BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK

DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

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| SUBJECT: RAILWAY & BRIDGE ENGINEERING (TH 3) | ACCADEMIC SESSION: 2021-22 |
| FACULTY: SRI CHAITANYA HEMBRAM | SEMESTER: 5TH |
|  | SEC: A |

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| Sd/- |
| H O D (Civil Engg.) |

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| **Discipline:**  Civil Engineering | **Semester:**  5THSemester | | **Name of the teaching faculty:**  SRI CHAITANYA HEMBRAM |
| **Subject:**  **Railway and Bridge Engineering** | **No. of Days/ per week class allotted: 04 period per week. (Monday-1 period, Wednessday-1 period, Thursday-1 period, Friday-1period)** | | **Semester From Date: 01-10-2021 To Date: 08-01-2022**  **No. of weeks: 14 weeks** |
| **Week** | **Class Day** | **No of period available** | **Theory Topics** |
| 1st | 01/10/2021 | 1 | **Section – A : RAILWAY**  1.0 Introduction  1.1 Railway terminology |
| 2nd | 04/10/2021 | 1 | 1.2 Advantages of railways |
| 05/10/2021 | 1 | 1.3 Classification of Indian Railways |
| 07/10/2021 | 1 | **2.0 Permanent way**  2.1 Definition and components of a permanent way |
| 08/10/2021 | 1 | 2.2 Concept of gauge, different gauges prevalent in India |
| 3rd | 21/10/2021 | 1 | 2.2 Suitability of gauges under different conditions |
| 22/10/2021 | 1 | **3.0 Track materials**  3.1 Rails  3.1.1 Functions and requirement of rails |
| 4th | 25/10/2021 | 1 | 3.1.2 Types of rail sections, length of rails |
| 26/10/2021 | 1 | 3.1.3 Rail joints – types, requirement of an ideal joint |
| 28/10/2021 | 1 | 3.1.3 Rail joints – types, requirement of an ideal joint  3.1.4 Purpose of welding of rails & its advantages |
| 29/10/2021 | 1 | Monthly class Test |
| 5th | 01/11/2021 | 1 | 3.1.5 Creep definition, cause & prevention |
| 02/11/2021 | 1 | 3.2 Sleepers  3.2.1 Definition, function & requirements of sleepers |
| 05/11/2021 | 1 | 3.2.2 Classification of sleepers  3.2.3 Advantages & disadvantages of different types of sleepers |
| 6th | 08/11/2021 | 1 | 3.2.3 Advantages & disadvantages of different types of sleepers  3.3 Ballast |
| 09/11/2021 | 1 | 3.3.1 Functions & requirements of ballast  3.3.2 Materials for ballast |
| 11/11/2021 | 1 | 3.4 Fixtures for Broad gauge |
| 12/11/2021 | 1 | 3.4.1 Connection of rails to rail-fishplate, fish bolts |
| 7TH | 15/11/2021 | 1 | 3.4.1 Connection of rails to rail-fishplate, fish bolts  3.4.2 Connection of rails to sleeper |
| 16/11/2021 | 1 | Class Test on chapter 1,2&3 |
| 18/11/2021 | 1 | **4.0 Geometric for Broad gauge**  4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment |
| 8TH | 22/11/2021 | 1 | 4.2 Permanent & temporary land width  4.3 Gradients for drainage |
| 23/11/2021 | 1 | **Section – B : BRIDGES**  1.0 Introductions  1.1 Definitions |
| 25/11/2021 | 1 | 1.2 Components of a bridge |
| 26/11/2021 | 1 | 1.3 Classification of bridges  1.4 Requirements of an ideal bridge |
| 9TH | 29/11/2021 | 1 | Monthly class Test |
| 30/11/2021 | 1 | **2.0 Bridge Site investigation, hydrology & planning**  2.1 Selection of bridge site  2.2 Bridge alignments |
| 02/12/2021 | 1 | Internal Assessment |
| 03/12/2021 | 1 | Internal Assessment |
| 10TH | 06/12/2021 | 1 | 2.3 Determination of flood discharge  2.4 Waterway & economic span |
| 07/12/2021 | 1 | 2.5 Afflux, clearance & free board |
| 9/12/2021 | 1 | 2.6 Collection of bridge design data & sub surface investigation. |
| 10/12/2021 | 1 | **3.0 Bridge foundation**  3.1 Scour depth minimum depth of foundation |
| 11TH | 13/12/2021 | 1 | 3.2 Types of bridge, foundations – spread foundation |
| 14/12/2021 | 1 | 3.2 Pile foundation- pile driving, well foundation – sinking of wells, caission foundation |
| 16/12/2021 | 1 | 3.3 Coffer dams |
| 17/12/2021 | 1 | **5.0 Points and crossings**  5.1 Definition, necessity of Points and crossings |
| 12TH | 20/12/2021 | 1 | **5.0 Points and crossings**  5.1 Definition, necessity of Points and crossings |
| 22/12/2021 | 1 | 5.2 Types of points & crossings with tie diagrams |
| 21/12/2021 | 1 | **6.0 Laying & maintenance of track**  6.1 Methods of Laying & maintenance of track |
| 23/12/2021 | 1 | 6.2 Details of a permanent way inspector |
| 24/12/2021 | 1 | **4.0 Bridge substructure and approaches**  4.1 Types of piers |
| 13TH | 27/12/2021 | 1 | 4.2 Types of abutments  4.3 Types of wing walls |
| 28/12/2021 | 1 | 4.4 Approaches |
| 30/12/2021 | 1 | Monthly class Test |
| 31/12/2021 | 1 | **5.0 Culvert & cause ways**  5.1 Types of culvers - brief description |
| 14TH | 03/01/2022 | 1 | 5.2 Types of causeways - brief description |
| 04/01/2022 | 1 | Revision |
| 06/01/2022 | 1 | Revision |
| 07/01/2022 | 1 | Previous Year Question Discussion |