KADI SARVA VISHWAVIDYALAYA

LDRP INSTITUTE OF TECHNOLOGY & RESEARCH, GANDHINAGAR.

B.E. 2nd Semester

MID SEMESTER EXAMINATION

Date/Day: 06/03/2014,THRUSDAY **Branch : CIVIL**

Sub Code : CC110 **Subject Name: MECHANICS OF SOLIDS**

Time : 12:00PM to 1:30 AM **Max. Marks : 30**

Instructions: 1) All questions are **compulsory**

2) Figures to the **right** indicate full marks.

Q.1 (A) (i).Convert following. **01**

1000 μ m =_____mm

(ii).Define: Particle **01**

(B) Draw free body diagram of **Fig.1.** **01**

(C) Determine force P considering equilibrium. Also determine stresses in each part of road **ABCDE**shown in **Fig.2.** **03**

E_{steel}=200GPa , E_{copper}= 100GPa, E_{brass}=80GPa, $E_{Aluminum}$=70 GPa

(D) Determine reactions for a cantilever beam of 6 m span carrying UDL of 10 kN/m throughout span length, Point load of 15 KN and anticlockwise moment of 9 kN.m acting at mid-point of beam. **04**

Q.2 (A) Explain stress-strain curve for mild steel with neat sketch. **05**

(B) A cord supported at A and B as shown in **Fig.3**.Determine value of load at C so that CD remains horizontal. **05**

OR

(B) Determine support reactions for a beam shown in **Fig.4.** **05**

Q.3 (A) Determine Magnitude, direction and location of resultant for a system of forces shown in **Fig.5.** **05**

(B) Determine support reactions for a beam shown in **Fig.6.** **05**

OR

Q.3 (A) Determine support reactions for a beam shown in **Fig.7.** **05**

(B) A steel road ABCD is shown in **Fig.8.**Calculate load P necessary for equilibrium. Also compute elongation of rod.**E= 200 GPa.** **05**

