Please Note (O’I Students)
1. Summer Vacation will commence from 01 June 2016.
2. GACS will reopen on 18th July 2016.
3. GACS timings will be from 7:30 a.m. to 1:35 p.m. and on Friday pack-up time will be 12:35 p.m.
4. Use punched pages for your homework.
5. Homework will be checked and marked by the teachers.
6. Good effort will be rewarded.
7. Enjoy your vacation.

ISLAMIAT (SUBJECT CODE: 2058)
1. Learn and revise all work done in classroom.
2. Complete the biographical accounts of ten blessed companions according to Table-I.

Table-I

<table>
<thead>
<tr>
<th>Name/Date of Birth &amp; Death</th>
<th>Proximity to the Prophet (PBUH)/common ancestors (if any)</th>
<th>Small biographical account or explanation of character</th>
<th>Title(s) with special reference to attributes if any</th>
<th>Important responsibilities given during the lifetime of the Prophet (PBUH) or after his death</th>
<th>Services to Islam (Migration is included but acceptance of Islam is not a service)</th>
<th>Reference of Incident explaining any specialty of personality</th>
<th>Reference of Ahadith, Quranic injunctions or tidings given by the Prophet (PBUH)</th>
</tr>
</thead>
</table>

3. Learn battles fought by the Prophet (P.B.U.H) i.e. Badar, Uhad, Trench, Khyber, Conquest of Makkah, Hunain, Mota and Tabuk according to Table-II.

Table-II

<table>
<thead>
<tr>
<th>Name of the battle (Year in which it was fought)</th>
<th>Causes of the battle</th>
<th>Preparations of the non believers</th>
<th>Preparations of the Muslims</th>
<th>Events of the battle</th>
<th>Loss of non believers</th>
<th>Loss of Muslims</th>
<th>Result of the battle</th>
<th>Quranic commandments related to battles</th>
<th>Important decisions taken by the Prophet (PBUH) after the battle</th>
</tr>
</thead>
</table>

MATHEMATICS (SUBJECT CODE: 4024)

Reference Book: Syllabus D Book 2
- Topic: Scale & Map  Review Question 1  Question No: 14, 15, 16, 17, 18, 19, 20 and 21
- Reference Book: Topical (Past Papers from 2010 to 2014)
  - Numbers
  - Algebraic Expression
  - Squares, Square roots, Cube and Cube roots
  - Algebraic Manipulation
  - Variations
  - Mensuration

ADDITIONAL MATHEMATICS (SUBJECT CODE: 4037)

Reference Book: Topical Additional Mathematics
Topic: Simultaneous Equation, Indices and Log
1. **Composition Writing:** Your write up should not exceed 500 words
   a. A Visitor. (Narrative)
   b. A crowded shopping centre (Descriptive)
   c. What are your strengths and weaknesses? (Reflective)

2. **Directed writing:**
   a. Your school asked for volunteers to entertain, for a day, a small group of young people from another country. You were one of those chosen. Write an account of what you did, considering some or all of the following points:
   - tour of the school and surrounding area
   - local activities
   - meeting friends and family
   b. An unfortunate incident occurred on the school outing when an argument arose with the owner of a stall selling drinks by the wayside. As the senior student present, you have been asked to give the Principal a clear picture of what happened. You should write a report in numbered paragraphs, with the title, the date and your signature. You must answer all the following questions:
   - How did the argument arise?
   - Why did the student refuse payment?
   - How was the argument finally settled?

3. Write a review of a book you have read, or a movie you saw or a match that caught your interest. **A list of recommended books and movies is given below:**

**Recommended Books**
- Animal Farm (George Orwell)
- Jane Eyre (Charlotte Bronte)
- Lord of Flies (William Golding)
- Rebecca (Daphne du Maurier)
- Gulliver’s Travels (Jonathan Swift)

**Recommended Movies**
- 2012
- Golden Compass
- Karate Kid
- Hobbit (Last part)
- Harry Potter (any film)

4. Find interesting articles from newspapers and magazines and summarise them in your own words. (at least 3)
History: Collect information and critically analyse the following topics:
1. War of Independence

Practical Assignment: Make a presentation on the role of Muhammad Ali Jinnah in Pakistan Movement.
Write all assignments done in 1st Term.

