MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: Machine Tools

Branch: ME

Time: 3 hours   **Max. Marks: 75**

Answer any **FIVE** Questions of the following   **5x15M=75M**

1. a) Sketch a single point cutting tool and indicate various angles as per ASA system.

   b) How the chip-tool interface temperature is measured experimentally?

2. a) What are the 'Box Tools'? Describe with sketch a roller steady box Tool for turning.

   b) What are automatic Lathes? Where their use is preferred and why?

3. a) Explain the working of table feed mechanism in shaper with a diagram.

   b) Discuss the various methods for holding work on planer tables.

4. a) How do you classify the different types of drilling machines?

   b) Explain the construction and working of jig boring machine.

5. a) How the milling machines are specified and explain their classifications mentioning the advantages of each one of them?

   b) Explain the working mechanism of indexing head and describe about direct indexing.

6. a) Describe the different types of abrasives used in grinding wheels.

   b) Describe the Indian Standard of Specifying the grinding wheel.

7. a) How broaching is done on horizontal pull type broaching machine.

   b) Explain the Principle of vertical spindle lapping machine.

8. a) Explain the different types of fixture.

   b) What are the main elements of jigs and fixtures? Explain.

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Applied Thermodynamics-II**

Branch: **ME**

Time: 3 hours   Max. Marks: 75

Answer any FIVE Questions of the following   **5x15M=75M**

1. A steam power plant operates between a boiler pressure of 42bar and a condenser pressure of 0.035bar. calculate for these limits the cycle efficiency, the work ratio, and the specific steam consumption: i) for a Rankine cycle with dry saturated steam at entry to the turbine; ii) for the Rankine cycle when the expansion process has an isentropic efficiency of 80%.

2. a) Explain the working of dead weight safety valve with neat sketch.

   b) Derive an expression for height of the chimney.   [8+7]

3. a) Derive expression for velocity in a nozzle and give applications of nozzle.

   b) Steam expands in a nozzle from an initial condition of 10 bar and 200C to 5 bar. Find out what type of nozzle is this? Find minimum area of the nozzle required to allow 3 Kg/s under the given set of conditions. Assume that the steam expands isentropic ally and neglect initial velocity.   [10+5]

4. a) What is the compounding of steam turbine? Discuss various methods of compounding.

   b) A simple impulse turbine has a blade speed of 350m/s and blade speed to steam velocity(inlet) ratio is 0.45. Nozzles are inclined at 20° to the plane of rotation and steam leaves the stage at an   angle 70° to the plane of rotation. Determine

   i) Blade inlet angle   ii) Kinetic energy of steam at outlet

5. a) Explain in detail about the Parson's reaction turbine with a neat diagram.   [7 + 8]

   b) In a 50% reaction turbine stage running at 3000 rpm the exit angles are 30^0 and inlet angle are 50^0 the mean diameter is 1m. The steam flow rate is 1000kg /minute and stage efficiency is 85%. Determine (i) power output of stage (ii) specific enthalpy drop in the stage (iii) percentage increase in relative velocity of the steam when it flows over the moving blades. Blade outlet angle = 20°. Determine the available isentropic enthalpy drop in the stage.

6. Give the various classification of condensers and explain the working principle of different types.

7. a) Explain the working principle of gas turbine along with p-v and T-s diagrams.   [8+7]

   b) Describe the difference between closed cycle gas turbine and open cycle gas turbine.

8. a) Differentiate between jet and rocket engines.   [7 + 8]

   b) With the help of a neat diagram, explain the function of a pulse jet engine along with its applications