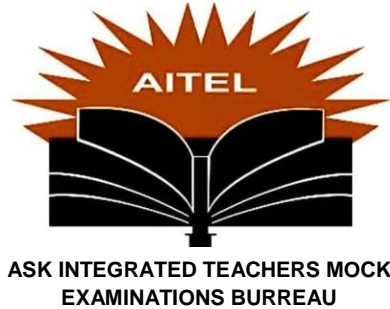


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MATHEMATICS
Paper 1
July/Aug. 2024
 $2\frac{1}{4}$ hours



AITEL JOINT MOCK EXAMINATIONS 2024.

Uganda Certificate of Education

Mathematics

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of two sections: A and B. It has six examination items.

Section A has two compulsory items

Section B has two parts: I and II. Answer one item from each part.

Answer four examination items in all.

Any additional item(s) answered will not score.

All answers must be written in the answer booklet(s) provided.

Graph paper is provided.

Silent, non-programmable scientific calculators and mathematical tables with a list of formulae may be used.

SECTION A (ATTEMPT ALL ITEMS)

ITEM 1

A factory which produces newspapers in Eastern Uganda spends 1500 to produce a copy of a newspaper and sells it at 2000 copies and managed to sell 1500 copies, the factory has worker who earns a fixture salary of 20000 per day and commission of 3% on the sale of the day

One day worker A Reaches home early and sends a child who was sent back .home for fees at the shop to buy 2kg of ice cream. the boy found the usual shop when it closed and bought to the next shop and he was given 2700 as balance on Ugandan money 40000 he went with , when the boy went back home , He gave a demand note the father demanding the 45% of the fees which remained of the 750000 to (Total fees)

TASK

- i. Determine the percentage profit or loss made by the company
- ii. Determine the salary of the workers at the end of the month
- iii. How much was $\frac{1}{4}$ kg of the ice cream.
- iv. How much money was paid on reporting day and how much is demand

20 SCORES

ITEM 2

A businessman in Mbale is going to produce two types of juice, that manage juice bottles and that orange juice for sale

He wants to make at least 2 mango juice bottles; he also wants to make more orange juice bottles than mango juice bottles

Due to the limited time, labour and facilities, he cannot make more than 10 juice bottle

The mango juice bottles are to be sold at 1500/= each and orange juice battles at 1000/= due to the ingredients added to the two types of juice, to make a profits, more than. Shs 8000 must be realized from sells

- i. How many bottles of the types of juice should the business man like in order to make maximum profits
- ii. What is the minimum number of bottles of juice he can make and still makes profit

20 scores

SECTION B

PART 1.

ATTEMPT ANY ONE ITEM

ITEM 3

A brad manufacturing industry found in eastern Uganda has run shortage of workers in the factory due to the increased work at the station, and the manger intends to recruit a good number of people to work in the factory and the information given each. Section and the information was given in the table below

52	36	76	51	62	67
45	49	54	58	53	74
50	80	70	57	64	64
84	71	85	72	78	43
84	72	69	49	66	42

Task .

(a). Giving a reason based on the computation using the collected data, Determine the suitable number of employees which should be added in the factory

(b). The manager wishes to know the number of officials which prefer the employees in each sector to be greater than 60, help him to estimate the number

20 scores

ITEM 4

A non-governmental organization aims to teach French, German, and English to their secondary schools in different communities in Uganda , they intend to recruit 72 instructors who can teach French , German and English and during the interviews it was found that 6 instructors teach all the subjects , 14 teach French only 7 teach German only and 12 teach English only , those who can teach French were 5 more than those who can teach German, 28 instructors teach at list 2 subjects and 34 instructors can either teach French or English but not German

Task

(a) Determine the number of instructors who teach at most one subject.

(b) Apply your mathematical expertise to determine the probability of the instructors who can at least one subject.

20 scores

SECTION B
Part 2
Attempt 1 item

ITEM 5

A well-known hotel in central Uganda which services up to international level has a problem of water supply they have been informed that water will finish three weeks before it comes back, but the manager nearby borehole which should be collected using a bucket with an open end of diameter 30 cm and a bottom diameter of 20cm. which is 42cm deep, and the water is collected in the cylindrical tank which should be full of water but the tank 5.0cm higher with the diameter of 300cm as shown below



If the cost of one 1 liter of water is 2000./= and given that each bucket carried is to facilitate with 500/=

Task

- a. Determine the number of buckets which should be carried to make the tank full.

b. Using your knowledge of mathematics help the manger to know the amount of money which will be spent on water in three weeks if one day the hotel uses 60 liters

ITEM 6

In the certain shop found in mbale city found in eastern Uganda sells the TV in a set at 920,000, the manager said that it can be bought in part i.e. deposit of 60% of the cash price and their payment of equal installment for 5 months/ given that the cash price of the TV set is lower than the hire purchase value by 20% , if mutunga . is a worker in the shop who pays the tax of SH 945600 annually and below is the tax structure of all workers in the shop

Taxable income sh	rate
100,000-250,000	8
250,001-400,000	15
400,001-650,000	20
650,000-900,000	26
900,000 above	35

Each employee is entitled to follow allowances

Transport = 2000 per day

Electricity = 40,000 per month

Water = 258,000 every year

Lunch = 10,000 per day

Insurance = 28500 per month

Child allowance for only 3 children at the following rates

0-5 years 40,000 each child

6-12 years 25,000 each child

13-15 years 10,000 each child

If Mutunga has 5 children of which 2 are 17 and 18 years, the other children are 21 years

Task

(a). Using your mathematics knowledge to determine the percentage of money which would be saved by buying the Tv set on cash terms other than hire purchase terms

(b). Guide Mutunga to know his annual net income and the taxable incomes

(20 scores)

END