2022 Q. GIS has become global and has permeated almost every aspect of human life. Therefore, Urban Planners can take Urbanization to new scales using GIS. Dissuss with examples. **(20)**

Geographic Information System, integrated with newer tools, software and features has pushed the art of urban planning to newer limits. More precision, artificial intelligence and various other aspects make it a revolutionary toof for urban planners.

Urban Planners can use it for the following purposes:

- **Land use planning and Zoning:**

GIS can be used to plan the spatial resources more efficiently and reduce costs by taking into account the already existing

spatial features into account. It can also prove to be helpful in designating the zones for particular purposes to decrease congestion and relieve complexities of residential and commercial areas.

e.g: Portland Oregon has used GIS to track their urban development while also ensuring the protection of various ecological zones. This is a famous case study of zoning regulations monitored, planned and implemented using GIS.

- **Infrastructure Development and Monitoring:**

Infrastructure can be planned using GIS for more spatial accuracy, while ensuring

efficient provision to all parts of a town. Further, the GIS can also be used to monitor its operation and maintainance. Urban Planners can use it to ensure proper provision of public amenities like drainage, water supply, electric supply and many more.

e.g: "Smart Nation Initiative" by Singapore has been an excellent example of infrastructure management in such a large metropolitan, that is used to monitor the public facilities and infrastructure.

- **Traffic and Transport Management:**

Signal-free or congestion free transit in major urban centers to reduce the cost and time of travel can be another

major application of GIS for Urban Planners. Integrating GIS with the new "Intelligent Transportation System" can help to ensure safe, efficient, timely and cost-effective transit within urban centers.

e.g: Singapore uses GIS in the transportation system to manage it's transport routes, signals coordination and management of traffic flow under the same "Smart Nation Initiative."

•– Environmental Management and Climate-Resilience:

Urban Planners can use GIS to evaluate the need of green spaces, parks, tree cover based on the demographic data and apparent development of the town or area.

It can also be used to make the urban spaces more livable using the real-time data of climate change and specifications of that area.

e.g: New York city has been using GIS to plan new parks, green spaces around new urban spaces, evaluate the need of tree canopy in an area based on the previous development and manage already existing green spaces, hence managing environmental resources and urban development, also make urban areas resilient to Global warming through greenery.

•— Disaster Risk Management:

Urban Planners can use the available data to plan urban center, in order to withstand disasters and

minimize damage and loss to infrastructure and individuals. This may include alternative traffic routes, backup water source and supply, evacuation and response plans etc.

e.g: Tokyo, Japan has used GIS to develop numerous disaster management plans like evacuation plans, drainage recovery routes and various others. This is an excellent example of pre-disaster management with the use of GIS.

Using GIS for such innovative purposes can truely help to make urban planning and management more efficient, safer, sustainable and cost effective, for urban Planners throughout the world.

←————————→