THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

ASSOCIATE OF SCIENCE EXAMINATION

SEMESTER II – 2019 MAY

PROGRAMMES:	**ARCHITECTTURAL AND CONSTRUCTION TECHNOLOGY**
COURSE NAME:	**BUILDING SERVICES**
CODE:	**BLDG2302**
YEAR GROUP:	**TWO**
DATE:	**TUESDAY, 2019 MAY 7**
TIME:	**3:00 P.M. – 5:00 P.M.**
DURATION:	**2 HOURS**
EXAMINATION TYPE:	**FINAL**

This Examination Paper has **8** *Pages*

INSTRUCTIONS:

1. **ANSWER ALL QUESTIONS FROM SECTION A**
2. **SECTION B CONSISTS OF FOUR (4) QUESTIONS. ANSWER ANY TWO (2)**

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SECTION B

Instruction: In the booklet provided, answer any TWO (2) questions from this section.

Question 1

A. List **THREE (3)** forms of renewable energy and **THREE (3)** forms of non-renewable energy. ***(6 marks)***

B. Explain why a substation is required in electricity generation. ***(4 marks)***

C. An office 12m long by 8m wide requires an illumination level of 300 lux on the working plane. It is proposed to use 80W fluorescent fittings having a rated output of 7375 lumens each. Assuming a utilization factor of 0.5 and a maintenance factor of 0.8,

i. Calculate the number of light fittings required. ***(5 marks)***
ii. Design the lighting scheme and show the layout of the fittings. ***(10 marks)***

Formula: $N = \frac{E \times A}{F \times U \times M}$ where,

N = number of fittings
E = average illuminance on the working plane (lux)
A = area of the working plane m2
F = flux from one lamp (lumens)
U = utilisation factor
M = maintenance factor

(Total 30 marks)

Question 2

A. Explain the following:

i. Natural ventilation
ii. Mechanically Assisted Ventilation Systems *(5 marks)*

B. Give a sketch of the cross section of the Septic Tank and explain the its function. *(10 marks)*

C. Explain any **TWO (2)** of the following water treatment processes and outline the procedure involved.

i. Sterilisation by chlorine
ii. Softening of hard water *(10 marks)*

D. Draw a labelled diagram showing Direct Supply of Cold Water to high rise building. *(5 marks)*

(Total 30 marks)

Question 3

A. Explain the use of a manhole. *(3 marks)*

B. Draw a well labelled diagram of the cross-sectional structure of a deep manhole. *(12 marks)*

C. Define the following:

i. Gray water
ii. Septic tank
iii. Absorption pit *(3 marks)*

D. With the aid of a diagram, explain any **ONE (1)** of the following waste disposal systems.

i. Combined system
ii. Separated system
iii. Partially separated system *(12 marks)*

(Total 30 marks)

Question 4

A. Explain the principles of any **TWO (2)** of the following water treatment processes.

i. Filtration
ii. Disinfection
iii. Aeration
iv. Storage *(12 marks)*

B. With the aid of neat well labelled sketches, differentiate between a propeller fan and an axial flow fan. *(7 marks)*

C. Define any **THREE (3)** of the following terms.

i. Public sewer
ii. Invert level
iii. Manhole
iv. Drain *(7 marks)*

D. Define the term 'back siphonage' in a water supply/distribution system. *(4 marks)*

(Total 30 marks)

END OF EXAMINATION