NAME OF FACULTY : **G.F**

DISCIPLINE : **CIVIL ENGG.**

SEMESTER : **5TH**

SUBJECT : HIGHWAY ENGINEERING LESSON PLAN DURATION : **15WEEKS**

WORK LOAD (THEORY/PRACTICAL) PER WEEK (IN HOURS): THEORY-05, PRACTICAL-02

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| **WORKING****WEEK** | **WORKING****DAY** | **TOPIC TO BE COVER (THEORY)** | **TOPIC TO BE COVER****(PRACTICAL)** |
| 1ST | IST | INTRODUCTION | DETERMINATION OF WATER ABSORPTION OF AGGREGATES |
| IIND | IMPORTANCE OF HIGHWAYENGINEERING |
| IIIRD | FUNCTION OF IRC, CRRI, MORT&H,NHAI |
| IVTH | IRC CLASSIFICATION OF ROADS |
| VTH | GLOSSARY OF TERMS USED IN ROAD GEO-METRICS AND THEIRIMPORTANCE: RIGHT OF WAY |
| 2ND | IST | ROAD MARGIN, ROAD SHOULDER, CARRIAGE WAY, SIDE SLOPES, KERBS, FORMATION LEVELS, CAMBER AND GRADIENT | DETERMINATION OF LOS ANGLES ABRASION VALUE OF AGGREGATE |
| IIND | AVERAGE RUNNING SPEED, STOPPING ANDPASSING SIGHT DISTANCE |
| IIIRD | NECESSITY OF CURVES, HORIZONTAL AND VERTICAL CURVES INCLUDING TRANSITIONCURVES. |
| IVTH | SUPER ELEVATION ANDMETHODS OF PROVIDING SUPER ELEVATION |
| VTH | SKETCH OF TYPICAL CROSS- SECTIONS IN CUTTING ANDFILLING ON STRAIGHT ALIGNMENT AND AT A CURVE |
| 3RD | IST | HIGHWAY SURVEYS AND PLAN | DETERMINATION OF IMPACT VALUE OF THEROAD AGGREGATE |
| IIND | TOPOGRAPHIC MAP, READING THE DATA GIVEN ON A TOPOGRAPHICMAP |
| IIIRD | BASIC CONSIDERATIONS GOVERNINGALIGNMENT FOR A ROAD IN PLAINAND HILLY AREA |
| IVTH | HIGHWAY LOCATION; MARKING OFALIGNMENT |
| VTH | TOPOGRAPHIC MAP, READINGTHE |

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|  |  | DATA GIVEN ON A TOPOGRAPHICMAP |  |
| 4TH | IST | ROAD MATERIALS | RIVISION OF PRACTICAL NO. 1 |
| IIND | DIFFERENT TYPES OF ROAD MATERIALS IN USE; SOIL, AGGREGATE, BINDERS – BITUMEN,CUTBACK, EMULSION ANDMODIFIED BITUMEN (CRMB, PMB) |
| IIIRD | BINDERS: COMMON BINDERS; BITUMEN, PROPERTIES AS PER BIS SPECIFICATIONS,PENETRATION |
| IVTH | SOFTENING POINT, DUCTILITYAND VISCOSITY TEST OF BITUMEN, PROCEDURES |
| VTH | CUT BACK AND EMULSION AND THEIR USES,BITUMEN MODIFIERS |
| 5TH | IST | DOUBT OF UNIT 1ST AND 2ND WILL BE TAKEN. | RIVISION OF PRACTICAL NO. 2 |
| IIND | ROAD PAVEMENTS |
| IIIRD | ROAD PAVEMENT: FLEXIBLE AND RIGID PAVEMENT, THEIR MERITS AND DEMERITS,TYPICAL CROSS-SECTIONS |
| IVTH | INTRODUCTION TO CALIFORNIA BEARING RATIO, METHOD OF FINDING CBR VALUE AND ITSSIGNIFICANCE |
| VTH | SUB-GRADE PREPARATION: SETTING OUT ALIGNMENT OF ROAD, SETTING OUT BENCH MARKS, CONTROL PEGS FOREMBANKMENT AND CUTTING |
| 6TH | IST | INTRODUCTION TO SUB BASECOURSE AND BASE COURSE | RIVISION OF PRACTICAL NO. 3 |
| IIND | GRANULAR BASE COURSE: (I) WATER BOUND MACADAM (WBM)(II) WET MIX MACADAM(WMM) |
| IIIRD | BITUMEN COURSES: (I) BITUMINOUS MACADAM (II) DENSE BITUMINOUSMACADAM (DBM) |
| IVTH | MEANING, CONDITIONS/SITUATIONS OF OCCURRENCE WITH EMPHASIS ON PRACTICALSIGNIFICANCE OF |
| VTH | \*METHODS OF CONSTRUCTION ASPER MORT&H |
| 7TH | IST | SURFACING: A) \* TYPES OFSURFACING | DETERMINATION OFTHE CALIFORNIA |

