ASSIGNMENT-1
BRANCH: ME
SEM: 4TH
LAST DATE OF SUBMISSION: 20/02/2015

IES COLLEGE OF TECHNOLOGY, BHOPAL

B.E. (4th SEM) ASSIGNMENT-1

ENGINEERING MATHEMATICS (BE -401)

DATE OF ASSIGN: 02/02/2015 **DATE OF SUBMISSION: 19/02/2015**

Q.1	a) Define Limit. (b) What is Analytic function? (c) If f(z) be regular function of z,prove that $\{\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\}\|f(z)\|^2 = 4\|f(z)\|^2$ or (c) show that $\int_0^{2\pi}\frac{d\theta}{a+b\cos\theta} = \int_0^{2\pi}\frac{d\theta}{a+b\sin\theta} = \frac{2\pi}{\sqrt{(a^2-b^2)}}$ where a$> b > 0$	
Q.2	a) Define Harmonic function. b) Determine whether $\frac{1}{z}$ is analytic or not. (c).Find poles and order opoles and residues	
Q.3	Define contour integrations.	
Q.4	Prove that Cauchy Riemann equation and define residues formula.	

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B.E. (4^{th} SEM) Assignment -1 (Unit-1)

ME-402 Material Science and Metallurgy

DATE OF ASSIGN: 02/02/2015 **DATE OF SUBMISSION: 19/02/2015**

Q.1	Distinguish between ionic and metallic bonds in solids? (Rgpv 2013, 2012)	2
Q.2	What do you understand by the term 'crystal lattice' and how many types of this are found in metal?(Rgpv 2014,2013)	2
Q.3	Show that the atomic packing factor (volume of atoms/volume of unit cell) for FCC and BCC structure and 0.74 and 0.68 respectively?(Rgpv 2011,2014)	3
Q.4	What properties should be considered while selecting acid, basic, and natural refractory? (Rgpv 2013,2014)	7
Q.5	How do you differentiate iron from steel? Name the various methods of making iron and steel and explain any one process? (Rgpv 2012,2013)	7

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B.E. (4th SEM) Assignment -1 (Unit-1)

TOM (ME-403)

DATE OF ASSIGN: 02/02/2015 **DATE OF SUBMISSION: 19/02/2015**

Q-1	What is the kinematic pair?	2
Q-2	Define degree of freedom?	2
Q-3	Explain Grubler's criterion of mechanism?	3
Q-4	Explain all inversion of four bar mechanism?	7
Q-5	Define Cartesian vector notations?	2
Q-6	What is the rigid body?	2
Q-7	Explain Kennedy's theorem?	3
Q-8	Explain Davis and Ackermann's steering mechanisms?	7

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B.E. (4th SEM) Assignment -1

Thermal Engg. And Gas Dynamics (ME-404)

DATE OF ASSIGN: 02/02/2015 **DATE OF SUBMISSION: 19/02/201**

Q.1	What is boiler efficiency?	2
Q.2	Draw a neat sketch of any high pressure boiler?	2
Q.3	What is Boiler Draught? Differentiate between artificial and natural draught.	3
Q.4	The following observations were made in a boiler trial. coal used = 200kg c.v. of coal = 29,800 kj/kg steam pressure = 11.5 bar, water evaporated = 2000kg, feed water temperature = 34°C. The steam produced is 0.95 dry and sensible heat and latent heat requirement at 11.5 bar are 790 kj/kg and 1992 kj/kg. Calculate equivalent evaporation from and at 100°C and efficiency of the boiler.	7
Q.5	Differentiate between subcritical and super critical boiler.	2
Q.6	Why is carnot cycle not practicable for a steam power plant?	2
Q.7	Write different between subcritical and critical boiler?	3
Q.8	Draw a neat sketch of any High pressure boiler.	7

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B.E. (4th SEM) Assignment -1

Assignment-I FM (ME-405)

DATE OF ASSIGN: 02/02/2015 **DATE OF SUBMISSION: 19/02/2015**

Q-1	Differentiate between simple and inverted U-tube differential manometer	2
Q-2	Define density, specific volume, weight density and specific gravity of fluid	2
Q-3	2 liter petrol weighs 14N. Calculate the specific weight, mass density, specific volume and specific gravity of petrol with respect to water.	3
Q-4	Determine the resistance offered to the downward sliding of a shaft of 400mm diameter and 0.1m length by the oil film between the shaft and a bearing of ID 402mm. The kinematic viscosity is 2.4×10–4m2/s and density is 900kg/m3. The shaft is to move centrally and axially at a constant velocity of 0.1m/s.	7
Q-5	Define Newtonian and Non-Newtonian fluids.	2
Q-6	What is a manometer? How are they classified?	2
Q-7	What is the difference between dynamic viscosity and kinematic viscosity? State their units of measurements.	3
Q-8	An inverted differential manometer containing an oil of sp. gr. 0.9 is connected to the difference of pressure at two points of a pipe containing water. If the manometer reading is 40cm, find difference of pressure.	7