CBCS SCHEME

USN | | | | | | | | | | |

15AE564

Fifth Semester B.E. Degree Examination, June/July 2019
Basics of Rockets and Missiles

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What are the parameters involved in Rocket performance? Explain them. **(12 Marks)**
b. What are the difference between space launch vehicle and missiles? **(04 Marks)**

OR

2 a. Explain why control and guidelines is required for rockets and missiles to meet the performance. **(12 Marks)**
b. Draw a schematic diagram of a mission profile for rockets. **(04 Marks)**

Module-2

3 a. Explain solid propellant rocket motor. **(08 Marks)**
b. What are the different solid propellants used in rockets? **(08 Marks)**

OR

4 a. Explain the turbo-pump used in liquid propellant rocket with a sketch. **(08 Marks)**
b. Explain propellant slosh, propellant hammer effects in a cryogenic engine. **(08 Marks)**

Module-3

5 a. What are the different airframe components used in rockets and missiles? **(06 Marks)**
b. What are the forces acting on a missile during flight? Explain with a neat sketch. **(06 Marks)**
c. Explain re-entry body design considerations. **(04 Marks)**

OR

6 a. What are the different classifications of missiles? **(06 Marks)**
b. Explain lateral damping in missiles. **(04 Marks)**
c. Explain down wash in a missile and how it affects the performance. **(06 Marks)**

Module-4

7 a. Derive Tsiolskousky's rocket equation. **(10 Marks)**
b. What is Multi staging? Why is it required? **(06 Marks)**

OR

8 a. Explain why thrust vectors are required for a rocket and how it functions. **(06 Marks)**
b. What are the different methods of thrust vector control? **(04 Marks)**
c. Explain the trajectory of a space launch vehicle. **(06 Marks)**

Module-5

9 a. What are the procedures carried out before the launch of a space vehicle? **(06 Marks)**
b. What are the testing techniques involved in rocket? **(10 Marks)**

OR

10 a. What are the materials used in fabrication of rockets? **(08 Marks)**
b. Describe instrumentation and data management in rocket testing. **(08 Marks)**

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