B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

December, 2017

BAS-007 : CNS - ATM SYSTEMS

Time : 3 hours *Maximum Marks : 70*

Note : (i) *Answer seven questions in all.*

(ii) *All questions carry equal marks.*

(iii) *Make suitable assumptions if needed.*

1. (a) Enumerate the differences between analog and digital communication systems. 6

   (b) The tuned circuit of an oscillator in a simple AM transmitter employs a 50 µH coil and a 1 nF capacitor. If the oscillator output is modulated by audio frequencies up to 10 kHz, what is the frequency range occupied by the side bands ? 4

2. (a) What is DGCA ? What are its functions ? 5

   (b) What are the considerations that determine airfield layout ? 5

3. (a) Explain how an MTI radar eliminates clutter. 5

   (b) An MTI radar operates at 5 GHz with a pulse repetition frequency of 800 pps. Calculate the lowest three blind speeds of this radar. 5

4. (a) What are the limitations of NDB 6
transmission ? What is the purpose of ATU
in NDB ?

(b) Define Amplitude modulation. Derive an 4
expression for modulation index in case of
AM.

5. (a) What are the actions to be taken by ATC in 5
case of an emergency descent of aircraft ?

(b) Explain the operation of PAR in aiding 5
ground controlled approach.

6. Write short notes on **any two** of the following :
(a) EM Spectrum 2x5=10
(b) SRE
(c) Transponder
(d) Marker beacons

7. What are the six basic flight instruments in a 10
cockpit ? Explain the function of each.

8. (a) Explain how accurate navigation is possible 5
using GPS.

(b) Explain the functioning of DME with the 5
help of a block diagram.

9. (a) How does VOR function ? Explain with 5
help of a diagram.

(b) What is Secondary Radar ? What is the duty 5
cycle of a radar with a pulse width of 3 μsec
and a pulse repetition time of 6 msec.