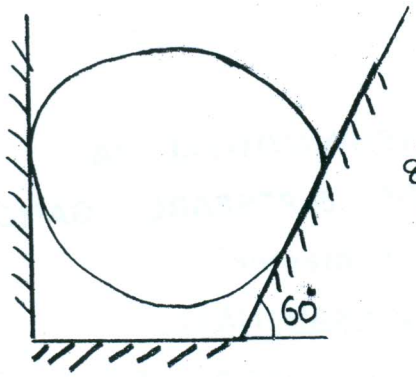

Fig. 1

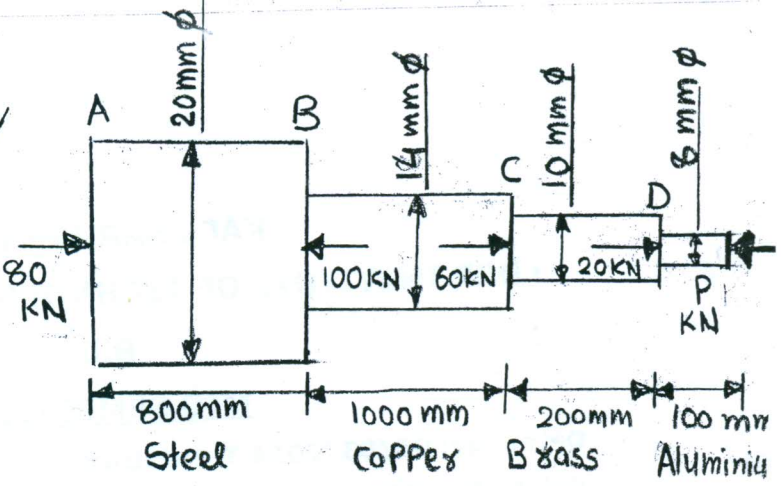

Fig. 2

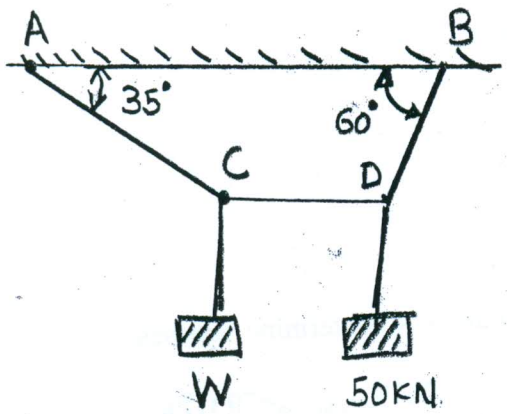

Fig. 3

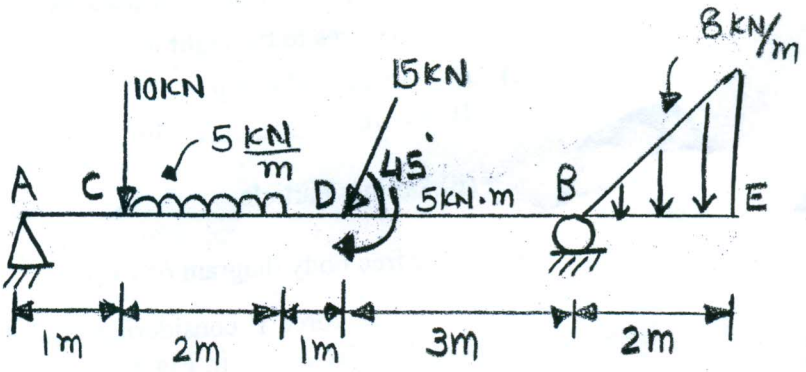

Fig. 4

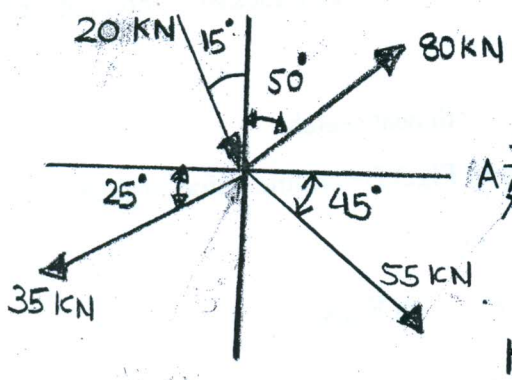

Fig. 5

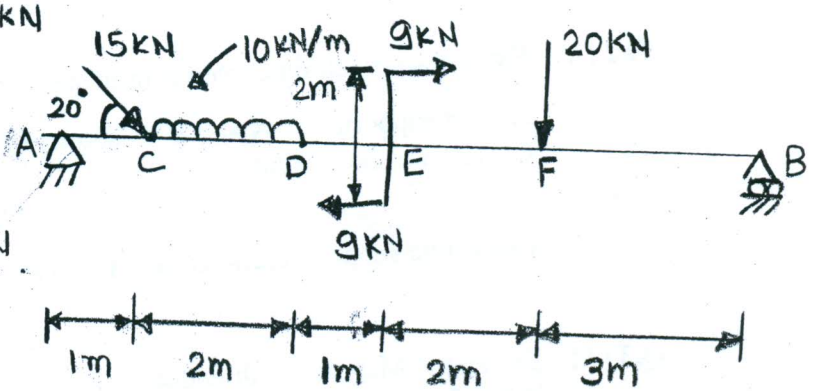

Fig. 6

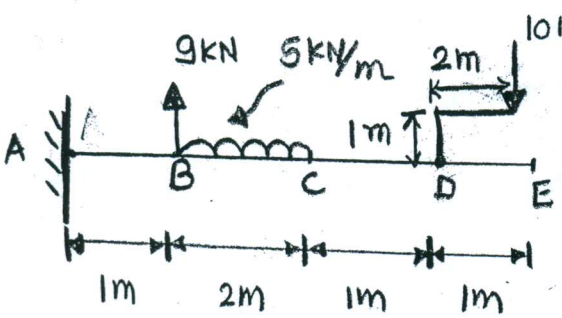

Fig. 7

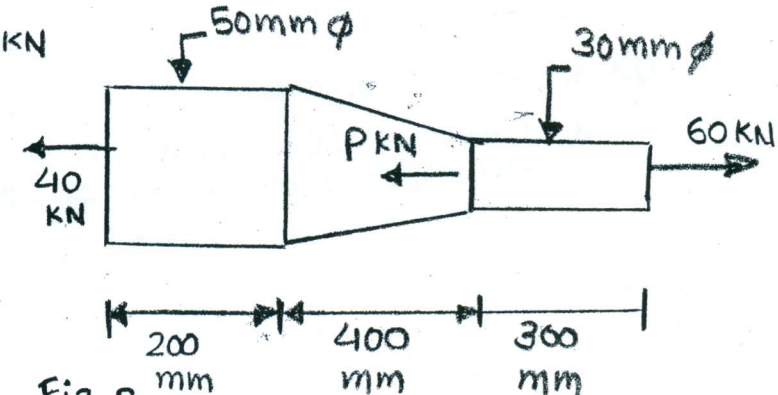

Fig. 8

Kadi Sarva Vishwavidyalaya

LDRP INSTITUTE OF TECHNOLOGY & RESEARCH, GANDHINAGAR.

