00643

B.TECH. (AEROSPACE ENGINEERING) (BTAE)

Term-End Examination

December, 2012

BAS-007 : CNS - ATM SYSTEMS

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. Questions **4** and **5** are **compulsory**.*

1. Explain in detail the functioning of ADF system. **8**

2. (a) What are the components of the AM spectrum ? **4**

(b) A broadcast radio transmitter radiates 10 kW when the modulation percentage is 60. How much of this is carrier power ? **4**

3. Write short notes on ***any four*** : **2x4=8**

(a) FM

(b) SRE

(c) Secondary RADAR

(d) MLS

(e) Doppler effect

4. What do the following terms stand for ? **1x12=12**

(a) ICAO

(b) RNP

(c) HSI

(d) TACAN

(e) MLS

(f) GLONASS

(g) IFR

(h) IFF

(i) VMC

(j) GAGAN

(k) PAPI

(l) RADAR

5. Explain ***any six*** : **3x6=18**

(a) EM spectrum.

(b) Airway.

(c) Transponder.

(d) Homing.

(e) Windsock.

(f) Macker beacons.

(g) Controlled airspace.

(h) Runway threshold.

6. (a) Explain how accurate navigation is possible using GPS. **4**

(b) What are the sources of error in GPS ? **4**

7. (a) Derive the RADAR range equation. 4

(b) Calculate the maximum range of a RADAR which operates at 3 cm with a Peak pulse power of 500 kW, if its minimum receivable power is 10^{-13}W, the capture area of the antenna is $5m^2$ and the radar cross sectional area of the target is $20m^2$. 4

8. With the help of a diagram, explain the operation of TACAN. 8

9. (a) What is AAI ? What are the functions of AAI ? 4

(b) Name the various types of scopes in use in ATC. 4