TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR:
HIGHER DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING

EEE 3207: ELECTRICAL BUILDING SERVICES ENGINEERING
END OF SEMESTER EXAMINATION

SERIES: MAY 2016
TIME: 2 HOURS
DATE:

Instructions to Candidates
You should have the following for this examination
-Answer Booklet, examination pass and student ID
This paper consists of FIVE questions. Attempt any **THREE Questions**
Do not write on the question paper.

QUESTION ONE

a) Define Tender Appraisal   **(2marks)**
b) State   :
   i)   The Technical factors which influence tender prices   **(4marks)**
   ii)   The   main difference between estimating and tendering   **(2marks)**
c) Give the Advantages and disadvantages of the following Tendering procedures:
   i)   Open   Tendering
   ii)   Selective Tendering

iii)   Package Deal   **(6marks)**

d) Explain why it is necessary to clarify ambiguities and uncertainties on the construction site before Tendering   **(3marks)**

e) Differentiate between Tender sum and contract sum   **(3marks)**

QUESTION TWO

a) Define
   i.   Illumination
   ii. Brightness
   iii. Reflection factor
   iv. Diffusing lighting   **(8marks)**

b) State where the following lamps are mostly applied and why,
   i.   Neon lamps
   ii. Low pressure sodium lamps   **(4 marks)**

c) Explain why the indirect lighting is most preferred to other lighting system in a professional design.
`   **(4 marks)**

d) Explain what is meant by an incident light.   **(4 marks)**

QUESTION THREE

a) State the **THREE** main objectives of Network Analysis in project implementation planning.   **(6marks)**

b) A certain Engineering project had Activities ,with costs and duration as shown in Table 1 below .Using the critical path method (CPM)construct the network and determine : -
   i)   The critical path on the network and state the duration of the project.
   ii) The total cost of the project
   iii) Float of Activities C ,G and M

Activity	Duration	Cost	Node number	Activity	Duration (months)	cost	Node number
A	4		1-2	M	3		10-9
B	9		1-3	N	2		8-11
C	2		1-4	O	3		9-11
D	6		2-5	P	1		11-12
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	6		6-10				

TABLE 1   **(14marks)**

QUESTION FOUR

(a) (i)State THREE purpose of flood lighting in buildings **(3marks)**

(ii)Explain the meaning of floodlighting **(2marks)**

(b)State:-

(i) Five properties for an ideal material for the filament of an incandescent lamp.

(5marks)

(ii)The reason why the filament of an incandescent lamp is enclosed in an evacuated glass bulb.

(2marks)

(c)For a given building it is desired to flood light the front of the building 42m wide and 16m high. Projectors of 30degrees beam spread and 1000 waH lamps giving 20lumea/waH are available. If the desired level of illumination is 45lm/m2 and if the projectors are to be located at the ground level 17m away. Design and show the suitable scheme
Assume:

Coefficient of utilization= 0.4

Depreciation factor   =1.3 and

Waste light factor   = 1.2 **(8marks)**

QUESTION FIVE
 a) State
    i.   Four lamps which are commonly used for interior lighting today
    ii. Five factors which the lighting designer should consider when selecting lamps.
(9 marks)
 b) Explain the term stroboscopic effect in discharge lamps and using the lead-lag connection of lamps, draw the circuit diagram, to show how it can be reduced.
(5marks)

 c) Two lamps A and B of 300 candelas and 500 candelas respectively are situated 100 meters apart. The heights of A above the ground level is 15M and that of B is 30M, if a photometer is placed at the center of the line joining the two lamps on the ground, calculate the reading of the photometer. **(6 marks)**