B.E DEGREE EXAMINATIONS: NOV / DEC 2010

Seventh Semester

AERONAUTICAL ENGIEERING

U07AR701: Avionics

Time: Three Hours   **Maximum Marks: 100**

Answer ALL the Questions:

PART A (10 x 1 =10 Marks)

1. Avionics equipment on modern military or civil aircraft accounts for around _____ % of the total cost of aircraft.
   a) 40   b) 30   c) 75   d) 60

2. _____ systems detect water droplets and provide warning of storms and cloud turbulence.
   a) FLIR sensor   b) Air data sensor   c) Infrared sensor   d)Radar

3. The operating speed of 8085 microprocessor is
   a) 3 MHz   b)1 MHz   c) 2 MHz   d) 4 MHz

4. Which one is a non maskable interrupt in 8085 micro processor?
   a) RST 6.5   b) RST 7.5   c) TRAP   d) INTR

5. _____ is always the first word in a response by a remote terminal.
   a) command word   b) data word.   c) address word   d) status word.

6. Data rate of ARINC 629 data bus is
   a) 1Mbps   b) 2 Mbps   c) 100 Kbps   d) 10 Mbps

7. _____ keyboards save space and offer flexibility in the cockpits of modern aircraft.
   a) Single Function   b) Multifunction   c) Single switch   d) None of the above.

8. Voice interactive system can be applied to
   a) Low workload situation.   b) Two crew member aircraft
   c) High workload and Single crew member aircraft   d) Critical tasks.

9. LORAN C and OMEGA are _____ navigation systems
   a) Hyperbolic   b) Inertial   c) Terrain Reference   d) Doppler

10. _____ are receivable world wide owing to their low propagation attenuation
    a) VLF   b) MF   c) HF   d) VHF

PART B (10 x 2 = 20 Marks)

11. How avionics equipments are different from ground based equipments?
12. List any three data entry control systems.
13. Mention the various instruction sets of 8085 microprocessor.
14. What are the advantages of introducing digital technology in avionics system?
15. What is the need for two different speeds in ARINC 429 data bus?
16. What is brickwalling in avionics architecture?
17. What is HOTAS?
18. What are the salient features of flat panel displays?

19. Define electronic warfare.

20. How are reliability and maintainability related?

PART B (5 x 14 = 70 MARKS)

21. a) With a neat block diagram, explain the various major avionics system used in aircraft.

(OR)

b) Discuss the major driver's involved in the design of avionics systems for civil and military aircraft and spacecrafts.

22. a) Explain the architecture of 8085 microprocessor with a neat block diagram.   **(OR)**

b) (i) Bring out the classification of semiconductor memories and discuss its salient features.   (8)

(ii) List down the steps involved in interfacing the memory devices with microprocessor mode coupling.   (6)

23. a) Explain the evolution of Avionics architecture from first to fourth generation with examples.   **(OR)**

b) Explain MIL STD 1553 B data bus in detail bringing out the bus architecture, word formats and message formats.

24. a) (i) Explain the role of various color CRT's in modern cockpits.   (10)

(ii) What are the advantages and versatility of CRT's that suit them to use display device in modern aircraft?   (4)

(OR)

b) (i) Explain how multifunction keyboard saves space and offers flexibility.   (7)

(ii) Explain a three element combiner HUD with neat sketches   (7)

(OR)

25. a) (i) Describe a fly by wire flight control system and its characteristics with a neat block diagram.   (8)

(ii) Mention the advantages of FBW flight control system over conventional FCS?   (6)

(OR)

b) (i) What is the need for Navigation system and explain any one of modern navigation system in detail.   (7)

(ii) Discuss the various classification of Navigation system.   (7)

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