



I SEMESTER M.TECH. (DEFENCE TECHNOLOGY)
END SEMESTER ONLINE PROCTORED EXAMINATIONS, FEB 2022
SUB: SYSTEMS AND WARFARE PLATFORMS [AAE-5175]

REVISED CREDIT SYSTEM

(21/02/2022)

Duration: 3 Hours

Max. Marks: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data if any, may be suitably be assumed.

- 1A Explain the concept of the OTH or BVR Radars missiles with the hand drawn sketches. (2M)
- 1B Define Stealth Technology in reducing the susceptibility of a ship to weapon hit and various mitigation techniques in ship design. (3M)
- 1C Define Amphibious Transport Dock currently in service of Indian Navy and explain the concept of docking well with a hand drawn sketch. (5M)
- 2A Explain the deployment and operation of a ballistic missile with hand drawn sketches (2M)
- 2B Explain the general design feature of the single and double hulls of a submarine, materials used and advantages double hull submarine with hand drawn sketches. (3M)
- 2C List out the Unique tanks in a submarine with a hand drawn sketches and explain the functions of these unique tanks during the surfaced, dived conditions and dived course keeping of the submarine, (5M)
- 3A What are the International standard values of pressure, temperature and density at sea level? An aircraft is flying at a speed of 734.4 km/hr at sea level. Calculate the Mach number at which the aircraft is flying. (2M)
- 3B What are three axes of an aircraft? What do we call the motion of aircraft about these three axes? Which control surfaces are used to produce these motions (3M)
- 3C Define range and endurance. Derive the Range Breguet expression for a jet engine airplane. (5M)

- 4A Explain the NBCD Counter Measures(CM) at sea, closure system, Counter Measure Wash Down (CMDW) system, weathering, Decontamination of personnel, Skin Decontamination Kit(SDK), Contamination Control Area(CCA) and Ship CCA (2M)
- 4B List and explain the various types of explosive mechanism employed in a bomb, the resulting effects in environment and subsequent effects on living beings & infracture/buildings. (3M)
- 4C Briefly answer the following questions (5M)
- i) Explain drag polar with a neat sketch
 - ii) What are the three traditional factors which determine the effectiveness of a tank?
 - iii) Advantages of Kevlar.
 - iv) What is a transducer?
 - v) Define vulnerability and susceptibility
- 5A What are run-flat tyres? What are the advantages of run-flat tyres? (2M)
- 5B Write a short note on Explosive Reactive Armour (ERA) (3M)
- 5C Explain in detail the functional blocks of a measurement system. (5M)