# R.K INSTITUTE OF ENGINEERING & TECHNOLOGY
## At/Po:Kantapada-Apuja,Niali,Dist-Cuttack,Odisha
## DEPARTMENT OF MECHANICAL ENGINEERING
## -:LESSON PLAN:-

| **Discipline:-** MECHANICAL | **Semester:** 6TH | **Name of the teaching faculty:-** Ramachandra Badhan | |
|---|---|---|---|
| Subject. AE & HV | No. Of days / per week class allotted:- 04 | Semester 6th<br>from date: 25.01.21 To Date: 30.04.21<br>No. Of weeks:- 15 | |
| Week | Class day | Theory/ Practical Topics : | |
| 1ST | 1st | Automobiles: Definition, need and classification | |
| | 2nd | Automobiles: Definition, need and classification | |
| | 3rd | Layout of automobile chassis with major components (Line diagram) | |
| | 4th | Layout of automobile chassis with major components (Line diagram) | |
| 2ND | 1st | Manufacturer's specification of auto engines ofmotorcycle, scooter, car & bus one from each. | |
| | 2nd | State the classification of engines basing on working principle, fuel used, position of cylinder, | |
| | 3rd | arrangement of cylinder. | |
| | 4th | Clutch System: Need, Types (Single & Multiple) and Working principle with sketch | |
| 3RD | 1st | Clutch System: Need, Types (Single & Multiple) and Working principle with sketch | |
| | 2nd | Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box, Concept of automatic gear changing mechanisms | |
| | 3rd | Gear Box: Purpose of gear box, Construction and working of a 4 speed gear box, Concept of automatic gear changing mechanisms | |
| | 4th | Propeller shaft: Constructional features | |
| 4TH | 1st | Differential: Need, Types and Working principle | |
| | 2nd | Braking systems in automobiles: Need and types. | |

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| | 3rd | Braking systems in automobiles: Need and types. | |
| | 4th | Mechanical Brake | |
| 5TH | 1st | Mechanical Brake | |
| | 2nd | Hydraulic brake | |
| | 3rd | Air brake | |
| | 4th | Air brake | |
| 6TH | 1st | Air assisted hydraulic brake | |
| | 2nd | Air assisted hydraulic brake | |
| | 3rd | Vacuum Brake | |
| | 4th | Vacuum Brake | |
| 7TH | 1st | Revision | |
| | 2nd | Wiring diagram of Horn circuit, Lighting circuit, Cut-out circuit, | |
| | 3rd | Voltage current regulator circuit and Flasher circuit (Sketch and description) | |
| | 4th | State the common ignition troubles and its remedies. | |
| 8TH | 1st | Spark plugs: Purpose, construction and specifications | |
| | 2nd | Description of the conventional suspension system for Rear and Front axle. | |
| | 3rd | Description of the conventional suspension system for Rear and Front axle. | |
| | 4th | Description of independent suspension system used in cars (coil spring andtension bars) | |
| 9TH | 1st | Description of independent suspension system used in cars (coil spring and tension bars) | |
| | 2nd | Constructional features and working of a telescopic shock absorber | |
| | 3rd | Constructional features and working of a telescopic shock absorber | |
| | 4th | State tyre specifications. | |
| 10TH | 1st | Explain the causes and remedies of tyre wear. | |
| | 2nd | Describe necessity of engine cooling. | |
| | 3rd | Describe defects of cooling and their remedial measures. | |
| | 4th | Describe defects of cooling and their remedial measures. | |

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| 11TH | 1st | Describe the Function of lubrication. | |
| | 2nd | Describe the Function of lubrication. | |
| | 3rd | Describe the lubrication System of I.C. engine. | |
| | 4th | Describe the lubrication System of I.C. engine. | |
| 12TH | 1st | **Fuel and Ignition system:** For petrol Engine: | |
| | 2nd | Revision | |
| | 3rd | Describe carburetion and Air fuel ratio. | |
| | 4th | Describe carburetion and Air fuel ratio. | |
| 13TH | 1st | Describe the Battery ignition and Magnet ignition system. | |
| | 2nd | Describe the Battery ignition and Magnet ignition system. | |
| | 3rd | Revision | |
| | 4th | Describe Multipoint fuel injection system | |
| 14TH | 1st | Describe Multipoint fuel injection system For Diesel engine: | |
| | 2nd | Describe Multipoint fuel injection system For Diesel engine: | |
| | 3rd | Describe the working principle of Fuel feed pump | |
| | 4th | Describe the working principle of Fuel feed pump | |
| 15TH | 1st | Injector and Fuel filter | |
| | 2nd | Describe the working principle of fuel injection system for multi cylinder engine. | |
| | 3rd | Describe the working principle of fuel injection system for multi cylinderengine. | |
| | 4th | Revision | |

