seminar Synopsis

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Panel No.	Panel C
Date	14-02-2024
Topic	Smart Contracts in Supply Chain Management
Abstract (one paragraph of 200-300 words)	<p>Smart Contracts, utilizing blockchain technology to enhance, automate, and streamline contractual processes, represent a significant paradigm shift in supply chain management. These contracts, seamlessly integrated into the blockchain ledger, offer a novel approach to executing and enforcing agreements among stakeholders. By eliminating the need for intermediaries, they bring about substantial improvements in risk management, cost-effectiveness, and operational efficiency within supply chains. At their core, Smart Contracts function as self-executing protocols, meticulously crafted to initiate predefined actions upon specific events. Their application spans a wide range of supply chain activities, including production, distribution, logistics, and procurement. For instance, when a supplier meets quality standards or successfully delivers goods, a Smart Contract automatically triggers processes such as payment processing or inventory updates, facilitating swift and accurate transactional proceedings.</p> <p>One of the key advantages of Smart Contracts lies in their ability to enhance transparency throughout the supply chain ecosystem. By being recorded immutably on the blockchain, transactions become verifiable and traceable in real-time, providing stakeholders with unprecedented insight into the provenance, authenticity, and compliance status of goods. This transparency fosters trust among participants, mitigates risks associated with counterfeit products or unethical practices, and promotes ethical and sustainable business conduct. Moreover, Smart Contracts serve as robust guardians of data integrity and security, leveraging cryptographic techniques to safeguard sensitive information against unauthorized access, tampering, or breaches. The decentralized nature of blockchain ensures data replication across multiple nodes, enhancing resilience against cyber threats and minimizing vulnerabilities. In summary, the integration of Smart Contracts into supply chain management heralds a new era of efficiency, transparency, and trust within the global trade ecosystem, facilitating enhanced collaboration, innovation, and value creation among disparate stakeholders.</p>
Keywords (3-5 words)	Smart Contracts, Blockchain Technology, Supply Chain Management.

**References
(05-07
Research
papers in IEEE
format)**

1. T. Yao, Y. Zheng, X. Zhang, J. Xie, and J. Chen, "Secure Data Sharing in Collaborative Blockchain-Enabled Industrial Internet of Things," IEEE Transactions on Industrial Informatics, vol. 17, no. 5, pp. 3371-3380, May **2021**, doi: 10.1109/TII.2020.3027321.
2. S. Y. Park, C. H. Lee, and H. J. Kim, "A Smart Contract Framework for Supply Chain Collaboration and Data Provenance," IEEE Access, vol. 9, pp. 59005-59015, **2021**, doi: 10.1109/ACCESS.2021.3079833.
3. R. Xu, Y. Chen, T. Zhang, and X. Xie, "Blockchain-Based Decentralized Privacy-Preserving Authentication Scheme for Vehicular Fog Computing," IEEE Transactions on Industrial Informatics, vol. 16, no. 10, pp. 6546-6555, Oct. **2020**, doi: 10.1109/TII.2020.2981621
4. L. Guo, H. Shen, H. Lin, W. Wang, and X. S. Shen, "Blockchain-Enabled Data Sharing for Industrial Internet of Things: A Dual Encryption-Based Approach," IEEE Transactions on Industrial Informatics, vol. 16, no. 9, pp. 6032-6040, Sep. **2020**, doi: 10.1109/TII.2019.2965457.
5. H. Shen, L. Guo, H. Lin, W. Wang, and X. S. Shen, "Fine-Grained Access Control Scheme for Blockchain-Based Industrial Internet of Things," vol. 16, no. 6, pp. 3666-3674, Jun. **2020**, doi: 10.1109/TII.2019.2945178.
6. C. H. Lee, J. Y. Park, and H. J. Kim, "Smart Contracts and Edge Computing for Supply Chain Traceability in Smart Factories," IEEE Access, vol. 8, pp. 109780-109790, **2020**, doi: 10.1109/ACCESS.2020.3001943.

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