

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Summer 2018- 19 Examination**

**Semester: 7**  
**Subject Code: 03101401**  
**Subject Name: Avionics**

**Date: 08/05/2019**  
**Time: 10:30am To 01:00pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions (All Are Compulsory) (Each of one mark)****(15)**

1. What is the Major problem associate with Moving Target Indicator (MTI) radar?
2. What is the VORTAC?
3. What are the types of RADAR Displays?
4. Which architecture is used in modern Fighter Jets?
5. How velocity of moving target is measured?
6. Which of the following cannot be measured in primary radar?
  - a) Height of the aircraft
  - b) Speed of the aircraft
  - c) Direction of the aircraft
  - d) Position of the aircraft
7. Which of the following navigational systems is most stealthy?
  - a) SSR
  - b) VOR
  - c) Celestial
  - d) INS
8. How is the velocity of an aircraft measured by passive radio systems?
  - a) Secondary surveillance method
  - b) Velocity data is transmitted by the aircraft and received by the station
  - c) Doppler shift
  - d) Satellite mapping
9. Rotational motions about the x, y and z-axis are called \_\_\_\_\_ respectively
  - a) pitch, roll and yaw
  - b) roll, pitch and yaw
  - c) yaw, pitch and roll
  - d) pitch, yaw and roll
10. APN deals with
  - a) ZEM
  - b) Target Acceleration
  - c) Time Delay in Auto Pilot
  - d) All of Above
11. The avionics systems which are stand alone black boxes where each functional area had separate, dedicated sensors, processors and displays and the interconnect media is point to point wiring are using ..... architecture.
12. LED works on the principle of ..... Electrons.
13. Attitude hold autopilot uses ..... as feedback path.
14. The strength of secondary radar varies inversely with distance to the \_\_\_\_\_ power.
15. VOR is stands for .....

**Q.2 Answer the following questions. (Attempt any three)****(15)**

- A. What is Avionics Architecture? Explain 3<sup>rd</sup> generation Avionics Architecture.
- B. Explain Reference Frames for Aircraft Navigation Systems.
- C. What is the difference between Primary and Secondary RADAR?
- D. What is guidance? What are the different guidance phases in an ASM?

- Q.3 (A)** What are different Displays used in Aircraft Cockpit? Explain HUD. **(07)**
- (B)** Explain different components of FMS. **(08)**
- OR
- (B)** What are the difference between INS and Radio Navigation Systems? **(08)**
- Q.4 (A)** Explain Attitude Hold Auto Pilot. Why it is not used in Civil Aircraft? How to improve its stability? **(07)**
- OR
- (A)** Explain working principle of CRT. **(07)**
- (B)** What is the need of modern guidance Laws? What are the three Modern Guidance Laws? Explain in brief. **(08)**