

FACULTY OF ENGINEERING
S.E (EC/ECT/IEC/E&C) Examination - DEC - 2014
Electrical Machines & Instrumentation (Rev)

[Time: THREE Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B	<p>1) Attempt any three questions from each section</p> <p>2) Question No.1 and Q. No. 6 are compulsory.</p> <p>3) Solve any two questions from remaining</p>	
SECTION A		
Q.1	<p>Answer any five</p> <p>i) Differentiate between DC machine and Generator.</p> <p>ii) What is the function of commutator in DC machine</p> <p>iii) What are the types of DC motors?</p> <p>iv) What is the significance of back EMF.</p> <p>v) Explain the working principle of 3-ϕ.I.M.</p> <p>vi) Write a note on power stages of 3-ϕ. I.M.</p> <p>vii) What is hunting in synchronous motor?</p> <p>viii) Explain the working principle of stepper motor.</p>	10
Q.2	<p>A Explain the constructions of DC machine with neat sketch.</p> <p>B Draw and explain Speed/Torque characteristics of DC shunt motor.</p>	08 07
Q.3	<p>A Explain various speed control methods of 3-ϕ induction motors.</p> <p>B Derive an EMF equation of DC generator.</p>	08 07
Q.4	<p>A Explain the different starters used for poly phase induction motors.</p> <p>B Explain the working principle of servo-motors. List its applications</p>	08 07
Q.5	<p>A A shunt generator drives 450A of 230V and the resistance of the shunt field and armature are 50Ω and 0.03Ω respectively. Calculate generated emf.</p> <p>B Explain the construction of synchronous machine with neat sketch.</p>	08 07
SECTION B		
Q.6	<p>Answer any five</p> <p>i) State merits and demerits of piezoelectric transducer.</p> <p>ii) What is difference between analog and digital transducer</p> <p>iii) What is seebeck effect?</p> <p>iv) What is RTC?</p> <p>v) Explain the working principle of thermocouple</p> <p>vi) State the four selection criteria for transducer</p> <p>vii) Give the classification of recorders.</p> <p>viii) List the property of ESD.</p>	10
Q.7	<p>A With the suitable diagram explain the working of LVDT.</p> <p>B What are the different types of strain gauges? Derive the relation for gauge factor.</p>	08 07
Q.8	<p>A Explain the working of object counters.</p> <p>B What are the different types of photosensitive devices? Explain in brief.</p>	07 08
Q.9	<p>A Explain the operation of x- y plotter. And state its applications.</p> <p>B With neat circuit diagram explain the working of real time clock.</p>	08 07
Q.10	<p>Attempt any three</p> <p>a) VAW meter.</p> <p>b) Optical oscillograph</p> <p>c) ESD(Energy spectral density)</p> <p>d) Alpha numeric display</p>	15