



INSTITUTE OF AERONAUTICAL ENGINEERING

Dundigal, Hyderabad -500 043

MECHANICAL ENGINEERING

ASSIGNMENT

Course Name	:	THERMAL ENGINEERING-I
Course Code	:	A40313
Class	:	II B. Tech II Semester
Branch	:	Mechanical Engineering
Year	:	2016– 2017
Course Faculty	:	Mr. SV Durga Prasad, Assistant Professor, Mr. A. Anudeep Kumar, Assistant Professor.

OBJECTIVES:

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S. No	Question	Blooms Taxonomy Level	Course Outcome
ASSIGNMENT-I			
1	a) Give classification of IC Engines b. What are the different lubrication systems available for IC engines?	Comprehension, Application	A
2	Explain different types of combustion chambers in SI and CI engines	Comprehension, Application	A,B
3	A four cylinder engine running at 1200rpm developed 25.3BHP. The average torque when one cylinder was cut out was 10.5kg_m. Determine the indicated thermal efficiency, if the calorific value of the fuel used is 10000kcal/kg, and the engine uses 0.25kg of petrol per BHP hour.	Application, Knowledge	C
4	Sketch and explain the valve timing diagram of a four stroke Otto cycle engine	Synthesis, Application	C
5	Explain the Morse test to find the frictional power	Knowledge, Application	F
ASSIGNMENT – II			
1	A centrifugal compressor delivers 16.5 kg/s of air with a total head pressure ratio of 4 :1 .The speed of the compressor is 1500 r.p.m. Inlet total head temperature is 20 ⁰ C, slip factor 0.9 .Power input factor 1.04 and 80 % isentropic efficiency. Calculate: Overall diameter of the impeller ii. Power input.	Application	A,F
2	An axial flow compressor with an overall isentropic efficiency of 85 % draws air at 20 ⁰ C and compresses it in the pressure ratio 4:1.The mean blade speed and flow velocity are constant throughout the compressor. Assuming 50 % reaction blading and taking blade velocity as 180 m/sec. and work input factor as 0.82.calculate (i)Flow velocity (ii) Number of stages	Application,	A,F

S. No	Question	Blooms Taxonomy Level	Course Outcome
3	In a simple vapour compression cycle, the piston displacement volume for compressor is 1.5 liters per stroke and its volumetric efficiency is 80 %.The speed of compressor is 1600 rpm. Find the power rating of compressor and refrigerating effect.	Application , Knowledge	ACF
4	28 tones of ice from and at 0 ⁰ C is produced per day in an ammonia refrigerator. The temperature range in the compressor is from 25 ⁰ C to - 15 ⁰ C.The vapour is dry and saturated at the end of compression and an expansion valve is used. Assuming a co efficient of performance of 62 % of the theoretical, calculate the power required to drive the compressor. Take latent heat of ice is 335 KJ/kg.	Application Concept	ACF
5	Describe a simple vapour compression cycle giving clearly its flow diagram	Application Concept	BF

**Prepared By: Mr. SV Durga Prasad, Assistant Professor,
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