

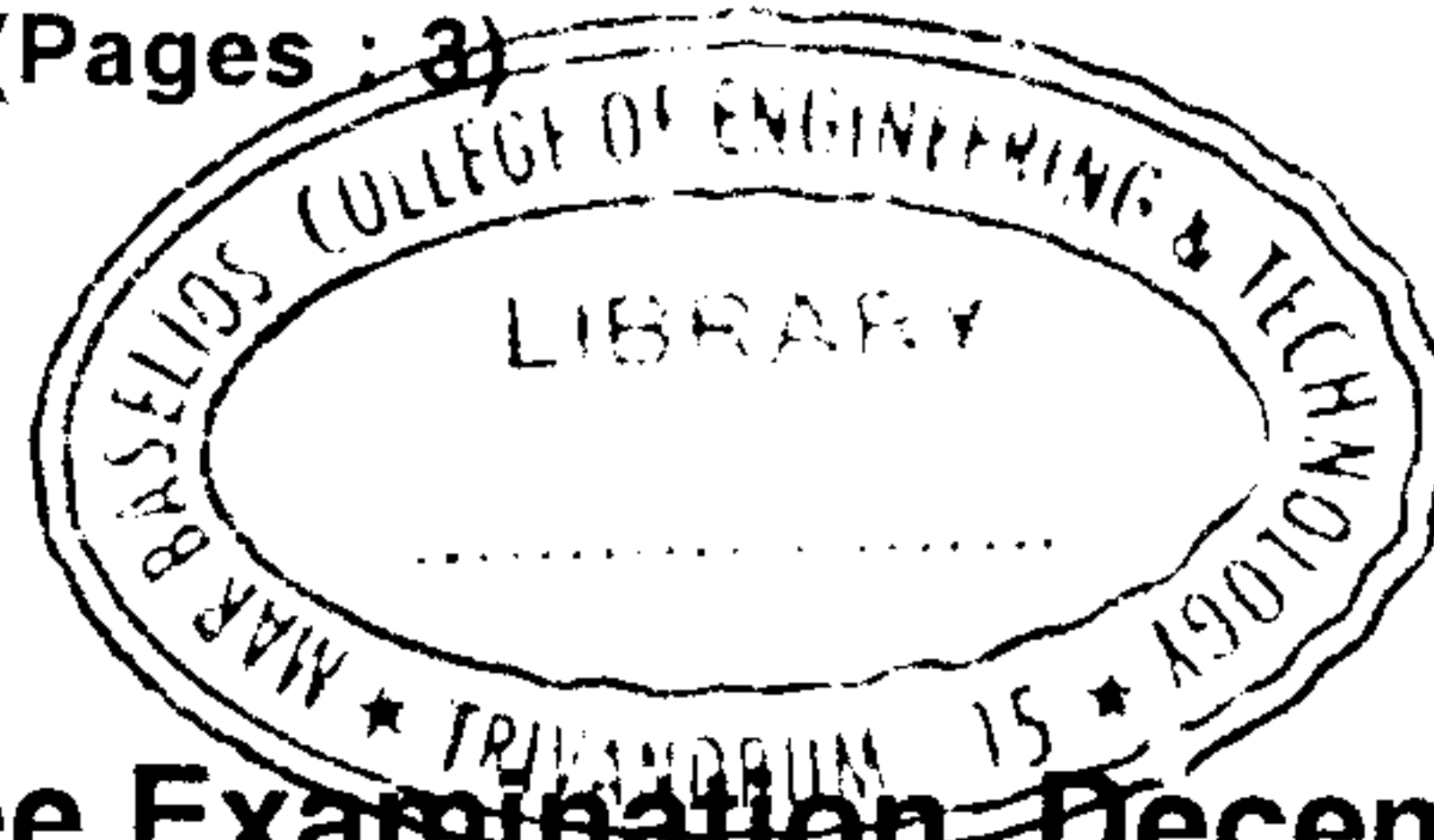


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F – 3155

Reg. No. :

Name :



**Sixth Semester B.Tech. Degree Examination, December 2018
(2013 Scheme)**

13.602 : INDUCTION MACHINES AND SPECIAL ELECTRICAL MACHINES (E)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

(2×10=20 Marks)

1. What is crawling in induction machine ? How it can be avoided ?
2. List out the tests which can be used to find the efficiency of an induction motor.
3. What are the advantages of squirrel cage induction motor over slip ring induction motor ?
4. List out the benefits of using auto transformer starters in induction motor.
5. What is the specialty of the deepest cage of double cage induction motor ?
6. What are different methods available for making a 1Φ induction motor self starting ?
7. Draw the phasor diagram of a single phase series motor.
8. What are the differences between a.c. servomotor and d.c. servomotor other than the type of supply used ?
9. What are the advantages of brushless d.c. motor ?
10. Is it possible to construct a single phase linear induction motor ? Support your answer.

PART – B

Answer **one full** question from **each** Module.

(20×4=80 Marks)

Module – I

11. a) With the help of a neat diagram explain the constructional features of a slip ring induction motor.

10

P.T.O.



- b) A full load slip of 500 HP, 50 Hz, 3 Φ induction motor is 0.02. The rotor winding has a resistance of 0.25 Ω per phase. Estimate the slip and power output if the external resistance of 2 Ω is inserted in each rotor phase. Assume that the torque remains constant. 10

OR

12. a) Draw the equivalent circuit of the 400 V, 50 Hz, 3 phase delta connected induction motor from the following data. Assume stator resistance of 4 Ω . 10

	Voltage (V)	Current (A)	Power (W)
No load test	400	3.0	650
Blocked rotor test	200	12.0	1600

- b) Explain the procedure in simple steps and draw the circle diagram for the above motor. Assume stator copper loss is equal to rotor copper loss. 10

Module – II

13. a) Explain on different types of braking used for induction motor. 10
- b) Two 50 Hz, 3 phase induction motors having six and four poles respectively are cumulatively cascaded, the 6 pole motor being connected to the main supply. Determine the frequency of the rotor currents and slips referred to each stator field if the set has a slip of 2%. 10

OR

14. a) Compare different types of starting methods used for induction motor. 10
- b) What are synchronous induction motors ? Briefly explain the working with a typical circuit for synchronous-induction machine. 10

Module – III

15. a) Explain double revolving field theory of single phase induction motor. Also draw the ideal torque slip characteristics. 10
- b) Explain with a neat diagram the construction and working principle of AC servo motor. 10

OR



16. a) Explain on armature and field controlled d.c. servo motor. 10
b) Draw a neat constructional diagram and explain the working of universal motor. 10

Module – IV

17. a) Explain short rotor and long rotor linear induction motor. 10
b) What are the essential theories that govern the principle of magnetic levitation ? 10

OR

18. Comment on the following :
- i) Stepper motor in printers. 5
 - ii) Speed control of linear induction motor. 5
 - iii) Torque slip characteristics of reluctance motor. 5
 - iv) Type of brushless motor. 5

