



ANEES HUSSAIN COACHING CLASSES

EXCELLENCE IN EDUCATION SINCE 1989

COMPREHENSIVE EXAMINATION 2025-2026

ENGLISH H.S.C. PART-II (PRE. ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 20

Time: 20 Minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 20 part questions and all are to be answered. Each part question carries one mark.
 - Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.

Q. 1: Choose the correct answer for each from the given options:

- The proverb, 'Don't count your chickens before they hatch' means :
 - * you can't two desirable things at the same time
 - * there is smth. good in every bad situation
 - * what you do is more than what you say
 - * don't make plans based on smth. That hasn't happened
- Choose the prefix which can be added to the word 'happy' to make its opposite:
 - * pre
 - * pro
 - * un
 - * super
- Choose a suffix for the verb "volunt" to change it into a noun:
 - * ion
 - * eer
 - * er
 - * ent
- The politician behaved as if he had never spoken publicly before , the underlined part is:
 - * adjectival phrase
 - * adjectival clause
 - * adverbial clause
 - * phrasal verb
- What do the guns firing in the distance signify?
 - * A hunting party
 - * A military exercise
 - * A celebration for victory
 - * A warning about escaped convicts
- What happens to Miss Havisham in the last?
 - * She marries Compeyson
 - * she leaves Satis House
 - * She is burned in a fire
 - * She dies of old age
- Estella's attitude towards Pip was always:
 - * friendly
 - * unfriendly
 - * different
 - * rude
- What does Joe advise Pip about lying?
 - *Lies are never justified
 - * lies would not make him less common
 - * Lies are harmless
 - * lies are fun
- Where did Pip meet the convict first time?
 - * in the forge
 - * in the village
 - * in the church
 - * in the marshes
- Joe advises Pip that the only way to be truly uncommon is through:
 - * honesty
 - * goodness
 - * honesty and goodness
 - * goodness and politeness
- Which of the following characteristics are found in Pahom?
 - * Unsatisfied and desirous
 - * contented and proud
 - * humble and kind
 - * wise and watchful
- Daedalus warned Icarus from _____.
 - * Fear of drowning
 - * sun's heat danger
 - * Minos' revenge plan
 - * wings might break
- The phrase "Let freedom ring" symbolizes _____.
 - * Political unity
 - * military success
 - * equality for all
 - * religious faith

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xiv. _____ is likely to cure the habit of hatred:

- * Loveliness
- * Amusement
- * idleness
- * constructive work

xv. Which sector is identified as one of the largest contributors to global greenhouse gas emissions?

- * education
- * tourism
- * healthcare
- * manufacturing and industry

xvi. What might Neruda mean by ‘becoming a slave of your habits’?

- * Being overly disciplined in life
- * following routines without question
- * Living freely and exploring new ideas
- * working hard to achieve goals

xvii. In the poem, Sur Sasui the poet teaches us:

- * patriotism
- * greed
- * adventure
- * love and devotion

xviii. Allama Muhammad Iqbal was a renowned poet and:

