Students need to provide Own Engineering Solution to these problem statements.

How to answer:

* Download this word file
* Type answers for the problem statement (3 to 4 lines for each question)
* Send answer file (Word) by email to [harshas@lgstrust.com](mailto:harshas@lgstrust.com)

This completes all the activities for 20 Points. Reports will be issued by Feb 5th

Questions:

1. **Filling the shortage of Unskilled Labour in Agriculture Segments**

Ans- Some engineering based solutions that can help to fill the shortage of unskilled labour in the agriculture sector are-development of hand tools ,better facility design, small farm affordable machines that make automation of tasks and Easy training mechanisms using visual aids, local languages and practical demonstrations can enable workers with limited literacy to safely operate equipment, Use of data analytics, sensors and automation for precision in terms of resource use (water, fertilizer etc.) helps reduce waste and enhance productivity from existing unskilled workforce.

1. **Filling the shortage of Skilled Labour in Agriculture Segments**

Ans- Solutions that can help to fill the shortage of skilled labour in the agriculture sector are -usage of agriculture drones that can reduce heavy reliance on manual monitoring and inspection by skilled workers, artificial intelligence and internet of things powered systems for targeted irrigation, fertilizer applications etc. Automates complex farm management and saves time for skilled labour, greenhouse technology sophisticated greenhouse structures and net houses integrated with climate control systems modify growing environments and support high crops with limited skilled supervision.

1. **Interconnecting the Labours and Land Owners in Agriculture Segment**

Ans- Develop an app or online platform that matches farmworkers with farms/jobs. Have profiles for both farm owners and labours to list the skills and jobs needed. Worker profiles could list experience level, equipment skills, languages spoken, and availability. Farm

profiles list tasks/roles needed, pay range, seasonality, housing availability, and more. An algorithm can then match workers with appropriate open farm jobs. Build a community/forum aspect where farmers and farmworkers can share best practices in sustainable agriculture, workplace safety guidelines, and provide mentorship opportunities. Bringing workers into knowledge sharing helps retain skills in the industry.

1. **Enhancing the availability and reachability of Farm Machine to Farmers**

Ans- Developing a farm machinery sharing app and platform to connect farmers with locally available machinery for rental or sharing. Farmers could list available equipment while others input their machinery needs, duration, and budget. An algorithm matches farmers to mechanics, dealerships, cooperatives, or individual owners with appropriate rentable equipment nearby. Integrate GPS and smart contracts to build trust and accountability between equipment owners and renters. GPS enables tracking of rental duration and usage to ensure fair compensation. Smart contracts automatically process payments while enforcing contractual terms like timely return. Build a database of DIY equipment maintenance tutorials, manuals and videos to empower farmers to complete basic troubleshooting and repairs themselves. Provide remote access to mechanic assistants as needed.

1. **Enhancing the Farm Machine Skill to Agri Labours and Land Owners**

Ans- Initiate training programs and workshops in collaboration with agricultural machinery manufacturers to enhance the technical skills of both labours and land owners. Develop drones with cameras and sensors to collect farm data to optimize machinery use and precision agriculture techniques. Provide intuitive software dashboards showing field variability mapping, crop stress levels, yield gaps etc. Use drones for hands-on education. Organize regional, hands-on "machinery rodeo" competitions where farmers can showcase equipment operation skills and troubleshooting. Makes skill building fun through peer learning. Reward top performers with prizes/publicity to incentivize participation.