

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –Ist SEMESTER–EXAMINATION – JULY- 2012****Subject code: 711102N****Date: 07/07/2012****Subject Name: Fundamentals of I.C. Engine and Automobile****Time: 2:30 pm – 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) On basis of performance parameters differentiate between two stroke and four stroke I.C Engine. **07**

(b) Describe with diagram the valve timing diagram of 4-stroke I.C. Engine. **07**

Q.2 (a) Describe mixture requirements in S.I. Engine. **07**

(b) Describe scavenging in two stroke engine. **07**

OR

(b) Describe air fuel cycle on p-v plane. **07**

Q.3 (a) Describe with diagram the working of mutiplate clutch. **07**

(b) Describe fuel injection pump with a neat sketch. **07**

OR

Q.3 (a) Describe design procedure and selection of material for crank shaft. **07**

(b) Determine the mass moment of inertia of the flywheel of an engine from the following data:- **07**

(1) Type of engine :- A single cylinder, single acting, four stroke oil engine.

(2) power developed :- 20 kW at 300 r.p.m

(3) The work done by the gases during the expansion strokes 2.3 times the work done on the gases during the compression and the work done during the suction and exhaust stroke is negligible. The speed is to be maintained within $\pm 1\%$.

Q.4 (a) Describe with diagram the working of synchromesh gearbox. **07**

(b) Describe multipoint fuel injection system with diagram. **07**

OR

Q.4 (a) Describe working of low heat rejection engine. **07**

(b) An air standard diesel cycle has a compression ratio of 14. The pressure at the beginning of the compression stroke is 1 bar and the temperature is 27°C. The maximum temperature is 2500 ° C. Determine the thermal efficiency and the mean effective pressure. **07**

Q.5 (a) Draw and describe typical layout of an electrical system of an automobile. **07**

(b) Describe with diagram the construction of automobile wheel and tyre. **07**

OR

Q.5 (a) Classify various steering linkages. Explain with diagram the working of rack and pinion steering system. **07**

(b) Describe with diagram the working of telescopic hydraulic shock absorber. **07**
