Paper Code: **HSAI 302 (AIDS & AIML) /** **HSAR 301 (AR & IIOT)**	L	T/P	Credits
Subject: Elements of Indian History for Engineers	2	0	2

Marking Scheme:

Teachers Continuous Evaluation: As per university examination norms in NUES mode from time to time.

End Term Theory Examination: As per university examination norms in NUES mode from time to time.

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks : As per University norms

- There should be 9 questions in the end term examination question paper
- Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions.
- Apart from Question No. 1, the rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, students may be asked to attempt only 1 question from each unit.
- The questions are to be framed keeping in view the learning outcomes of course/paper. The standard/ level of the questions to be asked should be at the level of the prescribed textbooks.
- The requirement of (scientific) calculators/ log-tables/ data-tables may be specified if required

Course Content	**No. of Lectures**
Unit I Science and Technology in Ancient India: Astronomy (Surya-Siddhanta, Aryabhatta, Varahamihira), Mathematics, Agriculture, *Shilpa-shastra* and Architecture, Physics and Chemistry, Medicine (Ayurveda), Metallurgy, Textile Production, Shipbuilding and Armaments.	[6]
Unit II Science and Technology in Medieval India: Geometry, Trigonometry and Algebra, Architecture, Agriculture (Canals and other irrigation systems), Graeco-Arabic Medicine (Unani-tibb)), Astronomy, medicine, textile, arms-making, shipbuilding and horticulture.	[6]
Unit III Modern Science in India: Surveys, Scientific Education, Scientific Societies, Growth of Scientific Institutions in colonial India, Indian Response.	[6]
Unit IV **Post-Independence India:** Policies in Science and Technology in independent India (IITS, Council of Scientific and Industrial Research, Ministry of Science and Technology), Indian Council of Agricultural Research (1947), Indian Council of Medical Research (1949), DRDO and Defence Technology, TIFR and Department of Atomic Energy and Nuclear Energy, ISRO and Space Programme (Satellite and Communication Revolution), Digital India (IT Revolution and computerization of Indian Railways), C-DOT and Telecom Advancement.	[6]

Reference Books:

[R1] D.M. Bose, S.N. Sen & B.V. Subbarayappa (Eds.), *A Concise History of Science in India*, New Delhi: Indian National Science Academy, 1971

[R2] David Arnold, *The New Cambridge History of India, III-5 (Science Technology and Medicine in Colonial India*, Cambridge: Cambridge University Press, 2004
[R3] Suvobrata Sarkar (Ed.), *History of Science, Technology, Environment and Medicine in India*, London and New York: Routledge (Taylor & Francis), 2022
[R4] Deepak Kumar, *Science and the Raj: A Study of British India*, Oxford Scholarship Online, October 2012.
[R5] P. Rama Rao, 'Science and Technology in Independent India: Retrospect and Prospect', in *Current Science*, Vol. 74, No.5, 10 March 1998, pp.418-432
[R6] A.L. Basham, *The Wonder That was India*, Vol. I, New Delhi: Rupa & Co., 1981 (Only Chapter VIII: The Arts and the Appendices: Astronomy, The Calendar, Mathematics, Physics and Chemistry, Physiology and Medicine, Logic and Epistemology, Weights and Measures, Coinage)
[R7] S.A.A. Rizvi, *The Wonder That was India*, Vol. II, London: Sidgwick & Jackson, 1987 (Chapter VII; Fine Arts-only on Monuments, Architecture and Painting for Geometry, etc.) M.S. Khan, 'Science and Technology in Early Medieval India', in https://dergipark.org.tr/tr/download/article-file/688183