Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

II SEMESTER B.TECH END SEMESTER MAKEUP EXAMINATIONS, JUNE 2018

SUBJECT: BASIC MECHANICAL ENGINEERING [MME 1001]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data if any may be suitably assumed.
- Use of Steam Tables is permitted

1A.	Determine the condition and related parameter of the steam for the following cases: (i) Pressure of 10 bar and temperature of 200ºC (ii) Pressure of 8 bar and enthalpy of 2500kJ/kg. (iii) Steam at 20bar and 300ºC is cooled at constant pressure during which the heat lost by the steam is 400kJ/kg.	**05**
1B.	With a neat sketch explain the working of a Pelton Wheel and discuss the propelling force in an impulse turbine.	**05**
2A.	(i)Draw the general layout of a Hydel Power Plant and name the various components? (ii)Explain the functions of a Evaporator and a Condenser in a vapour compression refrigeration system	**03+02**
2B.	An open belt running over two pulleys 1.5m and 1.0m diameter connects two parallel shafts 4.80m apart. The initial tension in the belt when it is stationary is 3000N. The smaller pulley is rotating at 600 rpm and coefficient of friction between the belt and pulley is 0.3. Determine the power transmitted by the belt drive.	**05**
3A.	Draw the neat sketch of an engine lathe, label the parts and explain the functions of the parts of carriage assembly.	**05**
3B	Differentiate between open and crossed belt drives and with a neat sketch explain the working of a stepped cone pulley.	**05**
4A.	From a test on a four stroke petrol engine, the following data is available: engine speed 1000 rpm, net brake torque 70 N-m, mean effective pressure 10 bar, stroke 150 mm, bore 100 mm, rate of fuel consumption 2.57 kg/hr., calorific value of petrol 41000 kJ/kg. Calculate the indicated thermal efficiency and brake thermal efficiency	**05**
4B.	With neat sketches and illustrating the pressure volume changes explain the working of a four stroke petrol engine.	**05**
5A.	Explain any five each pattern making allowances and desirable properties of moulding sand.	**05**
5B.	With neat sketches explain in detail how arc welding is carried out using a DC power source.	**05**