B.E.1ST Semester

MID SEM EXAMINATION

Date/Day : 13 October ,2014 **Branch : Civil Engineering**

Subject Name & Code : MECHANNICS OF SOLIDS (CC110) **Max. Marks : 30**

Time : 10:30 A.M. to 12:00P.M

Instructions: 1) All questions are **compulsory**

2) Figures to the **right** indicate full marks.

3) Indicate **clearly**, the options you attempt along with its respective question number.

Q.1	(a)	Determine Magnitude ,Direction and location of resultant as shown in **Fig.1**	[5]
	(b)	State and prove Varigon's theorem with neat sketch.	[5]
Q.2	(a)	Determine Magnitude, Direction and Location of resultant about O point as shown in **Fig.2.**	[5]
	(b)	Determine reaction at point of contact as shown in**Fig.3.**	[5]
		OR	
Q.2	(a)	Determine Magnitude, Direction and Location of resultant about A point as shown in **Fig.4.**	[5]
	(b)	Explain Lami's Theorem with neat sketch.	[5]
Q.3		Answer the following. **(Any two)**	
	(a)	A stepped bar is loaded as shown in **Fig.5.** Determine stresses in each part and total change in length. Esteel=200GPa, Ecopper= 100GPa, Ebrass= 80GPa.	[5]
	(b)	Explain stress strain behavior of mild steel with neat sketch.	[5]
	(c)	An assembly of steel bars is shown in **Fig.6.** Determine total Elongation. E= 200GPa.	[5]
	(d)	A steel bar ABC is shown in **Fig.7.**If temperature is raised by 40°C, What will be stresses in each part of Bar. E= 200 GPa and $\alpha=12 \times 10^{-6}$ per °C.	[5]

