Trial Exam I

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1 Question 1

Globalisation of knowledge production and regional innovation policy: Supporting specialized hubs in the Bangalore software industry

1.1

Structural components:

- Innovation agents: companies in a region’ s main industrial clusters, including their customers and suppliers. In this sense, industrial clusters represent the production component of the regional innovation system. In the RIS approach, industrial clusters are defined as the geographic concentration of firms in the same or related industries
- Stakeholders: backing up the innovative performance of the first type, include research and higher education institutes (universities, technical colleges, and R&D institutes), technology transfer agencies, vocational training organizations, business associations, finance institutions, etc. The knowledge creating and diffusing organizations provide the resources and services (knowledge, capital, etc.) to support innovation among the local firms

1.2

Crucial processes:

- Interactive learning: crucial for innovation as it is considered to be dependent on social capital and benefits from physical proximity thus enabling innovation will most probably take place when both human capital and social capital are in place.
- Absorb capacity: the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends.
- Collaboration with knowledge providers: interaction with universities and research centers.

1.3

Components and processes based on shared values:

- Interactive learning: this is the centre of innovation and it can benefit the collaboration and trust among the firms as well a knowledge provider and users.
- Building absorb capacity: utilize external knowledge through skilled human capital.
- Social capital development & physical proximity: the trust of social network facilate the interaction and inovation while geographic closeness supports shared norm and may have aggomeration effect.
- Policy support: the government support and policy can help to build the infrastructure and stimulate the collaboration among SMEs and research institutions.

1.4

Drivers include Interactive learning, absorb capacity, social capital, proximity.
Bottlenecks include the weak local linking and some firms' lack of absorptive capacity.

1.5

Solutions include:

- Enhance collaboration: Foster strong networks among SMEs, TNCs, and knowledge institutions to build trust and shared goals.
- Strengthen Absorptive Capacity: Provide training and resources to improve firms' ability to absorb and utilize external knowledge.
- Government Incentives: Use public procurement to create local markets and support innovative projects.
- Promote Proximity Benefits: Encourage co-location of firms and research institutions to enhance collaboration and knowledge sharing.
- Support Interactive Learning: Facilitate programs and initiatives that promote interactive learning and continuous innovation.

2 Question 2

2.1

- Major concepts:

Blockchain, Peer-to-Peer trading of energy, smart contract, 'trilemma' : scalability, security, and decentralisation.

- Research question:

How can blockchain technology address the trilemma of scalability, security, and decentralization in P2P energy trading and the proposal of a scalable, robust, and secure model to support fast and frequent energy trading.

- Resulution:

The paper proposes a second-layer solution model to address scalability issues, which processes transactions off-chain and records them on a side-chain to maintain the blockchain's robustness and security. And proposed solution is empirically tested using data from the RENeW Nexus project, demonstrating its viability in enhancing scalability while maintaining security and decentralization.

2.2

Blockchain-enabled P2P trading allows prosumers to sell surplus electricity directly to consumers without intermediaries, leading to higher earnings compared to feed-in tariffs. Consumers benefit from potentially lower energy costs and the ability to choose their energy source. And the decentralized nature of blockchain ensures transparency and security, so that it reduces the risk with the centralized energy system with intermediaries.

2.3

Agents conducting inclusive research and innovation in STEM actively work to incorporate diverse perspectives and address the needs of underrepresented groups. They prioritize accessibility, equity, and participation in STEM fields, striving to create environments that foster diversity. These agents engage communities, promote interdisciplinary collaboration, and develop policies and practices that ensure all voices are heard and valued in the research and innovation processes.

2.4

Energy-poor people are more likely to become consumers rather than prosumers due to limited resources for investing in energy production infrastructure like solar panels. This disparity could limit the inclusivity of blockchain-enabled P2P energy trading. Without targeted support and policies to assist energy-poor individuals in becoming prosumers, the benefits of this system may be skewed towards those already capable of producing energy, potentially exacerbating existing inequalities. Thus, inclusive measures are crucial for ensuring equitable access and participation in P2P energy markets.