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# A TEXTBOOK OF ENGINEERING MECHANICS

[In S.I. Units]

[For Degree, B.E./B.Tech. 1st Year]

By  
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# A TEXTBOOK FOR ENGINEERING STUDENTS FLUID MECHANICS INCLUDING HYDRAULIC MACHINES

**Dr. A.K. Jain**  
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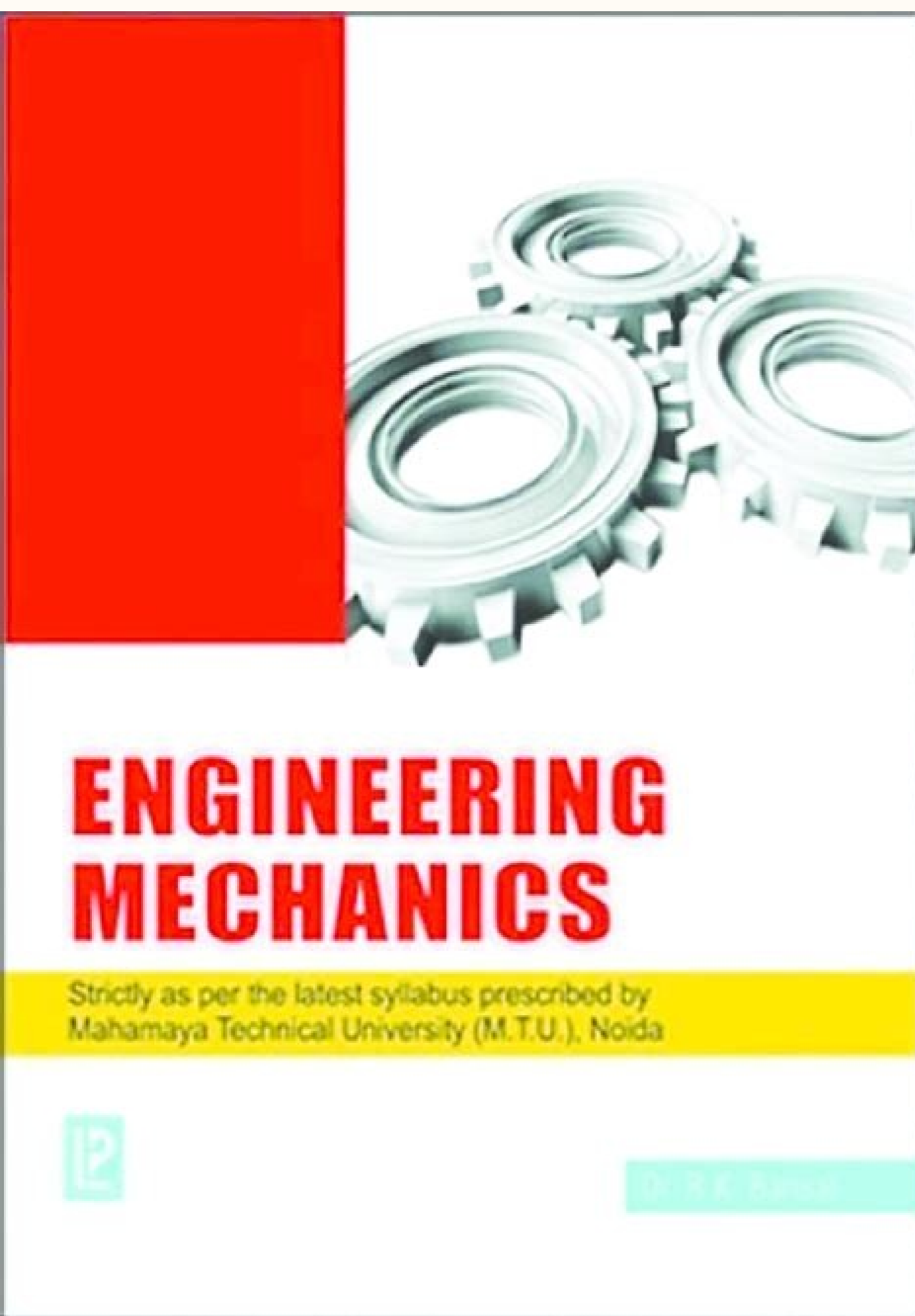
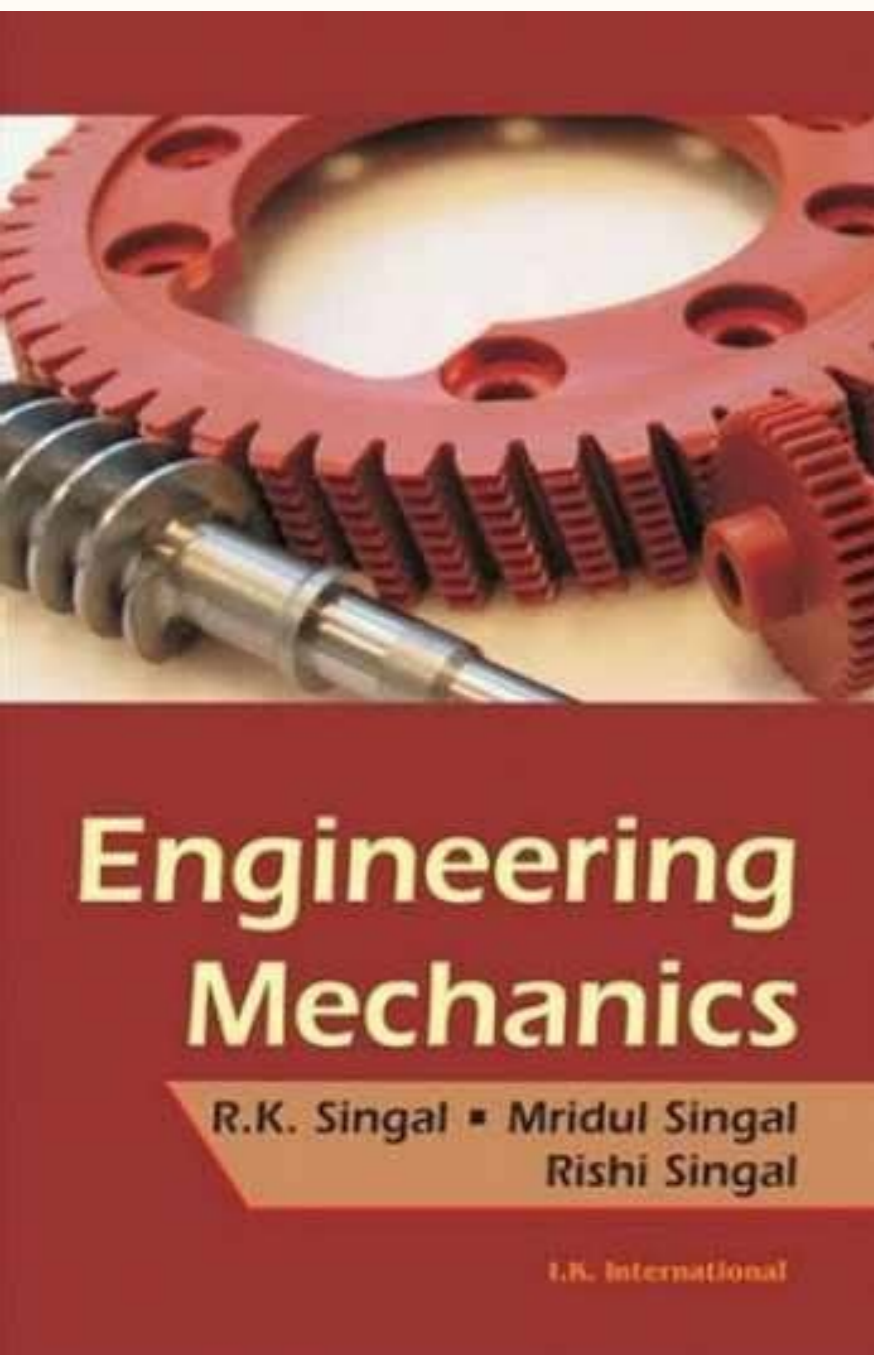
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Dr. A.K. Tayal



