UNIVERSITAS ISLAM INDONESIA
FAKULTAS MIPA
Jl. Kaliurang Km. 14,5 Jogjakarta

MIDTERM EXAM
ACADEMIC YEAR 2020/2021

Subject   : Disaster Management
Study Program/Class : Statistics/ A, B, C, D
Day/ Date   : Friday, Apr 23, 2021
Waktu   :13.00-15.00 WIB [120 menit]
Lecturer   : Achmad Fauzan,S.Pd.,M.Si
Test Form   : *Open Book.*
Online Media   : ZOOM and Google Form

A. RULES

1. Start doing the Mid-Semester Exam (UTS) by praying.
2. Rest assured that you are doing honestly, and Allah SWT is all-seeing of what you are doing.
3. Cheating (giver or recipient) UTS scores are both ZERO (0).
4. Can use Calculator.
5. Use the UII account to access the questions given.
6. The questions are divided into 20 numbers divided into four parts, namely:
   a. Multiple choice consists of 5 numbers. [direct answer on google form]
   b. The short description consists of 2 numbers. [directly answer in the form]
   c. The long description consists of 10 numbers. [questions are downloaded by Google Classroom and then done on paper/handwritten and uploaded in Classroom]
   d. Random Questions [according to each class] consist of 3 numbers. [directly answer in the form]
7. Prepare paper and other writing equipment for work and media for uploading the work.

B. QUESTIONS

LO : Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and uses humanities values following their field of expertise.

Number 1 – 5 [score 10]

CO:
1. Students can explain Endogenous and Exogenous Disasters
2. Students can explain the process of natural disasters.

Indicator:
1. Students can understand and explain the concept of Endogenous and Exogenous Disasters.
2. Students can understand and explain the process of natural disasters.

B.1. Pilihan Ganda

1. In the event of a volcanic eruption, most of the victims died and were injured as a result of. . .

a.	Hot clouds
b.	The after-product of a volcanic eruption
c.	Acid rain
d.	Rock fall from the crater of the mountain

2. Natural hazards (hazards) can be modified while the vulnerability and resilience of an area cannot be modified

a.	True
b.	False

3. Those who are not part of the Disaster Management Rapid Response Unit (SRC-PB) team are...

a.	BMKG
b.	BNPB
c.	TNI and POLRI
d.	Community Organization

4. What is not included in the category of disaster impact is...

a.	Health Impact
b.	Psychosocial impact
c.	Material and asset impacts
d.	Impact of national food security

5. These are plates that do not surround Indonesia

a.	Pacific Plate
b.	Eurasian Plate
c.	Asian Plate
d.	Indo-Australian Plate

B.2. Brief Description

LO : Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and uses humanities values following their field of expertise.

> **Number 6 – 7 [score 10]**
>
> CO:
> 1.   Students can explain the consequences of natural disasters that occur.
> 2.   Students can explain the Spatial Distribution of Natural Disasters.
>
> Indicator:
> 1.   Students can understand and explain the consequences of natural disasters that occur.
> 2.   Students can understand and explain the spatial distribution of natural disasters.

6. One of the impacts of an earthquake is the occurrence of a saturated or slightly saturated soil phenomenon that causes a loss of strength and stiffness due to stress, which is called the term!
7. The term in the earthquake is the center of an earthquake that occurs on the surface of the earth or known as . . .

B.3. Long Description – Do it on paper then upload it

LO : Mastering several statistical methodologies (methods and models) to be used in solving problems in several fields.

> **Number 8 – 17 [score 70]**
>
> CO:
> Students are able to explain the disaster management cycle before a disaster occurs (pre-disaster) including development planning, disaster mitigation, disaster prevention, development of a disaster early warning system, and disaster preparedness development strategies (preparedness).
>
> Indicator
> 1.   Students can understand and explain development planning prior to a disaster (pre-disaster).
> 2.   Students can understand and explain the process of disaster mitigation before the disaster (pre-disaster).
> 3.   Students can understand and explain the process of developing a disaster early warning system before a disaster occurs (pre-disaster).
> 4.   Students can understand and explain the concept of a disaster preparedness development strategy (preparedness) before a disaster occurs (pre-disaster).

