MT-III

R13

Code No: 118AG

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, April - 2018
AIRPORT PLANNING AND OPERATIONS
(Aeronautical Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What is airport privatization?	[2]
b)	What purposes do general aviation airports serve?	[3]
c)	What are the primary objectives of the airport master plan?	[2]
d)	How is an Airport Reference Code determined?	[3]
e)	What are CUTE systems?	[2]
f)	How can Gantt charts help airport management	[3]
g)	What are the direct passenger services?	[2]
h)	Mention the unit loading devices.	[3]
i)	How is aeronautical information useful?	[2]
j)	Explain access users and modal choice	[3]

PART - B

(50 Marks)

2. Explain about the different hub classifications described in the NPIAS. [10]

OR

3. What specific rules and regulations are used to operate airports? [10]

4. What are some of the various types of airport planning studies? What is the focus of each type of study? [10]

OR

5. What is the process involved with environmental planning for airport development? [10]

6. What are the different processes that comprise the passenger handling system at airport terminals? [10]

OR

7. What are FIS? What passengers typically require FIS? [10]

8. What are the functions of the passenger terminal? [10]

OR

9. Explain about the passenger information systems. [10]

10. Explain about access interaction with passenger terminal operation. [10]

OR

11. What are the factors affecting access mode choice? Discuss. [10]

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PART - A

(25 Marks)

1.a) Who typically owns airports in the United States? [2]
b) What are the requirements necessary for an airport to be classified as a reliever airport? [3]
c) What is described in the inventory section of the airport master plan? [2]
d) What factors are commonly taken into consideration in planning the airport terminal area? [3]
e) What is the mobile lounge concept? [2]
f) In what ways are passengers categorized while travelling through airport terminals? [3]
g) What do you mean by hubbing considerations? [2]
h) Give the examples of modern cargo designs [3]
i) What are airport technical services? [2]
j) How is telecommunications and meteorology data useful in technical services? [3]

PART - B

(50 Marks)

2. What is the difference between a port authority and an airport authority form of airport ownership and operation? [10]

OR

3. What are the different classes of airspace that exist in the current NAS? How do these classes vary in location and air traffic control regulations? [10]

4. What is meant by an airport planning horizon? What is the typical planning horizon for an airport master plan? [10]

OR

5. What steps are involved in estimating the space requirements in planning airport terminals? [10]

6. What are some of the technologies that exist and are being developed to improve ground access to airports? [10]

OR

7. What are the different types of gate-usage agreements that airports negotiated with aircraft operators? What are the advantages and disadvantages of each type of agreement? [10]

8. What are airline related operational functions? Explain. [10]

OR

9. What is air cargo market? Explain in detail. [10]

10. How is air traffic control implemented as a part of technical service? Explain. [10]

OR

11. What is access mode? Explain about in-town and off-airport terminal access modes? [10]

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DEPARTMENT OF AERONAUTICAL ENGINEERING
AIRLINE AND AIRPORT MANAGEMENT
MODEL PAPER -I

PART –A
Answer all the questions

1. Describe about ground airports?	[3]
2. Define Hub classification?	[2]
3. What is hub classification?	[2]
4. What is called as air side and land side?	[2]
5. What is airport master plan?	[3]
6. What is meant complexity of airport operation?	[3]
7. What is role of relieve airport?	[2]
8. Define small hubs?	[2]
9. What are facility requirements of airport?	[3]
10. Write about land in of planning?	[3]

PART-B

1. Describe about private airport in detail?	[10]
OR	
2. Differentiate between public and commercial service airport?	[10]
3. Draw airport loyal plow with neat sketch with components?	[10]
OR	
4. Discuss in detail about financial plans in construction of airport?	[10]
5. What are role of an airport and discuss the various types of aircraft?	[10]
OR	
6. Discuss about passenger and ramp handling?	[10]
7. What are the functions of passenger terminal?	[10]
OR	
8. What are the different types of cargo loading devices?	[10]
9. Discuss about air traffic control in detail?	[10]
OR	
10. What are the factors effecting access mode choice?	[10]

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AIRLINE AND AIRPORT MANAGEMENT
MODEL PAPER -II

PART –A
Answer all the questions

1. Define hub classification? [2]
2. Differentiate between long hub and medium hub? [3]
3. Write the components of airport? [3]
4. What is an airport planning system? [2]
5. Differentiate land side and air side? [3]
6. Write functions of airport? [2]
7. Draw airport layout? [3]
8. What is financial planning? [2]
9. Define forecasting of airport planning? [2]
10. What are design alternatives? [3]

