

MACHAKOS UNIVERSITY
UNIVERSITY EXAMINATION 2020/2021
SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS, STATISTICS AND ACTUARIAL SCIENCE
FIRST SEMESTER FIRST YEAR FOR
DIPLOMA IN FOOD AND BEVERAGES;
2802/102- MATHEMATICS

Instructions to candidates;

- .must have a scientific calculator and mathematical table.
- .question 1 is compulsory (sectionA)
- .choose any other 4 questions from section B.

Section A

1.a) a donation of 28 cartons of exercise books were distributed among 288 pupils in a school. If each carton had 144 exercise books, determine the number of books each pupil received

(4mks)

b) the ratio of men, women to children who attended a church service was 2:3:6 respectively. If there were 150 men, determine;

i) the difference between women and men who attended the service

(2mks)

ii)the total number of people who attended the service

(2mks)

c) a hemispherical bowl of internal diameter 42 cm, is filled with milk. Determine the capacity in litres of milk it can hold

(4mks)

d) the marked price of a fridge was ksh 48000.a customer bought it at 15% discount. If the trader made a profit of 8%, determine the amount of profit made to the nearest whole number in shillings

(4mks)

e) Without using a calculator evaluate $\{ \frac{1}{2} - \frac{1}{8} (\frac{3}{5} \text{ of } \frac{10}{15}) \div \frac{2}{5} \}$

(4mks)

f)a group of 6 boys has a mean weight of 54kg.when two more boys joined the group ,one with x kg and the other with $(x + 10)$ kg ,the new mean is 55kg.determine the value of x .

(6mks)

section B

2. Given a cylinder of internal and external radii to be 42cm and 35cm respectively and the height is 53cm (assuming the figure to be closed)

(i)determine it surface area leaving your answer interms of π

(4mks)

(ii) find the capacity of the tin in litres
(6mks)

3.a) express as a single fraction

i) $\frac{x-3}{4} + \frac{2x-3}{5}$

ii) $\frac{2x+3}{2} - \frac{x+3}{3}$
(5mks)

b) in a class of p students ,3 are absent during a history lesson. If those who are present are to sit in groups of five, how many such groups will there be?
(5mks)

4.A cylindrical tank of diameter 14m and height 10m is to be filled with water using a bucket which a shape of a frustum. Determine the number of buckets required to fill this tank given the bottom radius and top radius of the bucket to be 21cm and 35cm respectively and its height as 60cm
(4mks)

5.a container in the shape of a cylinder has a radius of 1.5m.it contains water to a depth of 3.5m, a solid plastic sphere of 0.8 m is placed inside the container and the level of water rises to x m calculate x to the nearest unit
(10mks)

6.a) if y varies constantly and partially as x: if x=16 when y=2 and x=33 when y=3.find the value of x when y=5
(6mks)

b) find the area of a triangular piece of cake measuring 70cm by 45cm by98cm
(4mks)

7.a) the sum of the first 5 terms of an A.P is 54 and the sum of the first 8 terms of the same A.P is 84.

Determine i) the first term and the common difference of the A.P.

II) the fifth term
(6mks)

b) calculate the area of a sector formed by a radius of 6cm and subtending an angle of 73.4°
(4mks)

8) a)9 men working in a factory produces 20 pans in 6 working days. How long will it take 12 men working in the same rate to produce the same number of pans.
(5mks)

b) an alloy consists of three meta A, B and C. If the ratio of A: B=3:4 and B:C=6:7. find

i)proportion of A:C

ii)given the quantity of metal B in the alloy to be 36kg.determine the mass of the alloy.
(5mks)

c) define the term measures of central tendency
(2mks)