2b

May 2016

Bansilal Ramnath Agarwal Charitable Trust's
VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY

Department of Mechanical Engineering

End Semester Assessment Examination

M. E. (Mechanical) (Design Engineering), 2013-Course

ELECTIVE – III

Date: 26-06-2015 Time: 2.30 am to 5.30pm

Time: 3 Hr.] **[Max. Marks: 50**

Instructions:

1. **Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6**
2. **Question number 7 and 8 are compulsory**
3. **Figures to the right indicate full marks.**

Q. 1 a) Write detail note on mode superposition method? (5)

b) What are different techniques for mass and stiffness matrix reduction? (3)

c) Why model reduction is required in structural dynamics? (2)

OR

Q. 2 a) what is master degree of freedom? What are different criteria for selecting master degree of freedom? (5)

b) Write a note on modal analysis. What are different mode extraction methods? (3)

c) What do you understand by enforced motion in transient dynamic analysis? (2)

Q. 3 a) What is static and dynamic analysis? Explain with suitable examples. (5)

b) Explain Analysis types and different methods? (3)

c) Explain complex eigen valus? (2)

OR

Q. 4 a) geometry clean-up, meshing techniques and explain in details? (5)

b) Explain 1-D, 2D, 3D Mesh (3)

c) how to improve quality in the meshing? (2)

Q. 5 a) Explain different steps involved in static analysis? (5)

b) Explain non-linear structural analysis? (3)

c) write a note on buckling? (2)

OR

Q. 6 a) what are governing equations and methods of computations in the analysis proess. (5)

b) What are the different methods in the model analysis explain any one? (3)

c) what is frequency response analysis? (2)

Q. 7 a) Derive expression for guyan condensation method? (5)

b) Write down shock and response spectrum analysis? (5)

Q. 8 a) Explain in detail Analysis of variance (ANOVA), factorial design and regression analysis? (10)