

THAKUR COLLEGE OF SCIENCE & COMMERCE

Exam: April 2018

Max. Marks: 75.

Paper Code:

Programme: S.Y.BSc

Semester: IV

Subject: Air Navigation

Q.1. Attempt any three:- **(15)**

- 1) State the principle of working of Basic Radar?
- 2) Define the following:-
 - a) Pulse width
 - b) Pulse Length
 - c) Pulse repetition interval
 - d) Pulse repetition Frequency
 - e) Scan rate.
- 3) Write a short note on Precision Approach Radar.
- 4) State the disadvantages of Precision Approach Radar.

Q.2. Attempt any three:- **(15)**

- 1) State the principle of the working of Airborne Weather Radar.
- 2) How is AWR used for mapping?
- 3) State the principle of Secondary Radar.
- 4) State the working of DME.

Q.3. Attempt any three:- **(15)**

- 1) State the principle of the working of Secondary Surveillance Radar.
- 2) Write a short note on Mode S of SSR.
- 3) State the disadvantages of SSR.
- 4) Write a short note on TCAS II.

Q.4. Solve the Following:- **(15)**

- 1) The radar in an aircraft at FL370 detects a cloud at 75 nm. The cloud disappears when the tilt is selected to 4° up and 2° down. Find the base and the top of the cloud.
- 2) The radar in an aircraft at FL300 detects a cloud at 100 nm. The cloud disappears when the tilt is selected to 2.5° up and 1.5° down. Find the top and the base of the cloud.

Q.5. Solve the following:- **(15)**

- 1) X to Y distance is 875 nm, track - 080° , W/V - $260^\circ / 15$ kts, TAS 250 kts. Find the distance and time to CP?
- 2) Distance A to B is 1800 km, Track - 100° , W/V - $280^\circ / 25$ kts., Find the distance and time to C.P. - nm assuming a TAS of 390 km/hr?
- 3) A to B distance is 1350 km, Track - 260° , W/V - $080^\circ / 15$ kts, 4 Eng TAS 320 km/hr, 3 Eng TAS 250 km/hr. Find the distance and time from C.P. to destination assuming that the a/c had engine failure at C.P.?

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Q.1. Attempt any three:- (15)

- 1) Define the following:-
 - a) Pulse width
 - b) Pulse Length
 - c) Pulse repetition interval
 - d) Pulse repetition Frequency
 - e) Scan rate.
- 2) Write a short note on Maximum and minimum range of Basic Radar.
- 3) Write a short note on Surface movement radar.
- 4) State the disadvantages of Precision Approach Radar.

Q.2. Attempt any one:- (15)

- 1) State the principle of the working of Airborne Weather Radar.
- 2) How is lightning detected in small aircrafts?
- 3) State the principle of Secondary Radar.
- 4) State the working of DME

Q.3. Attempt any three:- (15)

- 1) State the principle of the working of Secondary Surveillance Radar.
- 2) Write a short note on Mode A and C of SSR.
- 3) State any 5 codes used in SSR.
- 4) State the working principle of ACAS.

Q.4. Solve the Following:- (15)

- 1) The radar in an aircraft at FL370 detects a cloud at 75 nm. The cloud disappears when the tilt is selected to 4° up and 2° down. Find the base and the top of the cloud.
- 2) The radar in an aircraft at FL300 detects a cloud at 100 nm. The cloud disappears when the tilt is selected to 2.5° up and 1.5° down. Find the top and the base of the cloud.

Q.5. Solve the following:- (15)

- 1) X to Y distance is 875 nm, track - 080° , W/V - $260^\circ / 15$ kts, TAS 250 kts. Find the distance and time to CP?
- 2) Distance A to B is 1800 km, Track - 100° , W/V - $280^\circ / 25$ kts,. Find the distance and time to C.P. - nm assuming a TAS of 390 km/hr?
- 3) A to B distance is 1350 km, Track - 260° , W/V - $080^\circ / 15$ kts , 4 Eng TAS 320 km/hr, 3 Eng TAS 250 km/hr. Find the distance and time from C.P. to destination assuming that the a/c had engine failure at C.P.?

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Q.1. Attempt any three:- (15)

- 1) State the principle of working of Basic Radar?
- 2) Write a short note on Maximum and minimum range of Basic Radar.
- 3) Write a short note on Surface movement radar.
- 4) State the disadvantages of Precision Approach Radar.

Q.2. Attempt any three:- (15)

- 1) How is lightning detected in small aircrafts?
- 2) State the principle of the working of Airborne Weather Radar.
- 3) State the working of DME
- 4) How is wind shear detected in an aircraft.

Q.3. Attempt any three:- (15)

- 1) State the advantages of SSR?
- 2) Write a short note on Mode A and C of SSR.
- 3) State any 5 codes used in SSR.
- 4) Write a short note on TCAS I.

Q.4. Solve the Following:- (15)

- 1) The radar in an aircraft at FL370 detects a cloud at 75 nm. The cloud disappears when the tilt is selected to 4° up and 2° down. Find the base and the top of the cloud.
- 2) The radar in an aircraft at FL300 detects a cloud at 100 nm. The cloud disappears when the tilt is selected to 2.5° up and 1.5° down. Find the top and the base of the cloud.

Q.5. Solve the following:- (15)

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