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## DEPARTMENT OF MECHANICAL ENGINEERING
## -:LESSON PLAN:-

| **Discipline:-** MECHANICAL | **Semester:** 6TH | Name of the teaching faculty:- Ramachandra Pradhan | |
|---|---|---|---|
| Subject. AE & HV | No. Of days / per week class allotted:- 04 | Semester 6th from date: 03/02/22 To Date: 30.04.22 No. Of weeks:- 15 | |
| Week | Class day | Theory/ Practical Topics : | |
| 1ST | 1st | Automobiles: Definition, need and classification | |
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| | 3rd | Layout of automobile chassis with major components (Line diagram) | |
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| 4TH | 1st | Differential: Need, Types and Working principle | |
| | 2nd | Braking systems in automobiles: Need and types. | |

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| 6TH | 1st | Air assisted hydraulic brake | |
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| 7TH | 1st | Revision | |
| | 2nd | Wiring diagram of Horn circuit, Lighting circuit, Cut-out circuit, | |
| | 3rd | Voltage current regulator circuit and Flasher circuit (Sketch and description) | |
| | 4th | State the common ignition troubles and its remedies. | |
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| 10TH | 1st | Explain the causes and remedies of tyre wear. | |
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| 14TH | 1st | Describe Multipoint fuel injection system For Diesel engine: | |
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| **Discipline:-** MECHANICAL | **Semester:** 6TH | **Name of the teaching faculty:-** Ramachandra pradhan | |
|---|---|---|---|
| Subject. AE & HV | No. Of days / per week class allotted:- 04 | Semester 6th<br>from date: 14.02.23 To Date: 23.05.23<br>No. Of weeks:- 15 | |
| Week | Class day | Theory/ Practical Topics : | |
| 1ST | 1st | Automobiles: Definition, need and classification | |
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| | 3rd | Layout of automobile chassis with major components (Line diagram) | |
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## DEPARTMENT OF MECHANICAL ENGINEERING
## -:LESSON PLAN:-

| **Discipline:-** **MECHANICAL** | **Semester:** **4TH** | **Name of the teaching faculty:-** Debasis Dash |
|---|---|---|
| Subject. **THERMAL ENGINEERING-II** | No. Of days / per week class allotted:- 04 | Semester 4th<br>from date: 25/01/21 To Date: 30/04/21<br>No. Of weeks:- 15 |
| Week | Class day | Theory/ Practical Topics : |
| 1ST | 1st | **Performance of I.C engine**<br>Define mechanical efficiency, Indicated thermal efficiency, |
| | 2nd | Define mechanical efficiency, Indicated thermal efficiency, |
| | 3rd | Relative Efficiency, brake thermal efficiency overall efficiency<br>Mean effective pressure &specific fuel consumption. |
| | 4th | Relative Efficiency, brake thermal efficiency overall efficiency<br>Mean effective pressure &specific fuel consumption. |
| 2ND | 1st | Define air-fuel ratio & calorific value of fuel. |
| | 2nd | Define air-fuel ratio & calorific value of fuel. |
| | 3rd | Work out problems to determine efficiencies & specific fuel consumption. |
| | 4th | Work out problems to determine efficiencies & specific fuel consumption. |
| 3RD | 1st | **Air Compressor**<br>Explain functions of compressor & industrial use of compressor air |
| | 2nd | Explain functions of compressor & industrial use of compressor air |
| | 3rd | Classify air compressor & principle of operation. |
| | 4th | Classify air compressor & principle of operation. |
| 4TH | 1st | Describe the parts and working principle of reciprocating Air compressor |
| | 2nd | Describe the parts and working principle of reciprocating Air compressor |
| | 3rd | Explain the terminology of reciprocating compressor such as bore, stroke,<br>Pressure ratio free air delivered &Volumetric efficiency. |
| | 4th | Explain the terminology of reciprocating compressor such as bore, stroke,<br>Pressure ratio free air delivered &Volumetric efficiency. |
| | 1st | Derive the work done of single stage & two stage compressor with and without Clearance. |