PART-B

1. Discuss about private and general airport in detail? [10]

OR

2. Write function of airport in detail? [10]
3. Describe financial planning of airport? [10]

OR

4. Discuss in detail diverse alternatives? [10]
5. Explain departure control and achieved in airport? [10]

OR

6. What are the non-passenger related airport functions? [10]
7. What are characteristics of baggage handling system? [10]

OR

8. Describe about art band baggage system in detail? [10]
9. What is requirement of aeronautical information system in airport operations? [10]

OR

10. Discuss about access modes in town and off airport terminals? [10]

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AIRLINE AND AIRPORT MANAGEMENT
MODEL PAPER -III

PART –A
Answer all the questions

1. What is function of airport? [2]
2. Discuss primary role of commercial service airport? [2]
3. Draw airport layout? [2]
4. What is land use planning [3]
5. Explain baggage load planning? [2]
6. What is meant by environmental planning? [3]
7. What is medium hub? [2]
8. Discuss about general aviation airport? [3]
9. Discuss any two design alternatives? [3]
10. What are financial plans of an aircraft? [3]

PART-B

1. Differentiate long, small and medium hubs? [10]

OR

2. Write in detail functions of an aircraft? [10]
3. Discuss about financial planning of airport? [10]

OR

4. Discuss about master plan of airport? [10]
5. What are responsibilities of ground handling? [10]

OR

6. Discuss about ramp handling and services? [10]
7. What are airline related operational functions? [10]

OR

8. How do you process VIP in Airport terminal building? [10]
9. What is role of metrology department in airport operation? [10]

OR

10. Discuss about access any part of airport systems? [10]

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MODEL PAPER -IV

PART –A
Answer all the questions

1. Distinguish between public and private airport? [3]
2. Describe about commercial service airport? [2]
3. Define small hub? [2]
4. What is an airside? [2]
5. Write about relieve airport? [3]
6. What are complexities of airport operations? [3]
7. What is meant by environmental planning? [3]
8. What are the facility requirements of airport? [2]
9. Write components of airport? [3]
10. Write about land use planning? [2]

PART-B

1. Draw the components of airside and landside of an airport? [10]

OR

2. Describe functions of airport? [10]
3. What are design alternatives of airport? [10]

OR

4. Discuss about environmental planning of airport? [10]
5. What are the operating characteristics of baggage handling systems? [10]

OR

6. Discuss about out bound baggage system? [10]
7. Write about
   i. Direct passenger services [5]
   ii. Airline related passenger services [5]

OR

8. What are government requirements of airport operations? [10]
9. Discuss about aeronautical information system? [10]

OR

10. What are requirements of technical services in airport ATC? [10]

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MODEL PAPER -V

PART –A
Answer all the questions

1. What is meant by giant airports? [2]
2. Write the components of airport? [2]
3. Define medium hubs? [2]
4. What is land side? [2]
5. What do you understand by airport planning? [3]
6. What is airport master plan? [3]
7. What is forecasting of airport planning? [3]
8. Write components of airport [2]
9. Define airport plan layout? [3]
10. What are the facilities of print airport? [3]

PART-B

1. Discuss in detail the general aviation airport? [10]

OR

2. Write about relive airport and general airport? [10]
3. Discuss in detail about airport planning system? [10]

OR

4. What are facility requirements of an airport? Discuss in detail about terminal/parking of an aircraft? [10]
5. Differentiate between general and relieve airport? [10]

OR

6. Draw layout of an airport and its components? [10]
7. What are the duties of ground handling departments? [10]

OR

8. Explain about baggage handling procedure? [10]
9. Explain about cargo airport operation in detail? [10]

OR

10. What is the function of passenger related airport authority? [10]

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IV B.TECH II SEMESTER – AERONAUTICAL ENGINEERING
(R15A2127) HELICOPTER ENGINEERING
MODEL PAPER – I

MAXIMUM MARKS: 75

PART A **Max Marks: 25**

i. All questions in this section are compulsory

ii. Answer in TWO to FOUR sentences.

