Registration no: | | | | | | | | | | |

Total Number of Pages: 2 **B.Tech**
PEMT5401

7th Semester Regular / Back Examination 2016-17
NON FERROUS EXTRACTIVE METALLURGY
BRANCH: METTA,MME
Time: 3 Hours
Max Marks: 70
Q.CODE: Y275

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2 x 10)**

a) What do you mean by grade matte?
b) What is metal cloud and how it is formed?
c) Why pure alumina is not used as electrolyte for aluminum extraction?
d) What do you mean by cementation?
e) Mention the common impurities found in gold extraction through cyanidation process.
f) In the extraction of rare metals carbon is not used as reductant. Justify.
g) Name sulphide and carbonate ores of copper.
h) What do you mean by shock cooling?
i) Mention the importance of anode mud in metal extraction.
j) What do you mean by leaching? Mention two common leaching reagents.

Q2 Name the combined form where most of the Nickel ores are available. What are important ores of Nickel found in India/ With the help of a flow sheet explain the production of pure Nickel from its sulphide ore. **(10)**

Q3 **a)** Discuss thermodynamics principle of metal refining. Discuss the electrochemical reaction/s that take place at nickel anode. **(5)**

b) Discuss titanium sponge production by KROLL'S process. **(5)**

Q4 **a)** Explain the importance of Ellingham diagram in Pyro-metallurgical extraction of metals. **(5)**

b) What is electrode potential? Explain its application in purification of Zinc from Zinc sulphide solution. **(5)**

Q5	**a)**	Discuss the steps involve in copper production from sulphide ores through pyrometallurgical route.	**(5)**
	b)	Name two copper extraction units in India. List out different application of copper.	**(5)**
Q6	**a)**	Discuss in brief ion-exchange and solvent extraction process for zirconium extraction from its ore.	**(5)**
	b)	Discuss production of high purity zinc through Van Arkel process.	**(5)**
Q7	**a)**	In brief discuss the production of secondary tin.	**(5)**
	b)	What is the advantage of using ferrosilicon over carbon in the Magnesium extraction? Mention some applications of Magnesium.	**(5)**

Q8 **Write short answer on any TWO:** **(5 x 2)**

a) Environmental pollution due to aluminium industries in Odisha.
b) Sodberg Electrode.
c) Fire refining
d) DOW process