

Hall Ticket Number :

R-17

Code: 7G345

II B.Tech. II Semester Supplementary Examinations May/June 2024

Analog Electronics-II

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. a) What is an IC ? List out the IC Classifications and Explain 7M
b) With a neat circuit diagram explain basic operational amplifier circuit 7M

OR

2. a) Draw the circuit of inverting amplifier and derive the gain of the same. 7M
b) Derive the gain of non inverting amplifier 7M

UNIT-II

3. a) Illustrate the operation of inverting summer circuit using IC 741. 7M
b) Illustrate the operation of Subtractor circuit using IC 741. 7M

OR

4. a) Explain how voltage can be converted into current using Op-Amp. 7M
b) Discuss the operation of Adder-Subtractor using Op-Amp. 7M

UNIT-III

5. a) Demonstrate the applications of Op-Amp Comparator. 7M
b) Illustrate the operation of Schmitt Trigger circuit using IC 741. 7M

OR

6. a) Explain how astable multivibrator can be used as Square wave generator. 9M
b) Design an astable multivibrator for output frequency of 1KHz 5M

UNIT-IV

7. a) Discuss how PLL can be used for AM demodulation. 7M
b) Draw and Explain the operation of Schmitt trigger using IC555. 7M

OR

8. a) Discuss how PLL can be used as frequency translator. 7M
b) How a monostable multivibrator can be used as missing pulse detector? Explain. 7M

UNIT-V

9. a) With help of neat diagram explain the operation of counter type ADC. 7M
b) Illustrate the operation of weighted resistor DAC. 7M

OR

10. a) Construct the Inverted R-2R DAC and explain in detail 7M
b) With the help of neat diagram explain the operation of Monolithic DAC 7M

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Code: 7G241

II B.Tech. II Semester Supplementary Examinations May/June 2024

AC Machines – I

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

UNIT-I

1. a) Explain the different types of losses in the transformer. 7M
b) Derive the EMF equation of a single phase transformer. 7M

OR

2. a) Explain how the Iron losses are reduced by doing laminations. 7M
b) Derive the condition for maximum efficiency in a single phase transformer. 7M

UNIT-II

3. a) Derive necessary condition for zero and negative regulation of a transformer. 7M
b) Describe the experimental test procedure to separate the core losses of a transformer. 7M

OR

4. A 100 KVA lighting transformer has a full load loss of 3 KW, the losses being equally divided between iron and copper. During a day, the transformer operates on full load for 3 hours, one half loads for 4 hours, and the output being negligible for the remainder of the day. Calculate the all-day efficiency. 14M

UNIT-III

5. a) Write the advantages of a transformer bank of three 1-Ph transformers. 7M
b) What is the need of connecting the transformers in parallel? Mentions the conditions for parallel operating of transformers. 7M

OR

6. A 3-phase, 500 kVA, 6000V/400V, 50Hz, delta-star connected transformer is delivering 300 kW, at 0.8 pf lagging to a balanced 3-phase load connected to the LV side with HV side supplied from 6000 V, 3- phase supply. Calculate the line and winding currents in both the sides. Assume the transformer to be ideal. 14M

UNIT-IV

7. a) Describe the construction of a 3-phase cage type induction motor with neat sketch. 8M
b) Write the comparison between cage rotor and slip ring rotor with neat diagrams 6M

OR

8. a) Prove that maximum torque developed by the 3-Ph induction motor does not depend on the rotor circuit resistance? 7M
b) Explain the phenomenon of crawling and cogging. Also explain its effect. 7M

UNIT-V

9. a) Explain the induction motor operation under injection of an e.m.f. into the rotor circuit 7M
b) Explain the working principle of Induction generator. 7M

OR

10. A cage induction motor when started by means of a star-delta starter takes 190% of full load line current and develops 40% of full load torque at starting. Determine the starting torque and current in terms of full load values, if an auto transformer with 80% tapping were employed. 14M
