Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Fourth Semester

AERONAUTICAL ENGINEERING

U18AET4005: Aircraft Hardware and Materials

COURSE OUTCOMES

CO1: Analyze the properties of different aircraft materials.
CO2: Identify the various types of composite and non-metallic materials for aircraft construction.
CO3: Apply suitable hardware materials for different parts of the aircraft.
CO4: Identify the appropriate cables and connectors for various aircraft applications

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions: -
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Differentiate malleability and ductility property of a material.	CO1	[K_1]
2.	What does the steel numbering SAE - 1020 mean?	CO1	[K_2]
3.	Classify the types of composites used in modern aircraft.	CO2	[K_1]
4.	Justify the purposes of the fabric covering an aircraft.	CO2	[K_2]
5.	Mention the standards used to identify the threaded fasteners and rivets.	CO3	[K_1]
6.	What is the use of blind rivets in the aircraft?	CO3	[K_1]
7.	Define gear ratio.	CO3	[K_1]
8.	How do sprockets differ from gears?	CO3	[K_2]
9.	Show the turnbuckles assembly with a neat diagram.	CO4	[K_1]
10.	How coaxial cables work?	CO4	[K_1]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Explain the heat treatment process of steel	12	CO1	[K_1]
	b)	Give details on the mechanism of galvanic corrosion.	4	CO1	[K_2]
12.	a)	Describe the advantages of seasoning wood. Compare air seasoning and kiln seasoning wood.	8	CO2	[K_1]
	b)	Give details on the non-metals used in the aircraft.	8	CO2	[K_1]
13.	a)	Brief the aircraft plumbing tube forming process.	8	CO3	[K_1]
	b)	Give details of types of bolts in aircraft.	8	CO3	[K_1]
14.	a)	Characterize the need of gearing mechanism along with its types.	8	CO3	[K_2]
	b)	What is spring? Explain the types of spring used in aircraft construction.	8	CO3	[K_2]
15.	a)	Illustrate the operation and maintenance of bowden cable.	8	CO4	[K_2]
	b)	What are the factors affecting the selection of the materials in the electrical wire/cable?	8	CO4	[K_1]
16.		Outline the use of rivets along with types. Give an example for the numbering system of rivets.	16	CO3	[K_2]

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