KERALA AGRICULTURAL UNIVERSITY
B.Tech (Agrl.Engg) 2013 Admission
IIIrd Semester Final Examination- January -2015

Cat. No: Fpme.2107
Title:Thermodynamics and heat engine (2+1)

Marks: 50.00
Time: 2 hours

I Fill up the balnks
(10 x 1=10)

1. A process which follows the law _____is known as polytrophic process

2. Temperature is _____property of the steam

3. The reading of the pressure gauge is the _____

4. Compressor capacity is expressed in terms of_____

5. _____is used to supply mixture of fuel and air in correct proportion in a petrol engine

6. Ignition quality of petrol is represented by _____

7. Gas turbine plant is an example for _____cycle

8. The constant volume cycle is also called _____

9. The value of universal gas constant (R_u) is_____

10. The thermal efficiency of a diesel engine is the order of_____

II Write short notes on any FIVE questions
(5x 2=10)

1. Explain the principle of a gas turbine

2. Explain the working of a water tube boiler

3. Classify the air compressor and explain

4. Classification of IC engineering

5. Compare petrol engine with diesel engine

6. Explain valve timing diagram of two stroke engine

7. Explain the law of thermodynamics

III Write short notes on any FIVE questions
(5x 4=20)

1. Calculate the thermal efficiency of an engine working on the Otto cycle .The bore and stroke of the cylinder are 20 cm and 38 cm respectively .The clearance volume is 0.0032m³.assumer r=14

2. Explain the working of a four stroke CI engine with a neat sketch

3. Derive an expression for Rankine efficiency

4. Derive an expression for Ericcson cycle

5. Find the enthalpy ,internal energy and entropy of steam at a pressure of 10 bar.

a. When steam is dry saturated

b. When stream is 0.75 dry and

c. when steam is super heated to 25⁰ C

6. What do you mean by Isothermal process and derive an expression for work done during the process

7. A 4 stroke four cylinder gas engine has cylinder diameter of 25 cm ,stroke bore ratio is 1.8 ,clearance volume is 4500 cm^3 engine speed 240 rpm ,mean effective pressure 6.8 kg/cm^2 and mechanical efficiency is 75% .Calculate IHP, BHP ,swept volume and compression ratio

IV Write an essay on any ONE

(1 x 10=10)

1. a.) List the desirable properties of working fluid used for power plants

b.) Define a governor and mention the classification of governor and explain any one

2. a.) What do you mean by reversible adiabatic process .derive the expression PV^r =Constant

b.)Explain with a neat sketch the working of a simple carburetor