Geography:
Practical Assignment (must be done)

a. Draw outline maps of Pakistan showing:
   (i) Northern mountains, Indus Plains, Salt Range, Potwar Plateau
   (ii) Balochistan Plateau and prominent deserts in Pakistan
   (iii) Eastern and Western tributaries of Indus River
   (iv) Doabs in Upper Indus Plain
   (v) Latitude, longitude and tropic of cancer
   (vi) Types of forests
   (vii) Pakistan’s neighbouring countries

b. Collect information on Mineral Resources

CHEMISTRY (SUBJECT CODE: 5070)

Experimental Chemistry

Q1. Draw and label diagrams:
   (a) burette
   (b) pipette
   (c) titration flask

Q2. Draw and label diagram for the collection of the following types of gases:
   (a) Gas lighter than air
   (b) Gas heavier than air
   (c) Collection of gas on water

Particles of Matter

Q1. Define the following terms:
   (a) Boiling Point, Melting Point, Evaporation, Sublimation, Condensation, Solidification
   (b) Draw heating and cooling curve for water

Q2. (a) Define Diffusion?
   (b) What are the factors which affects rate of diffusion?
   (c) Sample of the gases carbondioxide CO₂ Mr=44 and Hydrogen Mr=2 are at the same temperature. Compare the speeds of molecules in these gases.
   (d) Give any three examples of diffusion from everyday life.

Q3. Describe the properties of solid, liquid and gases according to kinetic theory.

Separation Techniques

Q1. Write the principle for:
   (i) Filtration
   (ii) Crystallization

Q2. Give brief description with reasons for the following:
   (i) Why sugar cannot be separated by filtration from water?
   (ii) Why iodine is easily separated from mixture of iodine and sand?
   (iii) Why pure sample of liquid “A” (b.p 60°C) is not even separated from liquid “B” (b.p 61°C) by Fractional Distillation?

Q3. Define sublimation and write two examples with formulae.
Note:
- Solve all structured questions from (topical pure Chemistry) relevant to their units mentioned above.
- Prepare one theme based Chemistry science model along with scheme of study i.e.
  1. Electronic configuration
  2. Separation of mixtures
  3. Arrangement of particles in solid, liquid and gas

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**BIOLOGY (SUBJECT CODE: 5090)**

**Q1.** Fig 1 shows a cell observed under the microscope

![Cell Diagram](image1)

a. Where is this cell found?
b. Label the parts A, B and C.
c. ‘E’ contains a pigment. What is the pigment and explain its function?
d. What is structure ‘F’ meant for?
e. Which component contain DNA?

**Q2.** For each of the following, describe how the structure is related to its function:

a. Root hair cell
b. Red blood cell

c. A plant cell in pure water

![Plant Cell in Pure Water](image2)

- a. How can plasmolysis be brought about?
- b. In Fig 3, what fills space X? Explain your answer.
- c. Describe the events shown in Fig 2 and 3 in terms of water potential.

Q4. An uncooked potato was peeled. A piece form the middle was cut into strips X and Y, each 500mm long. One strip was placed in a strong sugar solution. Another strip was placed in pure water.
After 30 minutes strip X had grown longer. Strip Y had shrunk.

a. What could have happened to the cells in each strip, to make one strip swell and the other shrink?
b. Which strip had been placed in the sugar solution? Explain your answer.
c. The experiment was repeated using strips of cooked potato. These strips did not change in length. Can you explain why?

d. If you had some sugar solution which was exactly the same osmotic pressure of a potato cell and you placed a potato strip in it how, if at all, would it change?
e. Design an experiment using potato strips to produce a sugar solution with the same osmotic pressure as a potato cell. List your apparatus, and described your method in full detail.

