

II B.Tech II Semester Examinations, APRIL 2011
INTRODUCTION TO AEROSPACE TRANSPORTATION SYSTEMS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. Discuss requirements of various environment systems deployed in airplanes flying at low and higher altitudes. Provide brief details of each system. Discuss if there are alternatives if any. Make use of sketches and line diagrams to explain the answer. [4+8+4]
2. (a) Explain the effect of MOI of the wheels on the motion and stability of a two wheeler? Illustrate with theory if any.
(b) Why the racing bicycles are different from a common bicycle. Explain with illustrations. [8+8]
3. (a) What is the significance of the term Doppler VOR as used in avionics of the day with illustrations?
(b) Explain the functioning of Instrument landing System. [8+8]
4. (a) Describe the purpose of acquiring 8 to 10 seater aircraft for a state government. What are the essential features of such airplanes? Elaborate with examples.
(b) Describe the kind of instruments and other facilities provided on the ATC unit where the airports can handle airplane with a gross take off weight up to 50,000 Kg? [8+8]
5. (a) Discuss the category of loads coming on the structure of the wing of a military fighter airplane. Consider an airplane of this type for elaborating your answer.
(b) Discuss the stability and controllability of the 'Wright Flyer'. Is it different from that of the Pushpak type airplane? [8+8]
6. (a) Classify Military airplanes according to the role for which these are designed. What are their distinct features in comparison with a civil airplane? Illustrate with at least one example each say from the inventory of armed forces. Make use of representative sketches.
(b) Describe features typical of a single seater airplane for sports / racing use. What should be the speed range of such airplane? [8+8]
7. Calculate pressure, density and temperature at an altitude of 7000m in troposphere. Develop the relationship used. The sea level data is;
 $P = 101325 \text{ N/m}^2$, $T = 15^\circ\text{C}$, $L = 0.0065 \text{ K /m}$. [16]
8. (a) What are the logical steps adopted for the issuance of the certificate of air-worthiness to an airplane.

Code No: R05222105

R05

Set No. 2

- (b) Certain metal foil used for air separator becomes brittle at high altitude of operations. Comment on the airworthiness and its certification for airplane operations. [8+8]

II B.Tech II Semester Examinations, APRIL 2011
INTRODUCTION TO AEROSPACE TRANSPORTATION SYSTEMS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe the purpose of acquiring 8 to 10 seater aircraft for a state government. What are the essential features of such airplanes? Elaborate with examples.
(b) Describe the kind of instruments and other facilities provided on the ATC unit where the airports can handle airplane with a gross take off weight up to 50,000 Kg? [8+8]
2. (a) What are the logical steps adopted for the issuance of the certificate of airworthiness to an airplane.
(b) Certain metal foil used for air separator becomes brittle at high altitude of operations. Comment on the airworthiness and its certification for airplane operations. [8+8]
3. (a) What is the significance of the term Doppler VOR as used in avionics of the day with illustrations?
(b) Explain the functioning of Instrument landing System. [8+8]
4. Discuss requirements of various environment systems deployed in airplanes flying at low and higher altitudes. Provide brief details of each system. Discuss if there are alternatives if any. Make use of sketches and line diagrams to explain the answer. [4+8+4]
5. (a) Discuss the category of loads coming on the structure of the wing of a military fighter airplane. Consider an airplane of this type for elaborating your answer.
(b) Discuss the stability and controllability of the 'Wright Flyer'. Is it different from that of the Pushpak type airplane? [8+8]
6. (a) Explain the effect of MOI of the wheels on the motion and stability of a two wheeler? Illustrate with theory if any.
(b) Why the racing bicycles are different from a common bicycle. Explain with illustrations. [8+8]
7. (a) Classify Military airplanes according to the role for which these are designed. What are their distinct features in comparison with a civil airplane? Illustrate with at least one example each say from the inventory of armed forces. Make use of representative sketches.
(b) Describe features typical of a single seater airplane for sports / racing use. What should be the speed range of such airplane? [8+8]

Code No: R05222105

R05

Set No. 4

8. Calculate pressure, density and temperature at an altitude of 7000m in troposphere. Develop the relationship used. The sea level data is;
 $P = 101325 \text{ N/m}^2$, $T = 15^\circ\text{C}$, $L = 0.0065 \text{ K /m}$. [16]

