Roll No. .....

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B. Tech. 6th Semester (ME) Examination – May, 2023

DYNAMICS OF MACHINES

Paper : PCC-ME-308-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Unit. Question No. 1 is ***compulsory***. All questions carry equal marks.

1. Explain the following :
   (a) Difference between flywheel and governor 5
   (b) Gyroscopic stabilization 5
   (c) Engine shaking forces 5

UNIT – I

2. What do you understand by the static and dynamic force analysis ? Explain static force analysis of planer mechanism in detail by taking some suitable example. 15

3. Derive an expression for the force acting on the crank by the connecting rod in case of a reciprocating engine. 15

UNIT – II

4. Four masses m_1, m_2, m_3 and m_4 are 200 kg, 300 kg, 240 kg and 260 kg respectively. The corresponding radii of rotation are 0.2 m, 0.15 m, 0.25 m and 0.3 m respectively and the angles between successive masses are 45°, 75° and 135°. Find the position and magnitude of the balance mass required, if its radius of rotation is 0.2 m. 15

5. Explain the 'direct and reverse crank' method for determining unbalanced forces in radial engines. 15

UNIT – III

6. Explain Gravity controlled and spring controlled governor in detail. 15

7. What do you understand by dynamometer ? Explain the different types with labelled diagram. 15

UNIT – IV

8. Explain the application of gyroscopic principles to aircrafts. 15

9. Derive expressions for stability of four-wheel and two-wheel vehicle moving on curved path. 15
