



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

CERTIFICATE IN ELECTRICAL ENGINEERING MODULE 2

INSTALLATION

DATE: 8/9/2021

TIME: 8:30 – 11:30 AM

INSTRUCTIONS:

ANSWER ALL QUESTIONS

1. a) With aid of a diagram describe the overhead trunking wiring system for a Workshop (10 marks)
- b) State and explain any five advantage of trunking system as compared to conduit wiring system (5 marks)
- c) State any FIVE IEEE regulation regarding conduit wiring system (5 marks)
2. a) Define the term TARIFF as used in economics of power (2 marks)
- b) State and explain any 5-desirable characteristic of a good tariff (15 marks)
- c) Define the term semiconductor as used in electrical component (3 marks)
3. a) State and describe any FIVE types of TARIFFS (10 marks)
- b) State and explain any two advantage and one disadvantage of the tariff explained in three above (10 marks)
4. An industrial consumer has a constant load of 1500KW at 0.8pf lagging for 8hours per day for 20 days per month, for the remaining hours in a month there is constant unit power factor load of 100KW

Calculate the monthly cost of the following tariffs

Max demand charge each month

Each KVA of the first 200KVA of max demand at 1.20 ksh

Each KVA of the next 300KVA of max demand at 1.10ksh

Each KVA of the next 500KVA of max demand at 1.00ksh

Each additional KVA of max demand at 0.90ksh

Killo watt charge each month

Each of the first 180Kwh per KVA of max demand made in the month 70cents

Each of the next 180kwh per KVA of e max demand made in the month 60 cents

Each additional kwh supplied at 50cents

- b) if the consumer corrects the power factor of the main load from 0.8 to 0.95 lagging by means of loss free static capacitor costing ksh 100 per month

calculate the monthly savings (20 marks)

5. a) state the disadvantage of operating machines in low power factor

- b) A factory has the following daily load consumption

30kw for 2hrs per day

100kw for 8 hours per day

50kw for 4 hours per day

The charge for energy is made on basis of ksh 10 per kw of maximum demand plus 0.75cents per unit for 5 days per week and 50 weeks per year

Determine the cost per year of the energy consumed by the factory