MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF AERONAUTICAL ENGINEERING

IV B.TECH I SEMESTER

R15 SUPPLEMENTARY

PREVIOUS QUESTION PAPERS

LIST OF SUBJECTS

CODE	*NAME OF THE SUBJECT*
R15A2121	Avionics
R15A0331	CAD/CAM
R15A0368	Mechanical Vibrations & Structural Dynamics

R15

Code No: R15A2121

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech I Semester Supplementary Examinations, February 2021

Avionics

(AE)

Roll No										

Time: 2 hours 30 min **Max. Marks: 75**

Answer Any **Five** Questions

All Questions carries equal marks.

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1	i) Explain the development of avionics architecture.	**[8M]**
	ii) Give the word format of ARNIC 629 and explain.	**[7M]**
2	Discuss about an interface between pilot and different aircraft sensor	**[15M]**
3	Write short notes on head up display and helmet mounted display in detail.	**[15M]**
4	Explain data communication systems in detail.	**[15M]**
5	Write short note on gyroscope and accelerometers.	**[15M]**
6	Explain about integration of GPS and INS in detail.	**[15M]**
7	The principles and types of navigation system and write short note on any one.	**[15M]**
8	Discuss about satellite landing system.	**[15M]**

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R15

Code No: R15A0331

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech I Semester Supplementary Examinations, February 2021

CAD/CAM

(ME&AE)

Roll No										

Time: 2 hours 30 min **Max. Marks: 75**

Answer Any **Five** Questions

All Questions carries equal marks.

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1 Explain the concept of various co ordinate systems required for geometric display systems. Give an example? **[15M]**

2 Discuss the concept of obtaining a rotation about an arbitrary point in XY plane? **[15M]**

3 Explain the constructive solid geometry for the representation of solids? **[15M]**

4 What is meant by Geometric modelling? Explain different types of geometric modelling and compare them. **[15M]**

5 Briefly discuss the following NC motion control system of point to point, straight cut and contouring? **[15M]**

6 Write about the Horizontal and vertical axis machining centre in a CNC? **[15M]**

7 Explain the part design and manufacturing attributes giving examples?. **[15M]**

8 Describe different types of material handling systems used in CIM briefly? **[15M]**

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R15

Code No: **R15A0368**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech I Semester Supplementary Examinations, February 2021

Mechanical Vibrations & Structural Dynamics

(AE)

Roll No										

Time: 2 hours 30 min **Max. Marks: 75**

Answer Any **Five** Questions

All Questions carries equal marks.

1 Determine the natural frequency of system in figure 1 **[15M]**

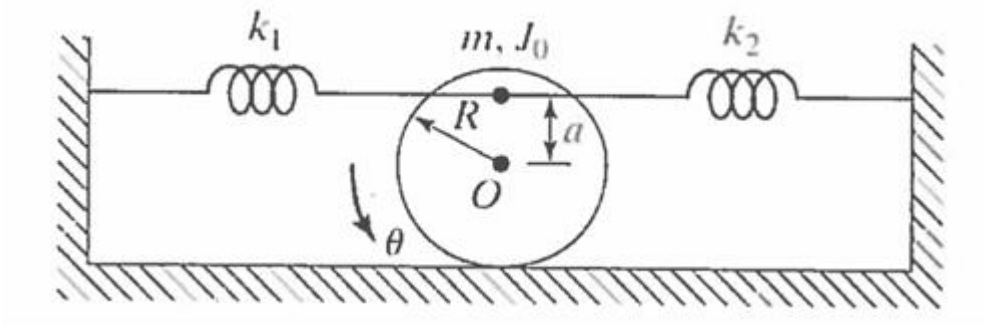

Fig.1

2 A body of 5 kg is supported on a spring of stiffness 200 N/m and has dashpot connected to it which produces a resistance of .002 N at the velocity of 1 cm/sec. In what ratio will thee amplitude of vibration to be reduced after 5 cycles. **[15M]**

3 Discuss in detail about vibration measuring instrument Vibrometer and Accelerometer. **[15M]**

4 A machine having a mass of 100 kg and supported on spring of total stiffness 7.84×10^5 N/m has a un unbalanced rotating element which results in disturbing force of 392 N at a speed of 3000 rpm. Assuming a damping factor equals to 0.20. **[15M]**

(a)Determine amplitude of motion due to unbalance,

(b) Transmissibility.

5 Consider a double pendulum of length $L_1 = L_2 = L$. Determine the natural frequency of system k =100N/m, M_1 =2Kg, M_2= 5 kg L=0.2m, a=0.1m as shown in figure 2. **[15M]**

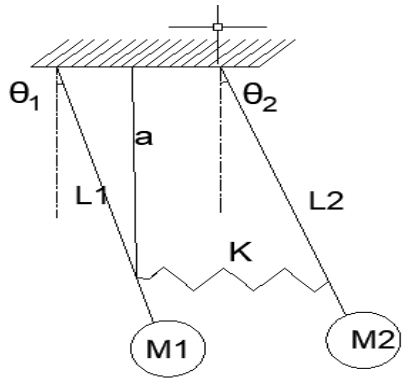

Fig.2

6 Calculate the natural frequency of system of K_1=40N/m , K_2 = 60 N/m M_1= 2Kg , M_2 = 5 kg as shown in figure 3. **[15M]**

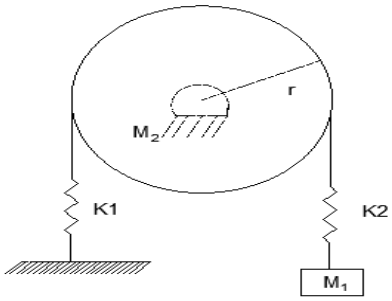

Fig.3

7 Solve for the lowest natural frequency of the system by Rayleigh's method E= $1.96X10^{11}$ N/m ^{2} , I=4X10 ^{7} m ^{4} in figure 4. **[15M]**

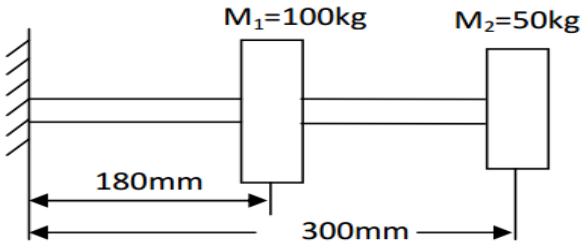

Fig.4

8 Determine the frequency equation for a beam with both ends free having transverse vibrations. **[15M]**

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