

Code: 9A02807

1

B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

DESIGN OF ELECTRICAL SYSTEMS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Explain in detail about the design aspects of lighting.
(b) Discuss about the design aspects of ventilation.
- 2 Explain in detail about different types of wiring systems.
- 3 (a) Discuss in detail about the classification of industrial installations.
(b) Explain about the selection of transformers in industrial installations.
- 4 (a) Explain how to calculate the fault current in case of a line to ground (L-G) fault.
(b) Write a short note on the selection of circuit breakers in power system fault calculations.
- 5 (a) Explain about the importance of power factor improvement.
(b) Three coils each of resistance $10\ \Omega$ and inductance $31\ \text{mH}$ are connected in star across $400\ \text{V}$, $3-\phi$, $50\ \text{Hz}$, a.c supply. Calculate the current drawn in each line, power factor and the total power drawn. If a bank of three static capacitors in delta is connected to improve the power factor to 0.9 lagging. Determine the capacitance of each phase.
- 6 (a) Explain about the main characteristics of earthing systems.
(b) Write a short note on neutral earthing for generators.
- 7 (a) What are the power quality issues and explain them?
(b) Explain any two methods to reduce the impact of harmonics.
- 8 Write a short notes on the following:
 - (a) SPCA
 - (b) USPW

Code: 9A02807

B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

DESIGN OF ELECTRICAL SYSTEMS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain the role of statutes in electrical system design.
(b) Discuss about the design aspects of vertical transportation.
- 2 (a) Explain in detail about special features applicable for high-rise apartment buildings.
(b) Write a short note on pre-commissioning tests.
- 3 (a) Explain about general characteristics of industrial installations.
(b) Explain about the selection of sub stations in industrial installations.
- 4 (a) Explain the role of short circuit studies in designing switch gear.
(b) Explain the coordination between different protective devices.
- 5 (a) Explain about the any two methods of power factor improvement.
(b) Explain about the power factor correction of induction motors.
- 6 (a) Explain different types of system earthing.
(b) Explain the selection criteria for earthing.
- 7 (a) Explain in brief about the disturbances caused by harmonics.
(b) Explain the design of detuned capacitor bank.
- 8 (a) What is depreciation? What are the methods to evaluate the depreciation?
(b) Explain the concept time value of money.

Code: 9A02807

3

B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

DESIGN OF ELECTRICAL SYSTEMS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain the design aspects of climate control.
(b) Explain the design aspects of vertical transportation.
- 2 (a) Explain the classifications of electrical installations.
(b) What are pre-commissioning tests and explain them.
- 3 (a) What are the general characteristics of industrial installations?
(b) Explain in detail about the selection of distribution architecture.
- 4 (a) Discuss in detail about earthing design.
(b) Write a short note on switching devices.
- 5 (a) Explain about optimal compensation and where it is required.
(b) How the power factor of induction motor will be corrected? Explain it.
- 6 (a) What are the main characteristics of earthing systems?
(b) What is earth leakage protection and explain it.
- 7 (a) What are harmonics? What are the sources of harmonics?
(b) Explain the design of detuned capacitor bank.
- 8 (a) Explain after tax analysis and tax considerations.
(b) Explain single payment compound amount model.

Code: 9A02807

4

B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

DESIGN OF ELECTRICAL SYSTEMS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain the design aspects of lighting.
(b) Discuss about design aspects of minor building services.
- 2 Explain in detail about different types of wiring systems.
- 3 (a) Explain about the classification of industrial installation.
(b) Explain in detail about the selection of distribution architecture.
- 4 (a) Explain about fault current calculations in a double line to ground fault.
(b) Write a short note on the selection of circuit breakers.
- 5 (a) Write a short note on the location of capacitors in power factor improvement.
(b) Write a short note on optimal compensation.
- 6 (a) How is earthing effectively done. What are the methods of reducing earth resistance?
(b) Explain about the neutral earthing for transformers.
- 7 (a) What are the power quality issues and the factors causing this issue?
(b) What are the limits of IEEE standard 519 - 1992?
- 8 Write a short notes on the following:
(a) SPCA
(b) USPW