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| 5TH | 2nd | Derive the work done of single stage & two stage compressor with and without Clearance. |
| | 3rd | Solve simple problems (without clearance only) |
| | 4th | Solve simple problems (without clearance only) |
| 6TH | 1st | **Properties of Steam**<br>Difference between gas & vapors. |
| | 2nd | Difference between gas & vapors. |
| | 3rd | Formation of steam.<br>Representation on P-V, T-S, H-S, & T-H diagram. |
| | 4th | Formation of steam.<br>Representation on P-V, T-S, H-S, & T-H diagram. |
| 7TH | 1st | Definition & Properties of Steam.<br>Use of steam table & mollier chart for finding unknown properties. |
| | 2nd | Definition & Properties of Steam.<br>Use of steam table & mollier chart for finding unknown properties. |
| | 3rd | Non flow & flow process of vapour.<br>P-V, T-S & H-S, diagram. |
| | 4th | Non flow & flow process of vapour.<br>P-V, T-S & H-S, diagram. |
| 8TH | 1st | Determine the changes in properties & solve simple numerical. |
| | 2nd | Determine the changes in properties & solve simple numerical. |
| | 3rd | **Steam Generator**<br>Classification & types of Boiler. |
| | 4th | Classification & types of Boiler. |
| 9TH | 1st | Important terms for Boiler. |
| | 2nd | Important terms for Boiler. |
| | 3rd | Comparison between fire tube & Water tube Boiler. |
| | 4th | Comparison between fire tube & Water tube Boiler. |
| 10TH | 1st | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) |
| | 2nd | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) |
| | 3rd | Boiler Draught (Forced, induced & balanced) |
| | 4th | Boiler Draught (Forced, induced & balanced) |
| 11TH | 1st | Boiler mountings & accessories. |
| | 2nd | Boiler mountings & accessories. |
| | 3rd | **Steam Power Cycles**<br>Carnot cycle with vapour. |

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| | 4th | Carnot cycle with vapour. |
| 12TH | 1st | Derive work & efficiency of the cycle.<br>Rankine cycle.<br>Representation in P-V, T-S & h-s diagram. |
| | 2nd | Derive work & efficiency of the cycle.<br>Rankine cycle.<br>Representation in P-V, T-S & h-s diagram. |
| | 3rd | Derive Work & Efficiency.<br>Effect of Various end conditions in Rankine cycle.<br>Reheat cycle & regenerative Cycle. |
| | 4th | Derive Work & Efficiency.<br>Effect of Various end conditions in Rankine cycle.<br>Reheat cycle & regenerative Cycle. |
| 13TH | 1st | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle. |
| | 2nd | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle. |
| | 3rd | **Heat Transfer**<br>Modes of Heat Transfer (Conduction, Convection, Radiation). |
| | 4th | Modes of Heat Transfer (Conduction, Convection, Radiation). |
| 14TH | 1st | Fourier law of heat conduction and thermal conductivity (k). |
| | 2nd | Fourier law of heat conduction and thermal conductivity (k). |
| | 3rd | Newton's laws of cooling |
| | 4th | Newton's laws of cooling |
| 15TH | 1st | Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) onlystatement, no derivation & no numerical problem. |
| | 2nd | Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) onlystatement, no derivation & no numerical problem. |
| | 3rd | Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility |
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## DEPARTMENT OF MECHANICAL ENGINEERING
## -:LESSON PLAN:-

| Discipline:- MECHANICAL | Semester: 4TH | Name of the teaching faculty:- Debasis Dash |
|---|---|---|
| Subject. THERMAL ENGINEERING-II | No. Of days / per week class allotted:- 04 | Semester 4th from date: 03.02.22 To Date: 30.04.22 No. Of weeks:- 15 |
| Week | Class day | Theory/ Practical Topics : |
| 1ST | 1st | **Performance of I.C engine** Define mechanical efficiency, Indicated thermal efficiency, |
| | 2nd | Define mechanical efficiency, Indicated thermal efficiency, |
| | 3rd | Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure &specific fuel consumption. |
| | 4th | Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure &specific fuel consumption. |
| 2ND | 1st | Define air-fuel ratio & calorific value of fuel. |
| | 2nd | Define air-fuel ratio & calorific value of fuel. |
| | 3rd | Work out problems to determine efficiencies & specific fuel consumption. |
| | 4th | Work out problems to determine efficiencies & specific fuel consumption. |
| 3RD | 1st | **Air Compressor** Explain functions of compressor & industrial use of compressor air |
| | 2nd | Explain functions of compressor & industrial use of compressor air |
| | 3rd | Classify air compressor & principle of operation. |
| | 4th | Classify air compressor & principle of operation. |
| 4TH | 1st | Describe the parts and working principle of reciprocating Air compressor |
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| | 3rd | Explain the terminology of reciprocating compressor such as bore, stroke, Pressure ratio free air delivered &Volumetric efficiency. |
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| | 1st | Derive the work done of single stage & two stage compressor with and without Clearance. |