1. Write the difference between Helicopter and Aircraft. 2M
2. Describe the term “Helicopter” 2M
3. Define Induced Power. 2M
4. Define Profile Drag Power. 2M
5. Define the term “Synchropter”. 2M
6. What are the factors considered to fuselage design? 3M
7. Mention the merits of side by side rotor. 3M
8. Write the uses of helicopter. 3M
9. Write the merits of Rotary wing aircraft. 3M
10. What is mean for Drag? Write its types. 3M

PART B

ANSWER FIVE QUESTIONS **5x10=50M**

1. Explain in details about various types of helicopter configuration.

Or

2. Write a detail notes on compound Helicopter.

3. What is a rotorcraft? What are the different types of rotorcrafts?

Or

4. What are the methods of controls of helicopter? Discuss with sketches/drawing.

5. Write a short note on Flapping and Feathering of rotor blades of a helicopter rotor.

Or

6. Explain collective pitch and cyclic pitch in a helicopter. Describe their action in vertical and forward flights.

7. Discuss the advantages and disadvantages of a compound helicopter over a conventional helicopter.

Or

8. Write the difference between compound helicopter and single rotor helicopter.

9. Explain in details about historical development of helicopter.

Or

10. Explain in details about performance characteristics of Rotor.

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IV B.TECH II SEMESTER – AERONAUTICAL ENGINEERING
(R15A2127) HELICOPTER ENGINEERING
MODEL PAPER – II

MAXIMUM MARKS: 75

PART A **Max Marks: 25**

i. All questions in this section are compulsory

ii. Answer in TWO to FOUR sentences.

1. Write Newton's second law of motion. 2M
2. Define Propeller efficiency of the rotor. 2M
3. Define Rotor hovering efficiency. 2M
4. What is mean for angle of attack? 2M
5. What is mean for angle of incidence? 2M
6. Mention the assumptions of simple momentum theory. 3M
7. Define Profile Drag. 3M
8. Mention the power losses of rotor in hover. 3M
9. Define Induced Power. 3M
10. What is mean for Rotational velocity? 3M

PART B

ANSWER FIVE QUESTIONS **5x10=50M**

1. i. Explain 'hover'.
   ii. Using ideal actuator disc theory. Find the relationship between power and thrust of the helicopter in hovering flight.

or

2. Derive the Thrust coefficient using blade element theory.

3. Derive the expressions for profile and induced power.

or

4. Describe twist in the context of a helicopter. When do u call it ideal? What are the advantages of having ideal twist?

5. i. Discuss rotor speeds and tip speeds.
   ii. What are the limitations on the rotor speeds?

or

6. Using ideal actuator disc theory. Find the relationship between thrust and power of the helicopter in hovering flight.
7. How does the blade element theory become superior to overcome actuator disc Theory? Hence define (i) Thrust Coefficient (ii) Torque Coefficient

or

8. Describe the mechanism of ground effect in hover. How does ground effect influence the performance of helicopter during hovering flight?
9. Explain the different types of hovercraft with suitable diagram.

or

10. Describe the types of jet machines used in hovercraft, explain briefly with diagrams.

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IV B.TECH II SEMESTER – AERONAUTICAL ENGINEERING
(R15A2127) HELICOPTER ENGINEERING
MODEL PAPER – III

MAXIMUM MARKS: 75

PART A Max Marks: 25

i. All questions in this section are compulsory

ii. Answer in TWO to FOUR sentences.

1.	What is mean for normal working state of Rotor?	2M
2.	Define Autorotation.	2M
3.	Define Induced velocity.	2M
4.	Define Rotor Drag Coefficient.	2M
5.	Write shaft power equation for vertical descent.	2M
6.	Write the momentum equation of vertical descent.	3M
7.	What is Parasite Drag?	3M
8.	Define Inflow angle for Autorotation?	3M
9.	What is Vortex?	3M
10.	Define Rate Of Climb	3M

PART B

ANSWER FIVE QUESTIONS **5x10=50M**

1. Explain Autorotation with help of Schrenk's diagram.

Or

2. Explain in details about various flow states of Rotor.
3. Derive and explain Performance calculation of vertical descent.

Or

4. Derive the expression for Rotor drag coefficient for vertical descent.
5. Illustrate with sketches, the vortex ring flow in vertical descent of a helicopter at fast rate of descent.

Or

6. Illustrate with sketches, the vortex ring flow in vertical descent of a helicopter at slow rate of descent.
7. What is the purpose of using equivalent solidities in helicopter rotor performance studies? Explain pitfalls using such "equivalent" factors with Rotors

Or

8. Write the difference between compound helicopter and single Rotor helicopter.
9. What do you understand by ground effect machine and how do you classify it.

Or

10. How the proximity of ground affects the performance of helicopter during hovering and forward flight.