Q5. The drawn diagram illustrates “Lock and key hypothesis”, with reference to that

<table>
<thead>
<tr>
<th>Test tube (contents and temperature conditions)</th>
<th>Observations</th>
<th>Deduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage-I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage-II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage-III</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Label the parts A, B, C?
b. Explain stage II?
c. Which type of reaction is taking place in this diagram?
d. Name any of the enzyme with its substrate on which its acts?

Q6. The effect of temperature on the rate of reaction of amylase with starch is investigated, Explain
A1
4 cm³ of 1% starch solution + 2 cm³ of saliva solution at 10°C

B1
4 cm³ of 1% starch solution + 2 cm³ of saliva solution at 30°C

C1
4 cm³ of 1% starch solution + 2 cm³ of saliva solution at 50°C

D1
4 cm³ of 1% starch solution + 2 cm³ of saliva solution at 70°C

E
4 cm³ of 1% starch solution + 2 cm³ of boiled saliva solution at 30°C

COMPUTER SCIENCE (2210)

1. Convert the following into given base:
   a. (11100101)₂ = (?)₁₀
   b. (1111111)₂ = (?)₁₀
   c. (1100110010001011)₂ = (?)₁₆
   d. (111101000011)₂ = (?)₁₆
   e. (81)₁₀ = (?)₂
   f. (29)₁₀ = (?)₂
   g. (437)₁₀ = (?)₁₆
   h. (151)₁₀ = (?)₁₆
   i. (F015)₁₆ = (?)₂
   j. (2C3)₁₆ = (?)₂
   k. (5A00)₁₆ = (?)₁₀
   l. (78D)₁₆ = (?)₁₀

2. Logic Gates are used to make Logic Circuits. Draw symbolic representation and truth tables for AND, OR, NOT, NAND, NOR, XOR and XNOR gates.

3. Write the names of any five input and any five output devices.

4. Write the use/application of MICR, OCR, OMR and Barcode reader.

5. What is a touch screen technology? Differentiate between different types of touch screen technology?

6. Write the program codes for Visual Basic 2010 that will:
   a. Display your name on the screen.
   b. Input your name and marks. Also display them on screen.
   c. Input two numbers and perform sum, subtraction, multiplication and division. Display result on the screen using appropriate messages.
   d. Input a number and display its square on the screen.
   e. Input a number and display its cube on the screen.
   f. Input two numbers. Use first number as base (b) and second number as exponent (e). Find the result using the formula \(b^e\) and display result on screen.
### PHYSICS (SUBJECT CODE: 5054)

2. A stone falls from the top of a building and hits the ground at a speed of 32 m/s. The air resistance force on the stone is very small and may be neglected.

   a. Calculate the time of fall.
   b. Copy and draw the speed-time graph for the falling stone.

![Speed-time graph](image.png)

1. A car increases its velocity from 10 m/s to 20 m/s in 5 s. What is its acceleration?

2. A runner has an acceleration of 10 m/s\(^2\). How long does it take him to reach a speed of 5 m/s from rest? (Note ‘rest’ means zero velocity.)

3. A train accelerates at 9 m/s\(^2\) for 5 s. If its initial velocity is 5 m/s, what is its final velocity?
3. The figure below shows the speed–time graph for a journey travelled by a tractor.

![Speed-Time Graph]

- a. Use the graph to describe the motion of the tractor during the sections OP, PQ, QR and RS.
- b. Which two points on the graph show when the tractor is stationary?
- c. State the greatest speed reached by the tractor.
- d. For how long was the tractor travelling at constant speed?
- e. State how the graph may be used to find the total distance travelled during the 200 s journey. Do not attempt a calculation.

4. Palm trees are growing every 25 m alongside the highway in a holiday resort.

![Palm Trees and Highway]

The IGCSE school bus drives along the highway.

- a. It takes 2 s for the bus to travel between palm tree 1 and palm tree 2.
  Calculate the average speed of the bus between tree 1 and tree 2.
- b. It takes more than 2 s for the bus to travel from tree 2 to tree 3.
  State what this information indicates about the speed of the bus.
Topic 1 – Measurements

1. The diagram shows an enlarged drawing of the end of a metre rule. It is being used to measure the length of a small feather.

