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B. TECH
(SEM-V) THEORY EXAMINATION 2020-21
AIRCRAFT PROPULSION-I

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

SN.	Questions	Marks	CO
a.	Write the difference between SI & CI engines.	2	2
b.	What is mean effective pressure?	2	1
c.	Why we need to cool the engine?	2	6
d.	Write the names of different types of engine cooling systems.	2	2
e.	What is the pitch of a propeller?	2	3
f.	What are non-air breathing engines?	2	3
g.	What are closed systems?	2	5
h.	What is pre ignition?	2	2
i.	What is carburation?	2	4
j.	What is octane rating?	2	1

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

a.	With the help of a p-v & T-s diagram explain otto cycles and express equation of thermal efficiency.	10	3
b.	What is knocking, explain various factors effecting knocking in SI engines.	10	2
c.	With the help of neat diagram explain working of a simple carburetor.	10	4
d.	Write advantages and disadvantages of liquid cooling system over air cooling system.	10	6
e.	Explain classification rocket motors.	10	5

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

(a)	Write the names of different fuels used in jet engines and their properties.	10	1
(b)	Discus rating of SI engine and CI engine fuels.	10	1

4. Attempt any one part of the following:

10 x 1 = 10

(a)	With help of a pressure- crank angle ($p-\theta$) explain normal combustion in SI engines.	10	2
(b)	What is ignition delay and how it effects normal combustion in CI engines?	10	2

5. Attempt any one part of the following:

10 x 1 = 10

(a)	What are the requirements for the SI engines combustion chambers? Explain different types of combustion chambers used for SI engines.	10	3
(b)	With the help of a neat diagram explain battery ignition system.	10	3

6. Attempt any one part of the following:

10 x 1 = 10

(a)	With the help of neat diagram explain dry sump lubrication system.	10	6
(b)	Explain the need of super charging in aircraft reciprocating engines.	10	6

7. Attempt any one part of the following:

10 x 1 = 10

(a)	What is burning rate and how it can be increased in solid propellant?	10	5
(b)	Explain total impulse, specific impulse, and impulse to weight ratio for rocket motors.	10	5