Model Question Paper-1 with effect from 2020-21 (CBCS Scheme)

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

Fifth Semester B.E. Degree Examination

Aircraft Systems & Instrumentation

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. Explain answers with necessary diagram
03. Draw flow chart if necessary

Module – 1			
Q.1	**(a)**	Explain the aircraft primary control surfaces and its working	6
	(b)	Discuss on working principle of conventional control systems	6
	(c)	Explain the FLY-BY-WIRE with necessary sketch	8
OR			
Q.2	**(a)**	What is auto-pilot system? How it works	8
	(b)	Explain on working of Power actuated Flight control systems	6
	(c)	Write the closed loop feedback system	6
Module – 2			
Q.3	**(a)**	Why parametric study is required before designing any systems? What are the parameters refers explain	6
	(b)	Explain hydraulic system test rig and testing process	8
	(c)	How the brake system works?	6
OR			
Q.4	**(a)**	Explain landing gear system working using Pneumatic systems	8
	(b)	What is PRSOV? Explain its working	6
	(c)	With the important components of Hydraulic systems, Explain its operations	6
Module – 3			
Q.5	**(a)**	Write a note on types of fuels used for cargo aircraft and combat airplanes	6

	(b)	Explain the working of Piston engine with neat sketch	6
	(c)	List the fuel system components and its workings	8
OR			
Q.6	**(a)**	What are lubricating systems used in aircraft engines?	6
	(b)	Explain the working of multi cylinder engine with neat sketch	6
	(c)	How the jet engine works?	8
Module – 4			
Q.7	**(a)**	Why the vapor controlling is important on the compartments? How it works	6
	(b)	Discuss on mechanism of deicing systems on wing structure	6
	(c)	How the air purification is done on the passenger compartment on the aircraft?	8
OR			
Q.8	**(a)**	List the components of evaporation system in aircraft and explain its operations	6
	(b)	How the moisture is maintained inside commercial compartment?	6
	(c)	Explain the fire protection systems on the aircraft	8
Module – 5			
Q.9	**(a)**	List the navigation systems used on aircraft. Explain working of any 1	6
	(b)	Write short notes on – a) Airspeed indicator b) Altimeter c) Altitude indicator	6
	(c)	Explain Gyroscope and its working principle	8
OR			
Q.10	**(a)**	How does a Tachometer work ?	8
	(b)	Explain working of - a) Temperature gauge b) Pitot tube c) Mach meter	6
	(c)	List the various engine system indicator and explain any one	6

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L2	CO1	PO5
	(b)	L1	CO1	PO5
	(c)	L2	CO1	PO7
Q.2	(a)	L2	CO1	PO5
	(b)	L1	CO1	PO4
	(c)	L1	CO1	PO4
Q.3	(a)	L2	CO1	PO5
	(b)	L2	CO1	PO5
	(c)	L2	CO2	PO5
Q.4	(a)	L2	CO1	PO4
	(b)	L2	CO2	PO5
	(c)	L2	CO2	PO5
Q.5	(a)	L2	CO3	PO7
	(b)	L2	CO2	PO7
	(c)	L2	CO2	PO4
Q.6	(a)	L1	CO2	PO7
	(b)	L1	CO2	PO4
	(c)	L2	CO2	PO4
Q.7	(a)	L2	CO2	PO5
	(b)	L1	CO2	PO4
	(c)	L2	CO2	PO5
Q.8	(a)	L1	CO2	PO5
	(b)	L1	CO2	PO5
	(c)	L2	CO3	PO5
Q.9	(a)	L1	CO3	PO5
	(b)	L2	CO3	PO5
	(c)	L1	CO3	PO5
Q.10	(a)	L2	CO3	PO5
	(b)	L2	CO3	PO5
	(c)	L2	CO2	PO5

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6

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Fifth Semester B.E. Degree Examination

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TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			
Q.1	**(a)**	Explain fly by wire system with neat sketch.	07Marks
	(b)	What is meant by active control technology and what is the need for ACT in fly by wire control?	07Marks
	(c)	List out the advantages of fly by wire control over the conventional mechanical flight control system	06Marks
OR			
Q.2	**(a)**	With a neat diagram explain Digital fly by wire system.	07Marks
	(b)	Explain Mechanical Flight control system.	07Marks
	(c)	Describe redundancy	06Marks
Module – 2			
Q.3	**(a)**	What is landing gear? Explain the different types of landing gear.	08Marks
	(b)	Explain basic brake control system with neat labelled diagram.	08Marks
	(c)	What is braking system? List out the function of braking system.	04Marks
OR			
Q.4	**(a)**	Explain Nose landing gear with neat labelled diagram.	07Marks
	(b)	Briefly explain the components of hydraulic system.	07Marks
	(c)	Explain the components of pneumatic system.	06Marks
Module – 3			
Q.5	**(a)**	Briefly explain the fuel quantity indicators.	08Marks
	(b)	Briefly explain jet engine electronic ignition system with neat sketch.	08Marks
	(c)	List the components used in lubricating oil system.	04Marks
OR			
Q.6	**(a)**	Describe Ignition circuit.	08Marks
	(b)	Explain the characteristics of fuel system.	06Marks
	(c)	Explain the various components of fuel system.	06Marks

Module – 4			
Q.7	**(a)**	With a relevant sketch explain briefly about the different types of anti-icing system .	14Marks
	(b)	What are the salient requirements necessary for the successful functioning of an environment control system.	06Marks
OR			
Q.8	**(a)**	With a relevant sketch explain briefly about pneumatic impulse deicing system.	10Marks
	(b)	Write a short note on fire extinguishing agent used in aircraft.	05Marks
	(c)	List out the requirements of Fire Detection System.	05Marks
Module – 5			
Q.9	**(a)**	With neat diagrams, explain about the working principle of pitot static system.	10Marks
	(b)	Describe briefly about gyroscope. List out the properties of gyroscopes.	10Marks
OR			
Q.10	Write short notes on the following: a. Thermocouple b. Mechanical Tachometer c. VSI – Vertical Speed Indicator d. Altimeter		20Marks

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	(b)	L1, L2	CO1	PO5
	(c)	L2	CO1	PO7
Q.2	(a)	L2	CO1	PO5
	(b)	L1, L2	CO1	PO4
	(c)	L1	CO1	PO10
Q.3	(a)	L2	CO1	PO5
	(b)	L2	CO1,CO2	PO5
	(c)	L2,L3	CO2	PO5
Q.4	(a)	L2	CO1	PO4
	(b)	L2	CO2	PO5
	(c)	L2	CO2	PO5
Q.5	(a)	L2	CO3	PO7
	(b)	L2	CO2	PO7
	(c)	L2	CO2	PO4
Q.6	(a)	L1	CO2	PO7
	(b)	L1	CO2	PO4
	(c)	L2	CO2	PO4
Q.7	(a)	L2	CO2	PO5
	(b)	L1	CO2	PO4
Q.8	(a)	L2	CO2	PO5
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Q.9	(a)	L2	CO3	PO5
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Q.10		L2	CO3	PO5

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