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| 6TH | 1st | **Properties of Steam**<br>Difference between gas & vapors. |
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| | 3rd | Formation of steam.<br>Representation on P-V, T-S, H-S, & T-H diagram. |
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| | 2nd | Describe the parts and working principle of reciprocating Air compressor |
| | 3rd | Explain the terminology of reciprocating compressor such as bore, stroke, Pressure ratio free air delivered &Volumetric efficiency. |
| | 4th | Explain the terminology of reciprocating compressor such as bore, stroke, Pressure ratio free air delivered &Volumetric efficiency. |
| | 1st | Derive the work done of single stage & two stage compressor with and without Clearance. |

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| 5TH | 2nd | Derive the work done of single stage & two stage compressor with and without Clearance. |
| | 3rd | Solve simple problems (without clearance only) |
| | 4th | Solve simple problems (without clearance only) |
| 6TH | 1st | **Properties of Steam**<br>Difference between gas & vapors. |
| | 2nd | Difference between gas & vapors. |
| | 3rd | Formation of steam.<br>Representation on P-V, T-S, H-S, & T-H diagram. |
| | 4th | Formation of steam.<br>Representation on P-V, T-S, H-S, & T-H diagram. |
| 7TH | 1st | Definition & Properties of Steam.<br>Use of steam table & mollier chart for finding unknown properties. |
| | 2nd | Definition & Properties of Steam.<br>Use of steam table & mollier chart for finding unknown properties. |
| | 3rd | Non flow & flow process of vapour.<br>P-V, T-S & H-S, diagram. |
| | 4th | Non flow & flow process of vapour.<br>P-V, T-S & H-S, diagram. |
| 8TH | 1st | Determine the changes in properties & solve simple numerical. |
| | 2nd | Determine the changes in properties & solve simple numerical. |
| | 3rd | **Steam Generator**<br>Classification & types of Boiler. |
| | 4th | Classification & types of Boiler. |
| 9TH | 1st | Important terms for Boiler. |
| | 2nd | Important terms for Boiler. |
| | 3rd | Comparison between fire tube & Water tube Boiler. |
| | 4th | Comparison between fire tube & Water tube Boiler. |
| 10TH | 1st | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) |
| | 2nd | Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) |
| | 3rd | Boiler Draught (Forced, induced & balanced) |
| | 4th | Boiler Draught (Forced, induced & balanced) |
| 11TH | 1st | Boiler mountings & accessories. |
| | 2nd | Boiler mountings & accessories. |
| | 3rd | **Steam Power Cycles**<br>Carnot cycle with vapour. |

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| | 4th | Carnot cycle with vapour. |
| 12TH | 1st | Derive work & efficiency of the cycle.<br>Rankine cycle.<br>Representation in P-V, T-S & h-s diagram. |
| | 2nd | Derive work & efficiency of the cycle.<br>Rankine cycle.<br>Representation in P-V, T-S & h-s diagram. |
| | 3rd | Derive Work & Efficiency.<br>Effect of Various end conditions in Rankine cycle.<br>Reheat cycle & regenerative Cycle. |
| | 4th | Derive Work & Efficiency.<br>Effect of Various end conditions in Rankine cycle.<br>Reheat cycle & regenerative Cycle. |
| 13TH | 1st | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle. |
| | 2nd | Solve simple numerical on Carnot vapour Cycle & Rankine Cycle. |
| | 3rd | **Heat Transfer**<br>Modes of Heat Transfer (Conduction, Convection, Radiation). |
| | 4th | Modes of Heat Transfer (Conduction, Convection, Radiation). |
| 14TH | 1st | Fourier law of heat conduction and thermal conductivity (k). |
| | 2nd | Fourier law of heat conduction and thermal conductivity (k). |
| | 3rd | Newton's laws of cooling |
| | 4th | Newton's laws of cooling |
| 15TH | 1st | Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) onlystatement, no derivation & no numerical problem. |
| | 2nd | Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) onlystatement, no derivation & no numerical problem. |
| | 3rd | Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility |
| | 4th | Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility |

PRINCIPAL
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