II B.Tech II Semester Examinations, APRIL 2011
INTRODUCTION TO AEROSPACE TRANSPORTATION SYSTEMS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is the significance of the term Doppler VOR as used in avionics of the day with illustrations?
(b) Explain the functioning of Instrument landing System. [8+8]
2. Calculate pressure, density and temperature at an altitude of 7000m in troposphere. Develop the relationship used. The sea level data is;
 $P = 101325 \text{ N/m}^2$, $T = 15^{\circ}\text{C}$, $L = 0.0065 \text{ K /m}$. [16]
3. (a) What are the logical steps adopted for the issuance of the certificate of airworthiness to an airplane.
(b) Certain metal foil used for air separator becomes brittle at high altitude of operations. Comment on the airworthiness and its certification for airplane operations. [8+8]
4. (a) Explain the effect of MOI of the wheels on the motion and stability of a two wheeler? Illustrate with theory if any.
(b) Why the racing bicycles are different from a common bicycle. Explain with illustrations. [8+8]
5. Discuss requirements of various environment systems deployed in airplanes flying at low and higher altitudes. Provide brief details of each system. Discuss if there are alternatives if any. Make use of sketches and line diagrams to explain the answer. [4+8+4]
6. (a) Classify Military airplanes according to the role for which these are designed. What are their distinct features in comparison with a civil airplane? Illustrate with at least one example each say from the inventory of armed forces. Make use of representative sketches.
(b) Describe features typical of a single seater airplane for sports / racing use. What should be the speed range of such airplane? [8+8]
7. (a) Describe the purpose of acquiring 8 to 10 seater aircraft for a state government. What are the essential features of such airplanes? Elaborate with examples.
(b) Describe the kind of instruments and other facilities provided on the ATC unit where the airports can handle airplane with a gross take off weight up to 50,000 Kg? [8+8]
8. (a) Discuss the category of loads coming on the structure of the wing of a military fighter airplane. Consider an airplane of this type for elaborating your answer.

Code No: R05222105

R05

Set No. 1

- (b) Discuss the stability and controllability of the 'Wright Flyer'. Is it different from that of the Pushpak type airplane? [8+8]

II B.Tech II Semester Examinations, APRIL 2011
INTRODUCTION TO AEROSPACE TRANSPORTATION SYSTEMS
Aeronautical Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe the purpose of acquiring 8 to 10 seater aircraft for a state government. What are the essential features of such airplanes? Elaborate with examples.
(b) Describe the kind of instruments and other facilities provided on the ATC unit where the airports can handle airplane with a gross take off weight up to 50,000 Kg? [8+8]
2. (a) What is the significance of the term Doppler VOR as used in avionics of the day with illustrations?
(b) Explain the functioning of Instrument landing System. [8+8]
3. (a) Explain the effect of MOI of the wheels on the motion and stability of a two wheeler? Illustrate with theory if any.
(b) Why the racing bicycles are different from a common bicycle. Explain with illustrations. [8+8]
4. Calculate pressure, density and temperature at an altitude of 7000m in troposphere. Develop the relationship used. The sea level data is;
 $P = 101325 \text{ N/m}^2$, $T = 15^{\circ}\text{C}$, $L = 0.0065 \text{ K /m}$. [16]
5. Discuss requirements of various environment systems deployed in airplanes flying at low and higher altitudes. Provide brief details of each system. Discuss if there are alternatives if any. Make use of sketches and line diagrams to explain the answer. [4+8+4]
6. (a) Classify Military airplanes according to the role for which these are designed. What are their distinct features in comparison with a civil airplane? Illustrate with at least one example each say from the inventory of armed forces. Make use of representative sketches.
(b) Describe features typical of a single seater airplane for sports / racing use. What should be the speed range of such airplane? [8+8]
7. (a) What are the logical steps adopted for the issuance of the certificate of airworthiness to an airplane.
(b) Certain metal foil used for air separator becomes brittle at high altitude of operations. Comment on the airworthiness and its certification for airplane operations. [8+8]
8. (a) Discuss the category of loads coming on the structure of the wing of a military fighter airplane. Consider an airplane of this type for elaborating your answer.

Code No: R05222105

R05

Set No. 3

- (b) Discuss the stability and controllability of the 'Wright Flyer'. Is it different from that of the Pushpak type airplane? [8+8]