8. Present data on the eruption of Mount Merapi which includes the date distribution variable, which can be seen in the appendix.
    a. Shallow Volcanic (VD)
    b. Distant Tectonics (TJ)
    c. Deep Volcanic (VA)
    d. Earthquake Blowing (GH)
9. Present data on Earthquakes in Indonesia for the last 2 months! (Date division is presented in the appendix!)
10. What is the process of the occurrence of the disaster according to the division of your group yesterday?

11. For example, an earthquake occurred in the middle of the sea. The distance between the epicenter and the shoreline is 10 km. The speed of the gemba center is 1024 km/h and its speed decreases by 80 km/h every km. If the tsunami wave height in the middle of the sea is 1 meter high.
12. Calculate the height of the waves on land?
    a. If on the land there are buildings that have a height of 5 m as many as 20 pieces, 7 m as many as 30 pieces, and 10 m as many as 10 pieces.

b. Calculate the percentage of the total number of buildings that were completely submerged by the Tsunami!

13. Calculate the scale of the earthquake if the energy released from the earthquake source is:

a. $0.5 \times 2^{17} \times 5^{19}$ erg
b. $0.628 \times 4^{10} \times 5^{8}$ erg

14. For example, there is an earthquake at sea. The distance between the epicenter and the shoreline is 4 km. The epicenter of the earthquake was 480 km/hour and its speed was reduced by a third (reduced by a third in different meanings by being a third) from the previous every km. If the height on land is 20 meters. Calculate the wave height at the epicenter?

15. The earthquake occurred at location A with a magnitude of 7.2 on the Richter scale. The depth of the earthquake source is 15 km from the ground, while the distance from the epicenter from the center of the earthquake recorder is 5/3 times the depth of the earthquake. Calculate:

a. The amount of damage according to the MM scale? (Based on ground acceleration from Donovan)
b. Give a description/interpretation if the earthquake occurs.

16. There was an earthquake with a large energy released of 10^21.9 erg. If the depth of the earthquake source is 60 km and the distance from the epicenter of the earthquake is 80 km.

Calculate:

a. The amount of damage according to the Richter scale.
b. Maximum ground surface acceleration at the epicenter of the earthquake?
c. The amount of damage according to the MM scale? [using both Methods, whichever yields the greater result].

17. Look for 5 attractions in your area

a. Write down the X and Y coordinates.

b. Make maps with these objects with the five objects given different colors and icons. Then provide the link (make sure the link is accessible).

18. Has 4 points (A, B, and C). With the following coordinates.

Points	Latitude	Longitude
A	1^{0} 15' 20'' NL	1^{0} 11.43' EL
B	2^{0} 15.23' NL	2^{0} 14' 20'' WL
C	1^{0} 34' 23'' SL	2^{0} 1' 32'' EL

Calculate:
a. The distance from each point (A-B,A-C,B-C)!
b. Which point is the farthest distance?
LO : Able to apply logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies humanities values in accordance with their field of expertise

> **Question number 18-20 [score 10] Question number 18-20 is based on the class using Random Questions.**
> CO:
> 1. Students can explain the Controlling and Triggering Factors of Natural Disasters: Natural Physical Factors, Human Factors.
> Indicator:
> 1. Students can understand and explain natural physical factors in relation to controlling and triggering factors of natural disasters.
> 2. Students can understand and explain human factors in relation to controlling and triggering factors of natural disasters.

Class A
1. When an earthquake occurs, what is the role of statistics?
2. Why does orographic rain occur?
3. During the covid period, is there a difference in the evacuation carried out?

Class B
1. How are tsunami waves different from ordinary waves?
2. Can the flood process be controlled apart from being absorbed by the soil for urban areas?
3. Why do you still have to comply with health protocols after being vaccinated?

Class C
1. Why does orographic rain occur?
2. How to provide direction to persons with disabilities in the event of a disaster?
3. Are there any signs of a landslide?

Class D
1. Volcanic deformation, has it reached the alert category if it has reached where?
2. If I shoot a nuclear bomb into the ocean, can it cause a tsunami?
3. Why do you still have to comply with health protocols after being vaccinated?

23. Say, ˹O Prophet,˺ "He is the One Who brought you into being and gave you hearing, sight, and intellect. ˹Yet˺
you hardly give any thanks."
— [Al-Mulk ayat 23] —

Verification of the 2020/2021 Mid-Semester Exam Questions				
The suitability of the question material with CO	**Completeness question information**	**Verifier**	**Verification date**	**Initials**
Suitable	Complete	Study program secretary	22/4/2021	