What is the length of the feather?
A 19 mm  B 29 mm  C 19 cm  D 29 cm

2. A ruler is used to measure the length of an object.

What is the length of the object?
A 3.0 cm  B 4.0 cm  C 5.0 cm  D 6.5 cm

3. A student uses a stopwatch to time a runner running around a circular track. The runner runs two laps (twice around the track). The diagrams show the reading on the stopwatch when the runner starts running, at the end of the first lap, and at the end of the second lap.

What is the time taken for the runner to run the second lap?
A 0 min 50 s  B 1 min 10 s  C 1 min 13 s  D 2 min 03 s
Exercise 2

Write the following quantities in standard form:

a) Radius of the Earth = 6,370,000 m =

b) Mass of electron = 0.000 000 000 000 000 000 000 000 000 000 911 kg =

c) Speed of light in vacuum = 300,000,000 m/s =

Express quantities using prefixes

Prefix is used to simplify the expression of very big or very small numerical values of physical quantities.

Fill in the blank of the table list of prefixes below:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Value</th>
<th>Standard form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tera</td>
<td>1,000,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Giga</td>
<td>1,000,000,000</td>
<td></td>
</tr>
<tr>
<td>Mega</td>
<td>1,000,000</td>
<td></td>
</tr>
<tr>
<td>Kilo</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Hecto</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Deca</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Deci</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Mili</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Micro</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Nano</td>
<td>0.000 000 001</td>
<td></td>
</tr>
<tr>
<td>Pico</td>
<td>0.000 000 000 001</td>
<td></td>
</tr>
</tbody>
</table>

Exercise 3

Convert the following to standard form:

a) 93 nm =

c) 0.8 mg =

b) 120 MJ =

d) 59 μs =

Exercise 4

Convert the measurement into SI unit and in standard form:

a) Radio Caringin Frequency of radio wave is 101.4 MHz =

b) Distance between the moon and the Earth is 383,000 km =

c) Mass of the Earth is 60 000 000 000 000 000 000 000 000 000 000 g =

d) The wavelength of a visible light is 0.00042 mm =

Exercise 5

The Body Mass Index (BMI) of a person is measured by taking the mass of the person divided by the square of his/her height. Use the information provided to work out the derived SI unit for BMI.
6. A stopwatch is used to time a race. The diagrams show the watch at the start and at the end of the race.

![Stopwatch Diagram]

How long did the race take?

A 45.7 s  
B 46.0 s  
C 46.5 s  
D 47.0 s

2. A student decides to measure the period of a pendulum (the period is the time taken for one complete swing). Using a stopwatch, he finds that 8 complete swings take 7.4 seconds. With his calculator, he then uses this data to work out the time for one swing. The number shown on his calculator is 0.925.

a. Is it acceptable for the student to claim that the period of the pendulum is 0.925 seconds? Explain your answer. [2]

b. How could the student measure the period more accurately? [2]

c. Later, another student finds that 100 complete swings take 92.8 seconds. From these measurements, what is the period of the pendulum? [2]

Note: Solve TOPICAL past papers of chapter “Kinematics” and “Physical Quantities, Units and Measurements”.

Note: Solve all MCQs and Structured questions relevant to the units studied from book and past papers.

- Prepare one theme based physics project.

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**ECONOMICS (SUBJECT CODE: 2281)**

Exam preparation questions: 1.1, 2.2,

Case Study: Structured Question: Alcohol and government policy

**Websites for Reference:** Logon to the websites for updates:

- [www.cie.org.uk](http://www.cie.org.uk)
- [www.cambridgestudents.org.uk](http://www.cambridgestudents.org.uk)
- [www.xtremepapers.com](http://www.xtremepapers.com)
- [www.facebook.com/gacs.lges](http://www.facebook.com/gacs.lges)
- [www.gacs.lges.edu.pk](http://www.gacs.lges.edu.pk)