

TEACHING PLAN FOR THEORY

Subject Teacher: Anas F Khan

Subject: Transportation Engineering Class: B.E (B)			Branch: Civil Engineering			Year 2017-2018		
Lecture No	Scheduled Date	Topics to be covered on the scheduled date						
I		Syllabus Discussion, Discussion on course objective & course outcome						
UNIT - I Transportation Engineering								
1	16/06	Introduction:- Role of transportation, scope of road transportation, highway development in India, necessity of highway planning and development plans e.g. Bombay plan, Lucknow plan.						
2	19/06	Classification of road: Classification of roads, road patterns, planning surveys and preparation of master plan based on saturation system, determination of road length by 3rd road development plan.						
3	20/06 23/06	Traffic engineering: Traffic characteristics-road user characteristics, vehicular characteristics (only name and significance) Traffic studies –name of various studies and their uses, accident studies-objectives, causes of accident, condition and collision diagram, and measures for the reduction in accidents.						
4	26/06	Traffic regulation and control devices-traffic signs, traffic signals (types merits and demerits) road markings. Traffic islands, types of road intersections (sketch merits and demerits). Parking facilities.						
UNIT -II Highway Engineering								
5	27/06	Highway alignment: Basic requirements of an ideal alignment and factors controlling it, engineering survey for highway location, special requirements for hill roads.						
6	30/06 03/07	Geometric design and traffic engineering: Design controls and criteria for geometric design, cross sectional elements, sight distance requirements, stopping distance, overtaking sight distance, overtaking zones with IRC recommendations						
7	04/07 07/07	Attainment of super elevation, radius of curves, methods of introduction of extra widening, widening of pavement on horizontal curves.						

8	10/07	Horizontal transition curves- objects, necessity, types of transition curves, length and shift of transition curves.
9	11/07	Design of vertical alignment, gradient and its type, IRC recommendations, grade compensation on horizontal curve.
10	14/07 17/07	Vertical curves: - crest and sag curves, types of summit curves, length of summit curve for SSD and OSD. Requirements, types of valley curves, length of valley curve for comfort and head light sight distance criteria.
11	18/07	Highway drainage:- Importance of highway drainage, subsurface and surface drainage systems, scope of arboriculture for highway.
UNIT - III Highway Materials		
12	21/07	Highway materials:- Importance and properties of sub-grade, pavement component materials. Tests on aggregates. Bitumen: Types--cut back, tar, emulsion and tests, modified binders, bitumen mix design by Marshall Stability test, viscosity based gradation of bitumen.
13	24/07	Pavement design: Objects and requirements, types of pavements structures, functions of pavement components factors affecting pavement design
14	25/07 28/07	Design of flexible pavement by C.B.R. Method, IRC 37- guidelines
15	31/07 01/08	Design of rigid pavements, factors affecting design & analysis of stress- wheel load stress & temp. Stress, critical combination of stress, IRC 58- design guidelines.
16	04/08	Types of joints, requirements of joints.
17	07/08	Construction:- Construction process of WBM, WMM, GSB (Mix design). Introduction to bituminous works such as prime coat, tack coat, seal coat, MPM, AC or BC, BM, DBM and premix carpet.
UNIT - IV Airport Engineering		
18	08/08	Introduction: Advantages and limitations of air transportation. Aero plane component parts and important technical terms.
19	11/08	Airport planning:- Aircraft characteristics, which influence judicious and scientific planning of airports, Selection of sites, survey and drawings to be prepared for airport planning.

20	14/08	Airport layout:- Characteristics of good layout, runway configuration, airport obstruction, location of terminal buildings, aprons and hangers.
21	15/08	Zoning requirements regarding permissible heights of constructions and landing within the airport boundary.
22	18/08 21/08	Runways and taxiways: Runway orientation, wind coverage, use of wind rose diagram, basic runway length.
23	22/08	Corrections for elevation, temperature and gradient as per ICAO and FAA recommendation.
24	25/08	Airport classification by ICAO.
UNIT - V Bridge Engineering		
25	28/08	Introduction:- Classification of bridges, components of bridges, preliminary data to be collected during investigation of site for bridges.
26	29/08 01/09	Determination of discharge – empirical formula, direct methods, economical span, afflux, HFL, scour depth and clearance, locations of piers and abutments, factors influencing the choice of bridge super structure, approach roads.
27	04/09 05/09	Loads on bridges: Brief specifications of different loads, forces, stresses coming on bridges, IRC load specification, requirements of traffic in the design of highway bridges.
28	08/09 11/09	Substructure: Abutment, Piers, and wing walls with their types based on requirement and suitability.
UNIT - VI Types of Bridge		
29	12/09 15/09	Various types of bridges: Culvert: Definition, waterway of culvert and types.
30	18/09	Temporary bridges: Definition, materials used brief general ideas about timber, floating and pontoon bridges
31	19/09	Movable Bridges: Bascule, cut boat, flying, swing, lift, transporter and transverse bridges, their requirement and suitability.
32	22/09	Fixed span bridges:- Simple, continuous, cantilever, arch, suspension, bowstring girder type and rigid frame and cable stayed bridges, materials for super structure.

33	25/09	Bearing:- Definition, purpose and importance. Types of bearings with their suitability
34	26/09	Erection of bridge super structure and maintenance:- Introduction to different techniques of erection of bridge super structure and maintenance of bridges.