Structure built to cover physical obstacles this article concerns the structure. For the card game, see Contract Bridge. For other uses, see bridge (disambiguation) and bridges (disambiguation). Bosphorus Bridge in Istanbul, Turkey under the Fort Pitt bridge in Pittsburgh, in Pennsylvania, the old arched bridge made in stone on the Kerava river in Kerava, in Finland, a bridge is a structure built to embrace a physical obstacle (like a Water body, Valley, road or railway) without blocking the road below. It is built in order to provide a passage on the obstacle, which is usually something that is otherwise difficult or impossible to cross. There are many different projects of bridges, each of which serves for a particular purpose and applicable to different situations. Bridges projects vary according to factors such as the function of the bridge, the nature of the ground in which the bridge is built and anchored and the material used to make it and the funds available to build it. The first bridges were probably made with fallen trees and launching trampolines. The Neolithic people built table bridges through Marshland. The Arkadiko bridge (dating back to the thirteenth century BC, in the Peloponnese) is one of the most ancient arched bridges still existing and useful. Etymology The stone bridge in Skopje, northern Macedonia The Sosepol bridge over the Zayandeh river is an example of design of the Safavid dynasty bridge (1502 \*1722). Isfahan, Iran. The 13th century Witerby bridge extends over the river Wharf. Oxford's English dictionary traces the origin of the word bridge to an old English word Brycg, with the same meaning. [1] The word can be traced directly to the proto-indi-European \*bāte à à à è W-. The word for the game of paper with the same name has a different origin. Seasonal bridge of the story north of Jispa, H.P., India. Bridges 2010 in Amsterdam, Netherlands I More simple and first of bridges were launching trampolines. Even Neolithic Neolithic people a form of boardwalk across marshes; examples of such bridges include the Sweet Track and the Post Track in England, approximately 6000 years old.[2] Undoubtedly, ancient people would also have used log bridges; that is a timber bridge[3] that fall naturally or are intentionally felled or placed across streams. Some of the first man-made bridges with significant span were probably intentionally felled trees.[4] Among the oldest timber bridges is the HolzbrÀ/Àcke Rapperswil-Hurden crossing upper Lake ZÀ/Àrich in Switzerland; the prehistoric timber piles discovered to the west of the Seedamm date back to 1523 BC. The first wooden footbridge led across Lake ZÀ/Àrich, followed by several reconstructions at least until the late 2nd century AD, when the Roman Empire built a 6-metre-wide (20À Át) wooden bridge. Between 1358 and 1360, Rudolf IV, Duke of Austria, built a 'new' wooden bridge across the lake that has been used to 1878 eÀÀÀ measuring approximately 1,450 metres (4,760À Át) in length and 4 metres (13À Át) wide. On April 6, 2001, the reconstructed wooden footbridge was opened, being the longest wooden bridge in Switzerland. The Arkadiko Bridge is one of four Mycenaean corbel arch bridges part of a former network of roads, designed to accommodate chariots, between the fort of Tiryns and town of Epidaurus in the Peloponnese, in southern Greece. Dating to the Greek Bronze Age (13th century BC), it is one of the oldest arch bridges still in existence and use. Several intact arched stone bridges from the Hellenistic era can be found in the Peloponnese.[5] The greatest bridge builders of antiquity were the ancient Romans,[6] The Romans built arch bridges and aqueducts that could stand in conditions that would damage or destroy earlier designs. Some stand today.[7] An example is the AlcÀ/Àntara Bridge, built over the river Tagus, in Spain. The Romans also used cement, which reduced the variation of strength found in natural egdirb no koob tsrif ehT .srehto dna ,nnameburG sennahoj ,nnameburG hcirU snaH yb segdirb rebmit fo ngised eht ni snoitavonni ynam erew ereht ,yrtutec ht81 eht gniruD j41[.trid fo sehcnì xis ot ruof htìw derevoo yllanif erew taht smaeb-ssorc gninoitìsop neht ,sralìp dekrof eseht gnola smaeb gnìcalp ,deb maerts eht otnì sknurt eert dekrof egral ruof gnìduoop yb detcurtsnoc erew yehT j41j31[.srevir dna smaerts revo segdirb tliub itnahaA ehT .yrtutec ht61 eht ni noitazinoloc naeporuE ot roìrp tsuj ,aciremÀ Htuos Fo Sniatnuom Sedna eht by Noitazilivic Acni





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