

**Duration: 3 Hours**

**Maximum Marks: 80**

N.B.: -

1. Question No 1 is Compulsory
2. Solve any three questions from remaining questions
3. Assume suitable data if required and mention it clearly
4. Figures to right indicate full marks

- Q1 Solve any four of following
- (a) What is the advantage of heterogeneous computing in autonomous vehicle systems? **5**
  - (b) Write a short note on traffic prediction and lane level routing. **5**
  - (c) What role does computer vision play in autonomous vehicles? **5**
  - (d) Write a short note on GPS. What are the advantages of GPS/IMU fusion? **5**
  - (e) What are some deep learning based techniques used in perception? **5**
- Q2
- (a) Why is a client system necessary for autonomous vehicles? Write a short note on ROS. **10**
  - (b) Write short notes on RADAR and LiDAR. **10**
- Q3
- (a) Write a short note on IMU/INS. **10**
  - (b) What is a cloud platform and what is its application to an autonomous vehicle system? **10**
- Q4
- (a) What is DSRC and how does it work? **10**
  - (b) Write a short note on Convolutional Neural Networks. **10**
- Q5
- (a) Write a short note on powertrain electronics. **10**
  - (b) What are the control algorithms for autonomous vehicles? **10**
- Q6
- (a) Explain the working and advantages of ADAS. **10**
  - (b) What are the components and functions of an Electronic Engine Control System? **10**

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