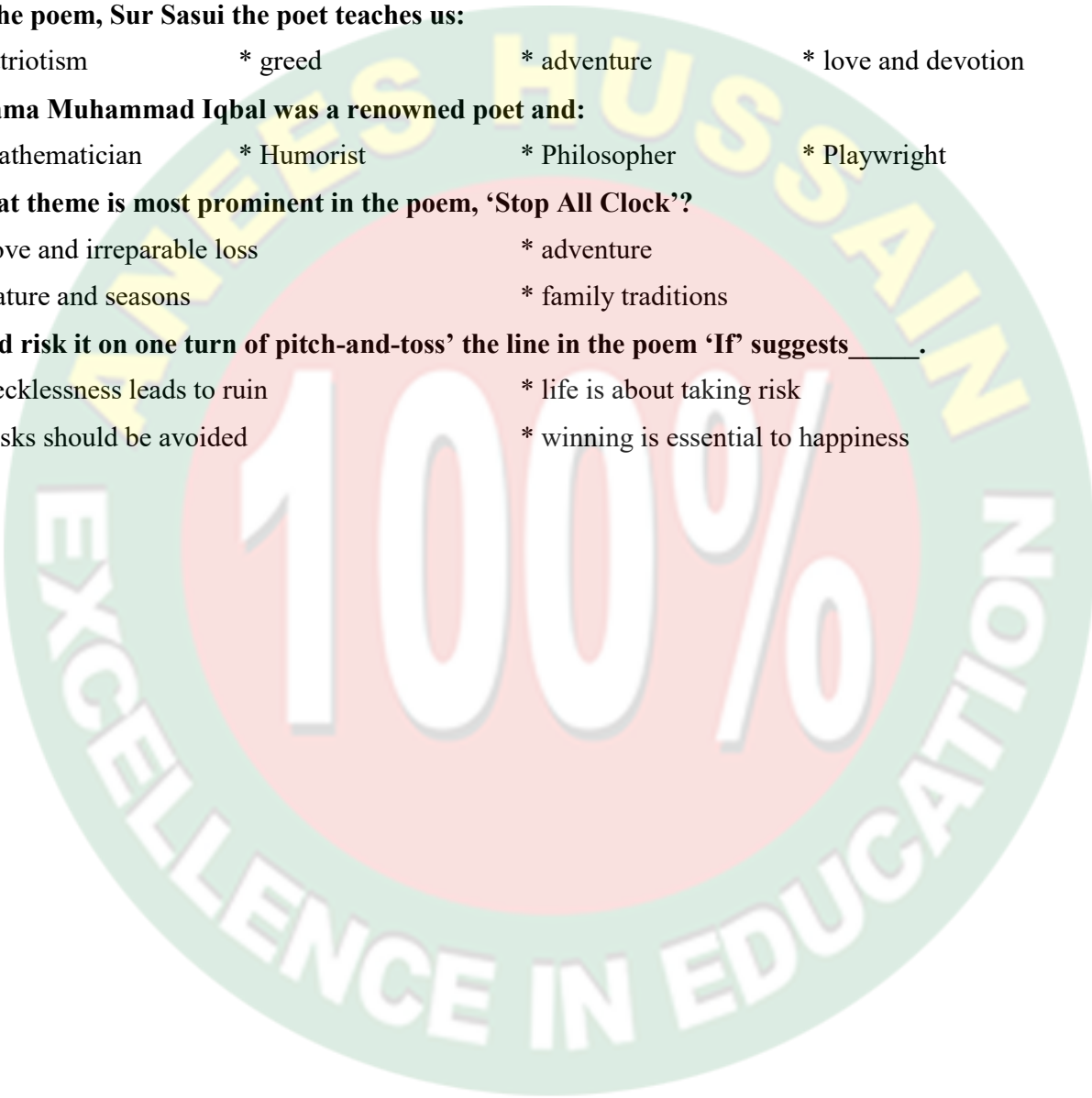
- * Mathematician
- * Humorist
- * Philosopher
- * Playwright

xix. What theme is most prominent in the poem, ‘Stop All Clock’?

- * Love and irreparable loss
- * adventure
- * Nature and seasons
- * family traditions

xx. ‘And risk it on one turn of pitch-and-toss’ the line in the poem ‘If’ suggests _____.

- * Recklessness leads to ruin
- * life is about taking risk
- * Risks should be avoided
- * winning is essential to happiness



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Max. Marks: 80

Time: 2 hour 40 Minutes
(40 Marks)

SECTION 'B'

(SHORT-ANSWER QUESTIONS)

NOTE: Attempt Six part-questions from Section B-I and Four part-questions from Section B-II. All part-questions carry equal marks.

Q. 2:

SECTION B-I (READING COMPREHENSION, POETRY AND NOVEL)

- What does Martin Luther King mean when he says, "Now is the time to rise from the dark and desolate valley of segregation to the sunlit path of racial justice?"
- What is the significance of Daedalus dedicating his wings to Apollo after Icarus's fall?
- According to Russell, why do scientists often experience deep satisfaction in their work?
- What does the ending of the story reveal about Pahom's character?
- How does the poem evoke feelings of nostalgia for infancy?
- Why is silence emphasized so strongly in the poem, 'Stop all Clocks'? What role does it play in the theme of mourning?
- Why did Miss Havisham adopt Estella?
- Who is Magwitch and how does he influence Pip's life?
- How does Estella treat Pip when they first meet and in what ways does this encounter influence his self-image?
- Does Pip feel proud or ashamed when he learns that Magwitch is his benefactor? Describe his reaction.

SECTION B II – (GRAMMAR)

- Match any **FOUR** of the following word / phrasal verbs of column "A" with the meaning in column "B":

Column 'A'	Column 'B'
Took down	wind
segregation	incidentally
draught	separation
By-the-by	indicate
Point to	write

- Use any **Four** of the following idioms in sentences:

on fleek	ball in his court	a short fuse
ghost someone	butterflies in my stomach	

- Complete the following conditional sentences:

- If you heat water to 100 degrees Celsius, _____.
- She will pass the exam if _____.
- If I were a millionaire, I _____.
- They would have caught the train, if they _____.

- Do as directed:

- We may divide poems in three categories narrative lyric and dramatic (Punctuate)
- In spite of the rain, the children went out to play. (Make a compound sentence)
- They have caught the thief. (Change the voice)
- He said to me, "Did you find my copy?" (Change the narration)

- Spot the errors and rectify the following faulty expressions:

- Hameed is the most smartest and intelligent student of the class.
- The number of unemployment people is rising faster than their usual rate.
- We will discuss about the new project in tomorrow's meeting.
- The cat got in from the window to catch the mouse.

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SECTION 'C'

(DETAILED-ANSWER QUESTIONS)



(40 Marks)

Note: Answer all questions from this section. All questions carry equal marks.

