[Total No. of Printed Pages:2] **CODE NO:- Z-301**

FACULTY OF ENGINEERING

F.E (All) Year Examination - June – 2015

Engineering Mechanics

(Revised)

[Time: Two *Hours*] **[Max. Marks: 40]**

"Please check whether you have got the right question paper."

N.B *i)* Attempt any three questions from the following.
ii) Question No.1 is compulsory.
iii) Assume suitable data if necessary and state it clearly.

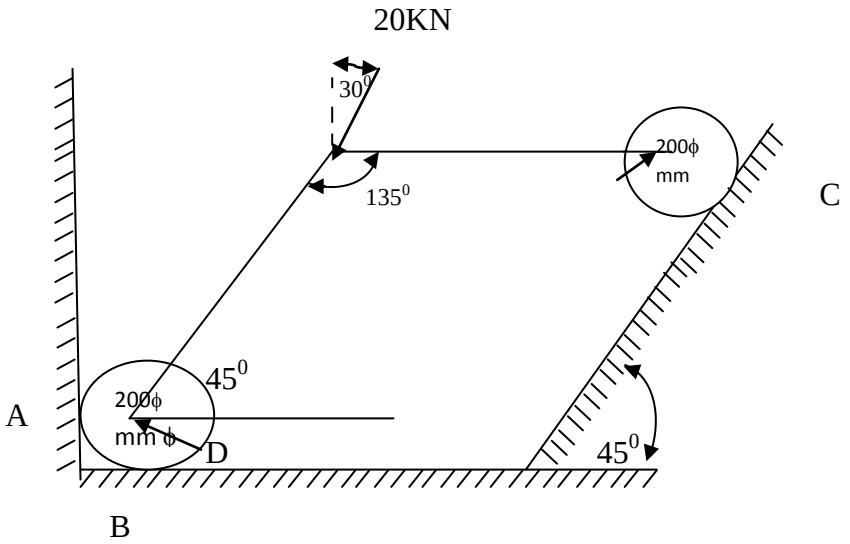
SECTION-A

Q.1 Answer any five from the following 10

i) Classification of force system.
ii) Explain the principle of equilibrium.
iii) Define with neat sketches of perfect frame and imperfect frame.
iv) State the laws of friction.
v) State and explain parallel axis theorem.
vi) Define polar moment of Inertia.
vii) State and explain triangle laws of forces.
viii) Explain principle of transmissibility.

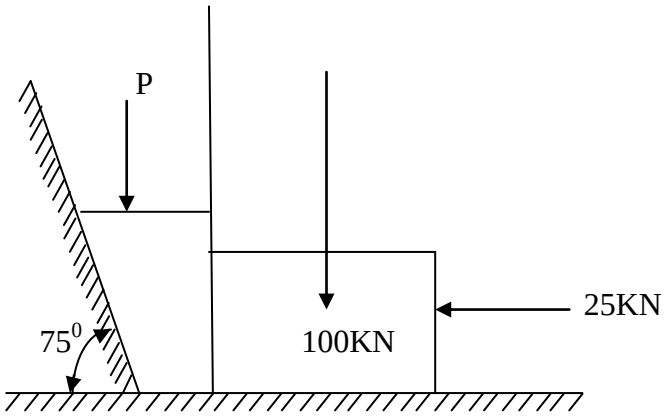
Q.2 a) The sum of two forces is 9N their resultant which is perpendicuar to the smaller force is a force 6N. Find the magnitude of the forces. 07

b) Find the support reactions at A, B, C for the rigid link DEF supported by the cylinders at D and F. the link is loaded by a single force 20KN as shown in fig. neglect friction and selfwt of link & cylinders. Take dia. of both cylinders as 200mm and length of link DE=EF=300mm. 08



Q.3 a) What are the laws assumptions in the truss analysis? 03

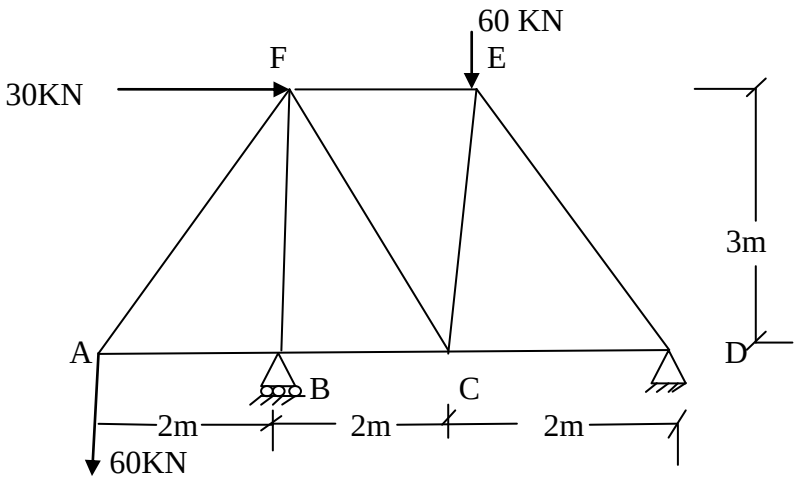
b) Determine the force p required to start the wedge as shown in fig. the angle of friction for all surfaces of contact is 15^0. 12



SECTION -B

Q.4 a) Explain principle of virtual work. 03

b) Determine the force in all the members of the frames indicate the nature of the forces of the members. 12



Q.5 a) What is meant by polar moment of inertia? State its applications. 03

b) Define radius of Gyration. How it is related to moment of inertia. 03

c) Find the moment of inertia about the centroidal axis. 09