

# **The Ambassadors College, Ota**

**S.S.S 2**

**THIRD TERM  
MID-TERM TERM**

**HOLIDAY  
ASSIGNMENT**

**2025/2026 Academic Session**

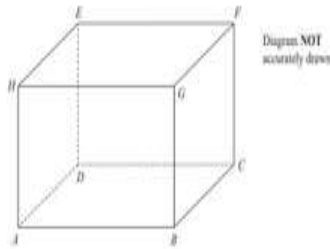
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**Name:** \_\_\_\_\_

# HOLIDAY ASSIGNMENT

## SSS2 IGCSE MATHEMATICS

1. The diagram shows cuboid  $ABCDEFGH$

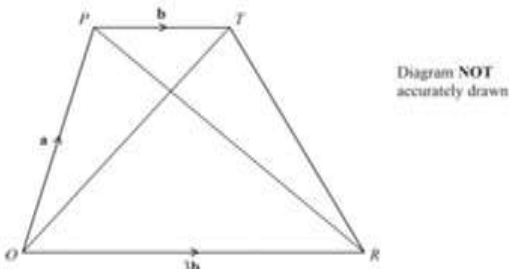
For this cuboid, the length of  $AB$ : the length of  $BC$ : the length of  $CF = 4 : 2 : 3$ . Calculate, to one decimal place, the size of the angle between  $AF$  and the plane  $ABCD$ .



2. A bag contains 15 red beads and 10 yellow beads. Ariana picks a bead at random, records its colour and replaces it in the bag. She then picks another bead at random.

- (a) Find the probability that she picks two red beads.
- (b) Find the probability that she does not pick two red beads.

3. (a)  $OPTR$  is a trapezium.



- (i) Find  $OT$  in terms of  $a$  and  $b$
  - (ii) Find  $PR$  in terms of  $a$  and  $b$ . Give your answer in its simplest form.
- (b)  $S$  is the point on  $PR$  such that  $PS : SR = 1 : 3$ . Find  $OS$  in terms of  $a$  and  $b$ . Give your answer in its simplest form.
- (c) What does your answer to part (b) tell you about the position of point  $S$ ?

## SSS2 GCE MATHEMATICS

- (a) Find the value of  $\alpha^2 + \beta^2$  if  $\alpha + \beta = 2$  and the distance between the points  $(1, \alpha)$  and  $(\beta, 1)$  is 3 units.
  - (b) Given that  $\log_{10} 5 = 0.699$  and  $\log_{10} 3 = 0.477$ , find  $\log_{10} 45$  without using mathematical tables. Hence solve  $x^{0.6245} = 45$ .
- Two points  $M$  and  $N$  on the surface of the Earth are given by their latitudes and longitudes as  $M(50^\circ S, 15^\circ E)$  and  $N(50^\circ S, 75^\circ E)$ . Calculate the
  - (a) radius of the parallel of latitude on which  $M$  and  $N$  lie
  - (b) distance  $MN$  measured along the parallel of latitude. (Take the radius of the earth to be 6400km).

## SSS2 IGCSE ADDITIONAL MATHEMATICS

- (a) Show that  $\frac{\cos x}{1 - \sin x} + \frac{1 - \sin x}{\cos x} = 2 \sec x$ .
  - (b) Hence solve the equation  $\frac{\cos \frac{\theta}{2}}{1 - \sin \frac{\theta}{2}} + \frac{1 - \sin \frac{\theta}{2}}{\cos \frac{\theta}{2}} = 8 \cos^2 \frac{\theta}{2}$  for  $-360^\circ < \theta < 360^\circ$ .
- The curve with equation  $y = a \sin bx + c$ , where  $a$ ,  $b$  and  $c$  are constants, passes through the points  $(4\pi, 11)$  and  $(-\frac{4\pi}{3}, 5)$ . It is given that  $a \sin bx + c$  has period  $16\pi$ .
  - (a) Find the exact values of  $a$ ,  $b$  and  $c$ .
  - (b) Using your answer to part (a), find the coordinates of the minimum point on the curve for  $0 \leq x \leq 16\pi$ .

## SSS2 GCE FURTHER MATHEMATICS

- (a) If  ${}^{n+1}C_{n-1} = 28$ , find the value of  $n$ .
  - (b) Simplify: (i)  ${}^{n+1}C_3 - {}^{n-1}C_3$  (ii)  ${}^{n+1}C_n - {}^{n-1}C_n$  (iii)  $\frac{{}^6P_2}{{}^6C_3} + \frac{{}^5C_1}{{}^4P_2}$
- (a) A committee of 2 tutors and 5 pupils is to be formed among 6 tutors and 10 pupils. In how many ways can this be done, if one particular tutor must be on the committee and two particular pupils must not be on the committee?
  - (i) without any restriction; (ii) with only one  $E$ .
- (a) The position vector of a particle of mass  $3\text{Kg}$  moving along a space curve at any time  $t$  seconds is given by  $\mathbf{r} = (4t^3 - t^2)\mathbf{i} - (2t^2 - t)\mathbf{j}$ ; find the force acting on it at  $t = 2\text{s}$ .
  - (b) If  $y = (2x + 3)^7 + \frac{x - 1}{2x - 1}$ , find the value of  $\frac{dy}{dx}$  when  $x = -1$ .

