Avionics
VTU CBCS Question Paper Set
2018

USN | | | | | | | | | |

10AE82

Eighth Semester B.E. Degree Examination, June/July 2015
Avionics

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a. Bring out the requirements of avionics in civil & military aircraft. (06 Marks)
    b. Explain split bus bar system used for electrical power distribution on board the aircraft. (08 Marks)
    c. List different types of cables used for connecting on board electrical system and explain them. (06 Marks)

2   a. Explain basic operational principle of an Inertial Navigation system. (10 Marks)
    b. With a neat schematic diagram, explain the working principle of stable platform. (10 Marks)

3   a. Explain Quadruplex actuation system, with neat diagram. (06 Marks)
    b. With neat diagram, explain generalized dissimilar redundant flight control system architecture. (06 Marks)
    c. Explain roll rate command control, with neat diagram. (08 Marks)

4   a. Explain 'basic T' and 'basic six' instrument grouping in flight, with neat diagram. (08 Marks)
    b. State the color assigned to the display in EFIS and the type of information to which they correspond. (04 Marks)
    c. Explain basic air data system, with a neat block diagram. (08 Marks)

PART – B

5   a. Explain the different radio frequency band on which the aircraft communications are usually carried out. (10 Marks)
    b. Explain slot antenna, with neat sketch. (05 Marks)
    c. With a neat diagram, explain the transmitter in a communication system. (05 Marks)

6   a. Explain the principle of μp, with neat diagram. (08 Marks)
    b. List various types of memories and briefly explain. (12 Marks)

7   a. List the advantages and disadvantages of CRT, LED, LCD. (10 Marks)
    b. Briefly discuss the following : i) DVI   ii) HUD. (10 Marks)

8   a. Explain different transfer formats that are used in MIL – STD 1553 B, with neat diagram. (10 Marks)
    b. Explain Integrated Avionic System architecture, with neat diagram. (10 Marks)

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PART – A

1. a. With the help of a schematic diagram explain split bar bus system. **(10 Marks)**
   b. Explain the importance of avionics systems in civil and military aircrafts. **(10 Marks)**

2. a. Explain the principle of inertial navigation system with a suitable schematic diagram. **(10 Marks)**
   b. With a neat sketch, explain the structure of stable platform. **(10 Marks)**

3. a. What are the concepts and features of fly by wire systems? With a neat sketch, list the elements a fly by wire flight control system. **(08 Marks)**
   b. Briefly explain the concept of copper Harper scale. **(06 Marks)**
   c. What are the common modes of failures in avionics systems? **(06 Marks)**

4. a. Explain the primary flight display systems used in civil aircrafts with a neat sketch. **(10 Marks)**
   b. With the help of a schematic diagram, explain the functioning of air data computers. **(10 Marks)**

PART – B

5. a. With a help of schematic diagram, explain the working of superheterodyne receiver. **(08 Marks)**
   b. Briefly explain the different equipments used in airborne communication systems. **(12 Marks)**

6. a. With a neat sketch explain the architecture of a general microprocessor. **(08 Marks)**
   b. Write short notes on : i) DRAM   ii) PROM   iii) EEPROM   iv) Flash memory. **(12 Marks)**

7. a. Briefly explain the following : i) CRT display   ii) plasma panel. **(10 Marks)**
   b. With a neat sketch explain the working principle of head up display. **(10 Marks)**

8. a. Briefly explain the different elements of element electronic wavefare. **(10 Marks)**
   b. With the help of schematic diagram, briefly explain the different word formats used in MIL STD 1553 B data bus. **(10 Marks)**

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PART – A

1   a. State the function of a bus-tie breaker and draw the type of bus bar arrangement to which it
       would be applied.   (08 Marks)
    b. Describe the construction and operation of a micro switch.   (08 Marks)
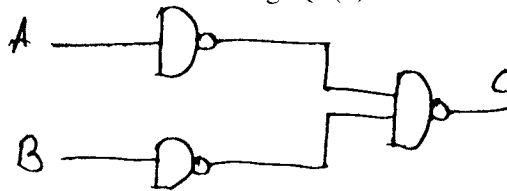   c. Write the truth table for the circuit shown in Fig. Q1(c).   (04 Marks)

Fig.Q1(c)

2   a. Explain basic operational principle of an INS.   (10 Marks)
    b. Explain the structure of stable platform.   (10 Marks)

3   a. Explain the figure that illustrates the key features of FBW.   (07 Marks)
    b. Explain the operation of failure detection algorithm for quaduplex sensors. (08 Marks)
    c. Define common mode failures with examples.   (05 Marks)

4   a. What are the general EFIS color coding.   (07 Marks)
    b. List and draw basic instrument grouping of flight instrument.   (04 Marks)
    c. Name some of the aircraft instrument to which a digital counter is applied. (04 Marks)
    d. What are the function of heading select and cross select knobs?   (05 Marks)

PART – B

5   a. Explain the different radio frequency band on which the aircraft communication carried out.
                                                                            (10 Marks)
    b. With neat diagram explain aircraft communication system.   (10 Marks)

6   a. Explain the internal architecture of an 8086 with neat diagram.   (07 Marks)
    b. List and explain different types of memories.   (06 Marks)
    c. Explain the pin configuration of µp with neat diagram.   (07 Marks)

7   a. Summarize the characteristics and requirement for an airborne DVI system. (08 Marks)
    b. List the advantages and disadvantages of ELD and plasma panel.   (07 Marks)
    c. What is the difference between civil and military aircraft cockpit?   (05 Marks)

8   a. Explain different types of words transferred in MIL – STD 1553B.   (10 Marks)
    b. Explain the working principle of RADAR.   (05 Marks)
    c. Why we use Manchester bi-phase data encoding for transmission?   (05 Marks)

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