Science & Technology · GS - III

Introduce the concept of Artificial Intelligence (AI). How does AI help clinical diagnosis? Do you perceive any threat to privacy of the individual in the use of AI in healthcare?

EXAM YEAR	PAPER	SUBJECT
2023	GS - III	Science & Technology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

AI enables machines to learn patterns and assist human decision-making; in healthcare it can improve diagnostic speed and accuracy, but sensitive medical data creates serious risks of privacy breaches, profiling and unauthorised use.

Model Answer

Introduction

Artificial Intelligence refers to computational systems capable of performing tasks involving learning, pattern recognition, prediction and decision-making that traditionally require human intelligence.

Body

AI in Clinical Diagnosis

Medical imaging: AI can identify patterns in X-rays, CT scans, MRIs and pathology images that may indicate disease.

Early detection: Machine-learning models can detect disease indicators at an early stage.

Risk prediction: AI can analyse large datasets to estimate risks of conditions such as cardiovascular disease.

Decision support: AI can assist doctors by integrating symptoms, medical history and diagnostic information.

Personalised medicine: Analysis of patient data can help identify treatment options suited to individual characteristics.

Privacy Threats

Healthcare data contains highly sensitive personal information. AI systems may create risks through:

Data breaches: Large datasets are attractive targets for cyberattacks.

Unauthorised secondary use: Patient information may be used beyond the original purpose.

Profiling: Algorithmic systems can potentially infer sensitive characteristics.

Third-party access: Sharing data with technology providers may create accountability concerns.

Re-identification: Even anonymised datasets may sometimes be linked back to individuals.

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Way Forward

Strong consent mechanisms, data minimisation, encryption, anonymisation, auditability, cybersecurity and clear accountability are necessary.

Conclusion

AI can substantially strengthen clinical diagnosis, but healthcare innovation must follow a **privacy-by-design approach** so that technological progress does not compromise patient autonomy and dignity.