

**B.Tech. AEROSPACE ENGINEERING  
(BTAE)**

**Term-End Examination**

**00248**

**June, 2016**

**BAS-007 : CNS – ATM SYSTEMS**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note : Answer seven questions in all. Questions no. 1 and 2 are compulsory.**

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1. What do the following terms stand for ? *12×1=12*
- (a) DGCA
  - (b) ADF
  - (c) TSI
  - (d) TACAN
  - (e) ILS
  - (f) GLONASS
  - (g) IFR
  - (h) DME
  - (i) IMC
  - (j) GAGAN
  - (k) GPS
  - (l) RADAR

2. Explain any *six* from the following : 6×3=18
- (a) Radial
  - (b) Attitude
  - (c) Morse Code
  - (d) Clutter
  - (e) Cardioid pattern
  - (f) Arrestor barrier
  - (g) Waypoint
  - (h) Airfield apron
3. (a) Explain the functioning of a basic communication system with the help of a block diagram. 4
- (b) What is the modulation index of an FM signal whose modulating frequency is 3 kHz and maximum deviation 12 kHz ? 4
4. What are the six basic flight instruments in a cockpit ? State the function of each. 8
5. (a) What are the terrain conditions for siting a CVOR ? 4
- (b) What are the sources of error in GPS ? 4
6. Write short notes on any *two* of the following : 2×4=8
- (a) NDB
  - (b) FM Modulation Index
  - (c) IFF

7. Explain the following in brief : 2×4=8
- (a) Differential navigation
  - (b) ATM components
8. (a) Derive the radar range equation. 4
- (b) Calculate the maximum range of a radar system 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 antenna is  $5 \text{ m}^2$  and radar cross-sectional area of target is  $20 \text{ m}^2$ . 4
9. With the help of a diagram, explain the operation of TACAN. 8
10. (a) What is AAI ? What are the functions of AAI ? 4
- (b) Name the various types of scopes used in ATC. 4
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