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|  |  | 1. PRIME COAT AND TACK COAT
2. SURFACE DRESSING WITH SEAL

COAT | BEARING RATIO |
| IIND | METHODS OF CONSTRUCTIONSAS PER MORT&H SPECIFICATIONS AND QUALITY CONTROL |
| IIIRD | RIGID PAVEMENTS: |
| IVTH | CONSTRUCTION OF CONCRETE ROADS AS PER IRC SPECIFICATIONS: FORM WORK LAYING, MIXING AND PLACING THECONCRETE |
| VTH | COMPACTING AND FINISHING, CURING,JOINTS IN CONCRETE PAVEMENT,EQUIPMENT USED |
| 8TH | IST | DOUBT OF UNIT 3RD AND 4TH WILLBE TAKEN. | (CBR) FOR THE SUB- GRADE SOIL |
| IIND | INTRODUCTION: TYPICAL CROSS- SECTIONS SHOWING ALL DETAILS OF A TYPICAL HILL ROAD, PARTLY IN CUTTING ANDPARTLY IN FILLING |
| IIIRD | SPECIAL PROBLEMS OF HILLAREAS |
| IVTH | ROAD DRAINAGE |
| VTH | NECESSITY OF ROAD DRAINAGEWORK, CROSS DRAINAGE WORKS |
| 9TH | IST | SURFACE AND SUBSURFACE DRAINS AND STORM WATER DRAINS. LOCATION, SPACINGAND TYPICAL | VISIT TO HOT MIX PLANT |
| IIND | SIDE DITCHES FOR SURFACE DRAINAGE.INTERCEPTING DRAINS, PIPEDRAINS IN HILL ROADS, |
| IIIRD | ROAD MAINTENANCE |
| IVTH | COMMON TYPES OF ROAD FAILURES OF FLEXIBLE PAVEMENTS: POT HOLE, RUTTING,ALLIGATOR CRACKING |
| VTH | MAINTENANCE OF BITUMINOUS |
| 10TH | IST | ROAD SUCH AS SEAL-COAT, PATCH- WORK AND RECARPETING | DUCTILITY OF BITUMEN |
| IIND | MAINTENANCE OF CONCRETE ROADS-FILLING CRACKS, REPAIRING JOINTS, MAINTENANCEOF SHOULDERS (BERMS),MAINTENANCE OFTRAFFIC CONTROL DEVICES |
| IIIRD | DOUBT OF UNIT 5TH AND 6TH WILL |

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|  |  | BE TAKEN. |  |
| IVTH | TEST OF UNIT 1ST AND 2ND. |
| VTH | ROAD CONSTRUCTION EQUIPMENT OUTPUT AND USE OF THE FOLLOWING PLANT ANDEQUIPMENT |
| 11TH | IST | HOT MIX PLANT | PENETRATION OF BITUMEN |
| IIND | TIPPER, TRACTORS (WHEEL AND CRAWLER) SCRAPER, BULLDOZER, DUMPERS, SHOVELS,GRADER, ROLLER, DRAGLINE |
| IIIRD | ASPHALT MIXER AND TAR BOILERS |
| IVTH | ROAD PAVERS |
| VTH | DOUBT OF UNIT 7TH AND 8TH WILL BE TAKEN. |
| 12TH | IST | TEST OF UNIT 3RD AND 4TH. | SOFTENING POINT TEST OF BITUMEN |
| IIND | AIRPORT ENGINEERING NECESSITY OF STUDY OF AIRPORT ENGINEERING, AVIATION TRANSPORTSCENARIO IN INDIA. |
| IIIRD | DOUBT OF UNIT 9TH WILL BETAKEN. |
| IVTH | TEST OF UNIT 5TH AND 6TH. |
| VTH | FACTORS TO BE CONSIDERED WHILE SELECTING A SITE FOR AN AIRPORT WITH RESPECT TOZONING LAWS. |
| 13TH | IST | TEST OF UNIT 5TH AND 6TH | VISIT TO HIGHWAY CONSTRUCTION SITE FOR DEMONSTRATIONOF OPERATION OFTIPPER, TRACTORS (WHEEL AND CRAWLER), SCRAPER, BULLDOZER, DUMPERS, SHOVELS, GRADER,ROLLER, DRAGLINE,ROAD PAVERS, JCB ETC. |
| IIND | INTRODUCTION TO RUNWAYS,TAXIWAYS AND APRON |
| IIIRD | DOUBT OF 10TH WILL BE TAKEN. |
| IVTH | TEST OF UNIT 7TH. |
| VTH | REVISION OF UNIT 1ST AND 2ND. |
| 14TH | IST | TEST OF UNIT 8. | MIXING AND SPRAYING EQUIPMENT |
| IIND | RIVISION OF UNIT 3RD AND 4TH. |
| IIIRD | TEST OF UNIT 9TH. |
| IVTH | REVISION OF UNIT 4TH AND 5TH |
| VTH | OBJECTIVE TYPE QUESTIONS |
| 15TH | IST | TEST OF UNIT 10TH. | A VISITTO READY MIX CONCRETE PLANT. |
| IIND | RIVISION OF UNIT 5TH AND 6TH. |
| IIIRD | REVISION OF UNIT 7TH |
| IVTH | REVISION OF UNIT 8TH |
| VTH | REVISION OF UNIT 9TH AND 10TH |