Seat No.:	Enrolment No.
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013

Subj	ject code: 711002N	Date: 04-06-2013	
Subj	ject Name: Vacuum Engineering		
Tim	ne: 10.30 am – 01.00 pm	Total Marks: 70	
Inst	tructions:		
	<ol> <li>Attempt all questions.</li> <li>Make suitable assumptions wherever necessary.</li> <li>Figures to the right indicate full marks.</li> </ol>		
Q-1 (a)	What do you mean by vacuum? How does it differ from vacuum pump on their working pressure ranges. Also m	•	07
(b	b) Classify the vacuum gauges based on their operating pri of operation and general application of the same.		07
Q-2 (a)	With neat sketch explain the construction, working and pump.	application of water ring	07
(b	<ul> <li>b) Define and explain the following.</li> <li>(i) Fore vacuum (ii) Maximum permissible start up pres tolerable discharge pressure (iv) Ultimate pressure (v) T</li> </ul>		07
(b	<ul> <li>What is resistance, and conductance in vacuum pipe wo exhaust and pumping speed. Discuss the basic theory of</li> </ul>		07
Q-3 (a)	Describe with neat sketch how a two stage rotary vacuum the properties of working fluids for oil sealed pumps.	m pump works. Discuss	07
(b	b) Write note on sorption pump		07
	OR		
Q-3 (a) (b	<ul> <li>Write note on turbomolecular pump.</li> <li>Explain with neat sketch construction and working of frediffusion pump. Also explain back streaming and back in the streaming and back.</li> </ul>		07 07
Q-4 (a)	Explain with neat sketch the construction, working and ionization gauge.	principle of hot cathode	07
(b	b) Briefly discuss the principle of operation of thermal con the factors which limit its upper and lower values of me		07
Q-4 (a)	OR  i) Discuss vacuum application in thin film coating.		07
- `′	b) Discuss the applications of Ceramics and polymers in va	acuum system	07
Q-5 (a)	Explain the selection criteria of demountable vacuum jo Also discuss the requirements of vacuum valve in system	•	07
(b	b) Write note on Mass Spectrometer Leak Detection.  OR		07
Q-5 (a)	Write note on space simulation chamber.		07
(b	b) Discuss the basic requirements of material as vacuum m metallic materials for vacuum applications.	aterials. Also discuss	07

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