

Total No. of Questions : 10]

SEAT No. :

**P4948**

[Total No. of Pages : 2

**[4959]-1214**

**B. E. (Instrumentation and Control Engineering)**

**AUTOMOBILE INSTRUMENTATION**

**(2012 Pattern) (End Semester)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat circuit diagrams should be drawn whenever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

**Q1)** Write short notes on :

**[10]**

- a) Automotive electronic engine management system.
- b) Security and warning system in automobile.

OR

**Q2)** Draw and explain construction and principle of operation of Rotary Pump and injector. **[10]**

**Q3)** What is rating capacity of battery? Explain various rating tests carried on batteries. **[10]**

OR

**Q4)** Explain care and maintenances of starter motor and starter switches. **[10]**

**Q5)** Explain the following with respect to automobile :

**[17]**

- a) Crank angle position sensor
- b) Sensors for speed
- c) Coolant temperature measurement
- d) Manifold pressure measurement

OR

**P.T.O.**

**Q6)** Write short note electronic system for activating air bags in automobile. [17]

**Q7)** Write short notes on : [16]

- a) LED lighting system
- b) Compensated voltage regulator

OR

**Q8)** Explain in detail the principle of operation of emission measuring instruments. [16]

**Q9)** Explain tiltable steering wheel and explain the following : [17]

- a) Steering and mirror adjustment
- b) Central locking system

OR

**Q10)** Write short notes : [17]

- a) Euro and Bharat norms
- b) Horn and wiper system