Q. 3: Write a personal statement to seek admission in MBA on scholarship at the University of Southampton, England. (10)

OR

Write an email to your class teacher explaining the reason for your absence from college and requesting permission to submit the missed assignment.

Q. 4: Write an essay on any One of the following topics: (10)

- Is our Examination System a true test of intelligence?
- Analyze how smart phones affect study habits.
- Analyze how AI has changed the way students learn.

Q. 5: Translate the following paragraph into Urdu or Sindhi: (10)

Courage means being brave even when we are scared. A firefighter shows courage by saving people from the fire. A student shows courage by speaking in front of the class. A doctor shows courage by treating sick people. A soldier shows courage by defending the country. Courage helps us to do the right thing, even when it is hard. Courage makes us stronger and effective.

Q. 6: Read the following passage given below and answer the questions that follow: (10)

OR

Make a précis of the following passage and suggest a suitable title to it:

Getting invited to an interview means you have passed the first hurdle. Your application must have made a good impression. Now you need to prepare yourself for an interview to make sure that you make the most of this opportunity. There are a number of things you can do. Firstly, you can do some research and find out about the employer and the job. Ask for information pack or speak to people who work for the company. Prepare for questions you might be asked. Some common ones are the reasons why you want the job. Whether you have done this kind of work before? Another important point is never to run the risk of arriving late. For example, considering making a dummy run in advanced to see how long the journey will take. It is also crucial to give plenty of thoughts to what you are going to wear. This will depend on the job you are applying for. There is no need to buy a new outfit, but aim to look neat and tidy. You need to make a good impression.

- Name two things you can do to prepare for an interview according to the passage (2)
- Why is it important to plan your journey to the interview in advance? (2)
- Classify the word class of the following words. (3)
a) Opportunity b) new c) prepare
- Point out one regular and one irregular verb. (2)
- Suggest suitable title to the passage. (1)

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وقت: ۲۰ منٹ

کل نشانات: ۲۰

حصہ ”الف“ (کثیر الانتخابی سوالات)

نوٹ: (۱) اس حصہ میں بیس جزوی سوالات ہیں۔ تمام سوالات کے جوابات مطلوب ہیں اور ہر ایک سوال کا ایک نمبر ہے۔

(۲) سوال یا اس کا جزا امتحانی کاپی میں نقل نہ کیجئے۔ سوال کے اصل نمبر اور جز کے سامنے مکمل جواب تحریر کیجئے۔

(۲۰)

سوال نمبر ۱: درست جواب کا انتخاب کر کے اپنی جوابی کاپی میں لکھیے:

۱. سبق سیرت محمدی ﷺ کی جامعیت کے مطابق اگر تم نے شکست کھائی ہے تو اس معرکے سے عبرت حاصل کرو:

☆ احد ☆ خیبر ☆ حنین ☆ تبوک

۲. شامل نصاب مزاحیہ مضمون ”کرکٹ“ اس کتاب سے ماخوذ ہے:

☆ خاتم بدہن ☆ سرگزشت ☆ آپ گم ☆ چراغ تلے

۳. سبق ”خوش طبعی“ ان کی تحریر ہے۔

☆ علامہ شبلی نعمانی ☆ سرسید احمد خان ☆ سید سلیمان ندوی ☆ محمد حسین آزاد

۴. نظم بدلی کا چاند کے شاعر کا نام ہے:

☆ شیر محمد خان ☆ محسن حسن خان ☆ شبیر حسن خان ☆ مختار حسین خان

۵. ”ادب آموزوں کے نام“ کا ماخذ ہے۔

☆ سانچ دار ☆ حرف و حکایت ☆ خطبات احمدیہ ☆ دوسرا کنارہ

۶. عالم گیر کے بیٹے مرزا کام بخش کے کوکہ پر قتل کا الزام لگا، ”کوکہ“ سے مراد ہے:

☆ دوست ☆ شریک بھائی ☆ باپ شریک بھائی ☆ رضاعی بھائی

۷. تلاشِ بسیار کے باوجود ہاتھ نہ آسکا۔

☆ طوطا ☆ دوست ☆ ابن الوقت ☆ الیم

۸. مسخرن دوانی کی ماں کا نام تھا:

☆ بہر ویسا ☆ زٹل ☆ سڑی مستان ☆ حماقت

۹. سبق ”سحر ہونے تک“ میں اس فلسفی کا ذکر ہے:

☆ بقراط ☆ ارسطو ☆ افلاطون ☆ سقراط

۱۰. مختار مسعود کی آٹو گراف الیم پر لفظ الیم سنہرا اچھا ہوا تھا، جبکہ الیم کا رنگ تھا:

☆ پیلا ☆ سفید ☆ نیلا ☆ سیاہ

۱۱. ”ٹنک سپ تتی“ کا فارسی ترجمہ انھوں نے کیا:

☆ ضیاء الدین نخشی ