



FACULTY OF ENGINEERING & TECHNOLOGY
KENYA INSTITUTE OF HIGHWAYS & BUILDING TECHNOLOGY (KIHBT)

DEPARTMENT OF ELECTRICAL & ELECTRICAL ENGINEERING

UNIVERSITY EXAMINATION FOR:
HIGHER DIPLOMA IN ELECTRICAL AND ELECTRONIC
ENGINEERING

EEP 3203: ELECTRICAL BUILDING SERVICES ENGINEERING

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2017

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. You should have the following for this examination:
 - *Answer Booklet*
 - *Examination pass*
 - *Student ID*
2. This paper consists of **FIVE** questions. Attempt any **THREE** Questions
3. **Do not write on the question paper.**
This paper consists of **FOUR** printed pages

QUESTION ONE

State the THREE main objectives of network analysis in project implementation planning.

(6Marks)

(a) An Electrical sub-contractor under took a project with activities as listed in table 1 below.

By using the network analysis determine :-

(i)The critical path (show it on the network)

(ii)The project duration

(iii) The float for activities D,H,and K

Activity	Period Weeks	Event No.
A	4	1 – 2
B	9	1 – 3
C	2	1 – 4
D	6	2 – 5
E	3	3 – 6
F	0	3 - 7
G	4	4 – 7
H	7	7 – 10
I	4	5 – 8
J	2	5 – 6
K	5	6 – 9
L	3	6 – 10
M	7	10 – 9
N	2	8 – 11
O	3	9 – 11
P	1	11 – 12

(14 Marks)

QUESTION TWO

(a) With reference to lightning protection explain the following

(i) Why lightning protection is necessary

(ii)Air termination

(iii)Earth termination

(iv) Down conductor

(10 Marks)

(b) Explain :-

(i) The zone of protection for lightning arrestor roof conductors

(ii) Reason for over lapping zones of protection.

(iii) The objective of lightning protection scheme

(10 Marks)

QUESTION THREE

(a) Explain why each of the following meetings may be preferred to over the other in construction site.

(i) Adhoc meeting

(ii) Formal meeting

(4 Marks)

(b) Explain any THREE malpractices which demonstrate abuse of tendering procedure. **(6 Marks)**

(c) Explain why it is necessary to clarify ambiguities and uncertainties before tendering. **(4 Marks)**

(d) State any FOUR sources of overhead cost in an Engineering construction project. **(2 Marks)**

(e) Explain each of the sources in (d) above.

(4 Marks)

QUESTION FOUR

(a) State

(i) Two methods of minimizing stroboscopic effect from discharge lamps in domestic installations

(ii) Four applications of flood lighting in buildings.

(5 Marks)

(b) Explain:-

(i) The term incandescence in lamps.

(ii) Why the filament of an incandescent lamps is enclosed an evacuated glass bulb. **(5 Marks)**

(c) A 7m x 9m room is lit by a 300cd lamp emitting flux in the lower hemisphere only and placed 4m above the centre and directly above the Centre. Determine the illumination at a point the flour:-

(i) In the middle of the shorter wall.

(ii) At the bottom corner of the wall

(iii) At the Centre of the larger wall.

(10 Marks)

QUESTION FIVE

(a) Define:-

(i) Diversity in installations.

(ii) A wiring system.

(iii) Final sub-circuit.

(3 Marks)

(b) Draw a wiring diagram to show the sequence of equipment at a domestic consumer in take point with a ring power circuit and a spur.

(c) Define the following terms

(i) Damp situation

(ii) Caravan site

(4 Marks)

(d) Explain the following methods of starting electrical machines.

(i) Star-delta

(ii) Direct on line

(6 Marks)