## CHRISTIAN RELIGIOUS STUDIES (GCE)

- 1a. Explain the Leadership/qualities of Joseph
- b. Mention FIVE reasons why Joseph's brothers hated him.

## ECONOMICS (IGCSE)

In 2006 the US Investment bank, Goldman Sachs, paid their senior executives and star traders based in London \$10 million or more each in bonuses. The London branch of Goldman Sachs enjoyed record profits because of favourable financial market conditions. It had advised on important mergers.

Traders of Goldman Sachs, whilst enjoying high wages and spectacular bonuses, work long hours. However, everyone was not highly rewarded for their works.

- a. Identify two functions of an investment bank.
- b. Why might a firm pay a bonus to its staff.
- c. Explain two reasons why senior executives are paid more than cleaners.

## BUSINESS STUDIES

IGCSE Business Studies Textbook by Keren Borrington and Peter Stimpson page 113 Exercise 1

# HOLIDAY ASSIGNMENT

## COMMERCE (GCE)

- 1a. What is Span of Control?
- b. State FOUR factors that determine span of control.
  
- 2a. State FIVE importance of advertising to the economy.
- b. Explain the following documents used in foreign trade.
  - i. Dock Warrant
  - ii. Consular Invoice
  - iii. Ship manifest
  - iv. Freight note
  - v. Bill of lading

## FINANCIAL ACCOUNTING (GCE)

1. Accounting Extract, Question 141
2. Accounting Extract, Question 145

## ACCOUNTING (IGCSE)

- 1a. Describe a Bank Statement
- b. What is Bank Reconciliation Statement.
- c. State and explain the FOUR stages of Bank Reconciliation Statement.
- d. Explain SIX reasons why the Bank Account may differ from the Bank Statement.
- e. State SIX advantages of Bank Statement.
- 2a. State the FOUR uses of the journal.
- b. Explain the SIX errors which are not shown by a trial balance.
- c. State the errors that will not allow the trial balance to balance (Refer to chapter 3, page 48 of the IGCSE Accounting Textbook).

## BIOLOGY

- 1 (a) A student investigated the effect of windspeed on the rate of transpiration.
- The student placed a fan at different distances from a plant shoot and measured the distance the air bubble moved in three minutes.
- The distance the air bubble moved can be used to calculate the rate of water uptake, which is equivalent to the rate of transpiration.
- Fig. 5.1 shows the apparatus the student used.

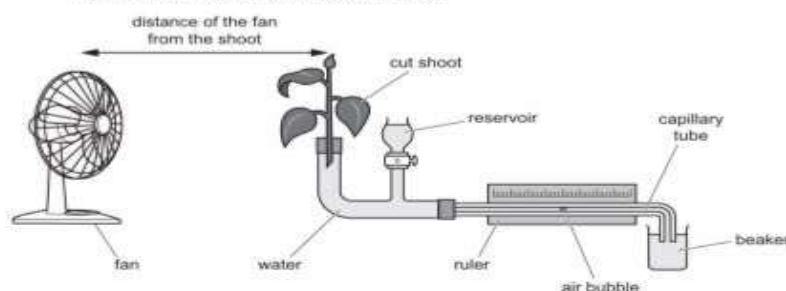


Fig. 5.1

Table 5.1 shows their results.

Table 5.1

distance of the fan from the shoot /m	distance travelled by the air bubble in three minutes /mm	rate of water uptake /mm per second
0.3	26	0.14
0.4	25	0.14
0.5	23	0.13
0.6	20	
0.7	19	0.11
0.8	16	0.09

# HOLIDAY ASSIGNMENT

(i) Calculate the rate of water uptake when the fan is 0.5 m from the plant shoot.

Give your answer to **two** decimal places.

Space for working.

..... mm per second [2]

(ii) Using the information in Fig. 5.1 and Table 5.1, complete the sentences by writing a word or phrase in the spaces to describe the results.

As the fan is moved further away from the shoot, the windspeed .....

and the ..... moved by the air bubble decreased.

During transpiration water evaporates from the surfaces of the

..... cells into the air spaces inside the leaf. The water vapour

diffuses out of the leaf through the ..... This causes

water to move through the capillary tube causing the air bubble to

move towards .....

[5]

(iii) State **one other** factor that affects the rate of transpiration.

..... [1]

(b) State **two** uses of water in a plant.

1 .....

2 ..... [2]

## CHEMISTRY (IGCSE)

- Write sentences that compare the metal and non-metal elements for these properties.
  - Conducting electricity
  - conducting heat
  - malleability
  - melting and boiling points
- Describe how the oxides of metals and non-metals differ.

## CHEMISTRY (GCE)

- Using equations only, outline the steps involve in the contact process.
- State **THREE** physical and chemical properties each of tetraoxosulphate(VI)acid.
- Give **THREE** uses of tetraoxosulphate(VI) salts.