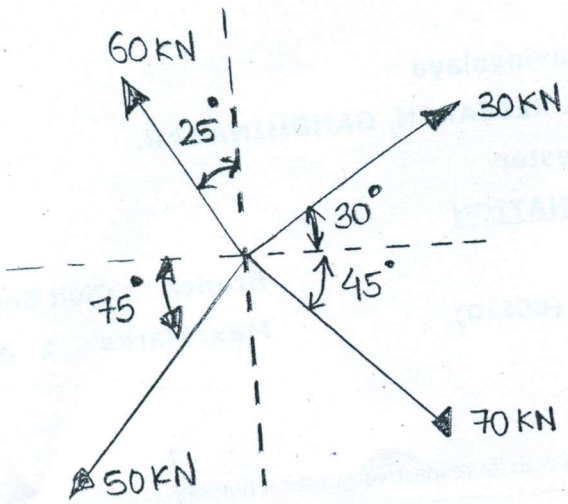

Fig. 1

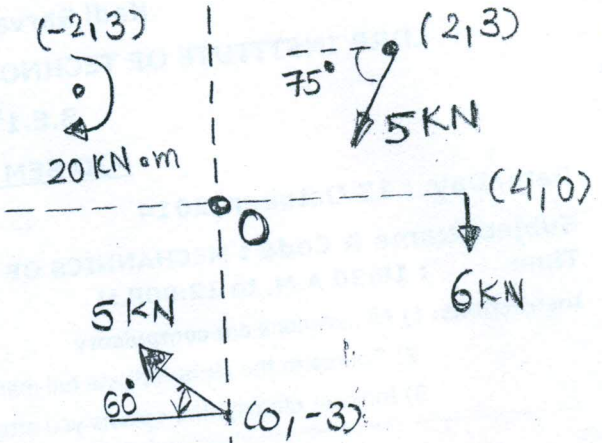

Fig. 2

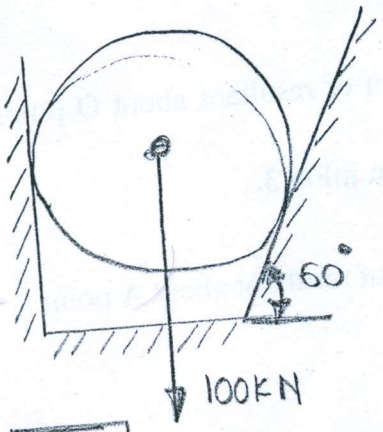

Fig. 3

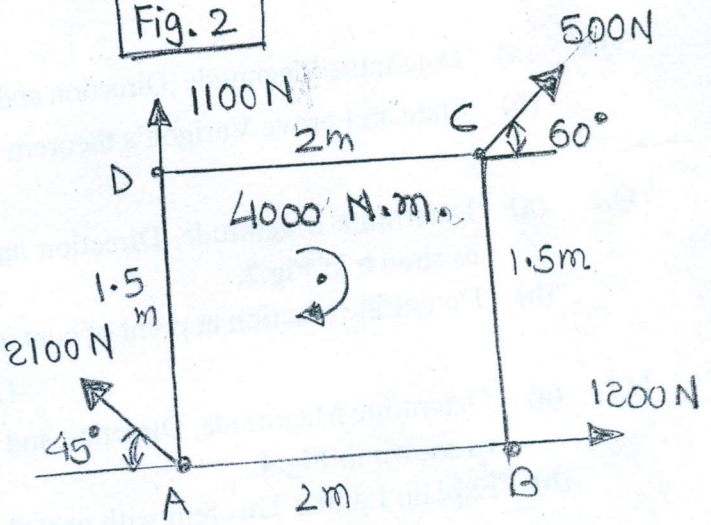

Fig. 4

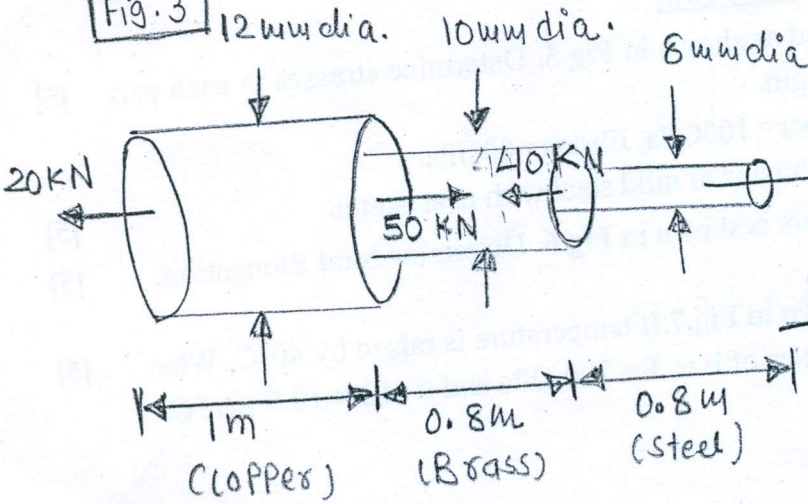

Fig. 5

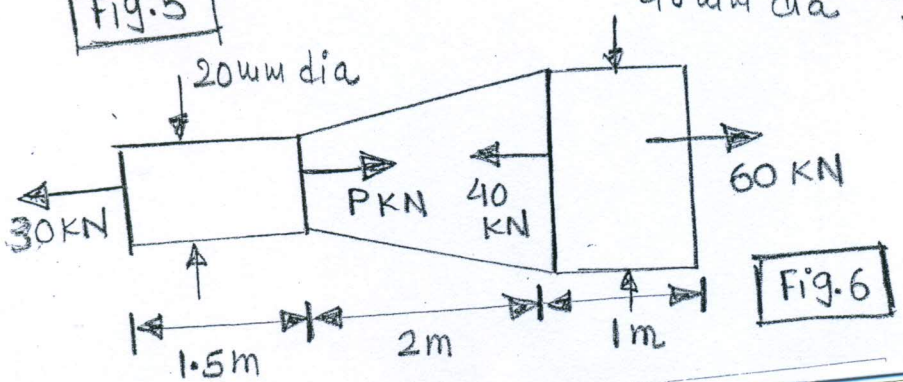

Fig. 6

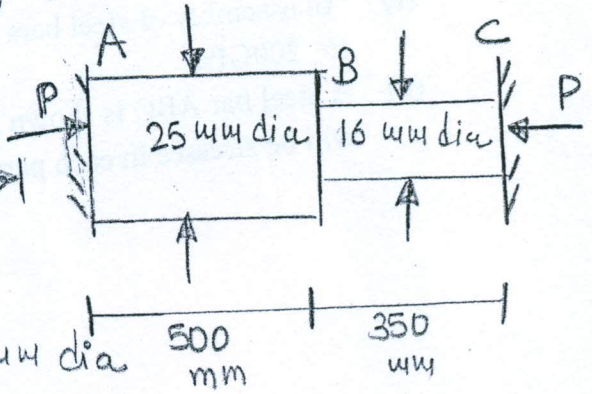

Fig. 7