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## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B-Tech

Semester – V

Subject (Course): Aircraft System & Maintenance

Max. Marks :100

Course Code : ASEG344

Duration : 3 Hrs

No. of page/s:

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**Note: Make use of *sketches/plots* to elaborate your answer. Brief and to the point answers are expected. The Question Paper contain 3 Sections- Section A, B and C**

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### Section A (10 X 2M=20M)

1. Define Rudder lock.
2. Write function of Elevon and flaperon.
3. Draw T-S diagram of Bootstrap cycle.
4. What do you understand by Marker beacons?
5. Draw temperature Vs moisture content of Direct Evaporative cooling system
6. Write function of Selector Valve and Shut-off valve.
7. What do you understand by FBW? Write its advantages.
8. Categorize Two different configurations of Landing Gear?
9. Define Iso-propyl nitrate type starter.
10. Define Line and base Maintenance.

### Section B (4 X 10M=40M)

11. Describe Starting and Ignition system of an Aircraft. Explain briefly the triple breech cartridge type starter.
12. Classify types of checks used in inspection of aircraft. Explain them briefly.

13. Illustrate Auto pilot system Active control Technology and DFBW Technology with suitable sketch.
14. Explain with suitable sketch Thermal switch and thermo-couple fire protection system.

**Section C (2 X 20M=40M)**

15. a. Explain Instrument Landing system. Write advantages and dis-advantages of ILS.[10M]  
b. Draw sketch of ILS Indicator, marking its components and write function of each component.[10M]
16. Elaborate Boost-strap air cycle system. Draw Schematic diagram and T-S diagram of Bootstrap cycle. Briefly explain the advantages and disadvantages along with the applications of the Bootstrap cycle.

OR

- (a). Explain Continuous loop fire protection system in an aircraft. Also mention the different types of continuous loop fire protection systems are used in Aircraft. [10M]
- (b). Write a brief note on anti-icing and de-icing system used in stabilizers, windscreen, wings, propellers and fuel vents.[10M]

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### Section A (10 X 2M=20M)

1. Why ceramic is used in anti-fire protection system?
2. What do you understand by saturation efficiency?
3. Classify four types of brakes used in aircraft.
4. Sketch diagram of VOR. Write its function
5. What is glide path? Write its function
6. Describe Push pull rod system.
7. Differentiate between slot and slat.
8. Specify Runway Threshold with suitable sketch.
9. Write principle of Refrigeration cycle.
10. Why balancing is required in aircraft.

### Section B (4 X 10M=40M)

11. Why is plunger type pump describe as a positive displacement pump? Describe one type of PDP.
12. What is an aircraft control system? Explain primary and secondary control surface with help of diagram.
13. What are different approaches of maintenance and how they are performed?
14. Explain aircraft refrigeration cycle. Also, sketch Schematic and T-S diagram of refrigeration cycle.

**Section-C (2 X 20M=40M)**

15. (a) Explain fly-by-wire Technology and Auto pilot system Active control Technology using block diagram. [10 M]  
(b) Write a short note on practical application of Auto pilot system Active control Technology [10 M]
16. a. What is ILS? What are the advantages and disadvantages of ILS. Discuss briefly the components of ILS with suitable sketches. {10 M]  
b. Explain Types of Runway approach along with suitable sketches. [10 M]

OR

What is VOR? With the help of suitable sketches, explain the principle of operation, working and advantages and disadvantages of VOR.