

## Open Elective (1 out of 2 papers for students of other Departments):

### Paper No. HS: 457 (Open Elective-1)

#### Science and Technology of Pre-Modern India

Unit. I – Science and Technology of Harappan period-pottery technology-Copper/bronze metallurgy-Post-Harappan metallurgy-Iron technology-megaliths-iron age ceramics-polished ware technology:RCPW,PGW,NBPW- Agricultural science and technology.

Unit. II- Astronomy and mathematics- Bhaskara-Aryabhata-Varahamihira- Developments in medicine and surgery- Ayurveda:Vriksha, Hasti and Asva-Samhitas of Charaka, Susrutha and Bhela.

Unit. III- Maritime technology, port construction technology- shipping technology- navigational technology.

Unit. IV- Science and Technology in the age of the Delhi Sultans- agricultural technology- textile technology-Development of science and technology in the age of the Mughals- Agricultural technology - maritime technology- medical systems-and technology- bio sciences and bio-technology.

#### Reference Books:

1. A.K.Bag (ed.) A.K. Bag, *History of Technology in India*, 4 vols. New Delhi.
2. \_\_\_\_\_. *Science and Civilisation in India*, vol. I. Navarang Publishers.
3. \_\_\_\_\_. *History of Mathematics in Ancient and Medieval India*, Delhi
4. \_\_\_\_\_. *India and Central Asia: Science and Technology*, 2 vols. New Delhi
5. Charles Singer (ed.) *History of Technology*, 4vols.
6. Romila Thapar, *Cultural Past*.
7. Irfan Habib, *Prehistory*, People's history of India, Vol.1, Tulika, Aligarh, 2001.
8. \_\_\_\_\_. *Technology in Medieval India*, 650-1750, Delhi, 2009.
9. \_\_\_\_\_. *Man and Environment*, Delhi, 2011.
10. \_\_\_\_\_. *Agrarian System of Mughal India*,
11. \_\_\_\_\_. and Vijay Kumar Thakur, *The Vedic Age*, Reprint, New Delhi, 2009.
12. \_\_\_\_\_. and Vivekanand Jha, *Muryan India*, Delhi, 2005.
13. Shrimali, K.M., *The Age of Iron and the Religious Revolution*, 700-350 BC, Delhi, 2008.
14. Al-Hassan et.al., *Islamic technology, An Illustrated History*.
15. Chattopadhyaya, S.P., et. al. *Science, Philosophy and Culture*, 2 Vols.
16. Charles Heslie, *Asian Medical Systems*.
17. Irfan Habib, 'Technology and Barrier to Social Change in Mughal India', *Indian Historical Review*, Vol.5, No.1-2, 1978-79.
18. *The Technology and economy of Mughal India* (IESHR), Vol.17, No.2, 1980.
19. Shereen Ratnagar, *Encounters: The Westerly Trade of Harappan Civilisation*, New Delhi.
20. D.P. Agarwal, *The copper Bronze Age in India*, Munshiram Manoharlal, New Delhi.

21. D. B. Chakrabarti and Nayanjyoti Lahiri, *Copper and Its Alloy in Ancient India*, New Delhi
22. D.M. Bose, Sen & Subbarappa, *A Concise History of Sciences in India*,
23. Rehman, ed. *History of Science and Technology in India*, vol. II.

**Paper No: HS. 458 (Open Elective-2)**

**TRADE AND COMMERCE IN PRE- MODERN INDIA**

Unit.I- Origin and growth of trade in ancient India-trade centres- trade items-trade routes-forms of exchange- barter system- monetary exchange- use of coins- weights and measures.

Unit.II- Over land trade- trade routes- sarais- santhes- forms of trade- itinerant trade- caravan trade- tolls and other forms of collections-rise of urban centres.

Unit.III- Overseas trade: major sea routes and ports of trade- trade networks- local centres, marts and emporia- exchange between port towns- cargo and shipping-imports and exports.

Unit.IV- Structure of trade: trading communities- producers- middlemen and traders- monetary mechanisms- trade agreements and contracts- role of the State.

Unit.V- From Trade to Capital: trade corporations in south India- growth of bankers and usurers- relation between traders and producers-putting out system- Kammalars and chettis of south India.

**Reference Books:**

1. Tapan Roy Chaudhuri and Irfan Habib, *Cambridge Economic History of India*, Vol. 1.
2. Khan, I.A., *Serais in the Mughal Empire*.
3. Naqvi, H.K , *Urbanisation and Urban centres under the great Mughals*.
4. John F. Richards (ed.) *Monetary system in Mughal India*.
5. Sanjay Subrahmaniam, *Political Economy of Commerce*,
6. Chaudhuri, K.N., *Trade and Civilization in the Indian Ocean*.
7. \_\_\_\_\_. *Asia before Europe*.
8. Champakalakshmi, *Trade, Ideology and Urbanisation*,
9. Jain, V.k., *Trade and Traders in Western India, 1000-1300*, Delhi, 1990
10. Meera Abraham, *Two Medieval Merchant guilds of South India*, 1982.
11. Kenneth Pearson, *The Indian Ocean*, London, 2001.
12. Arasaratnam, S., *Maritime trade in the 17<sup>th</sup> century*, OUP, 1981.
13. Irfan Habib, *Atlas of the Mughal Empire*, OUP, 1981.
14. \_\_\_\_\_. *Essays in Indian History*, Tulika, 1993.
15. Satish Chandra, *Essays in Medieval Indian History*, OUP, 2003.
16. Seema Alavi (ed.) *Eighteenth Century in India*, OUP, 2001.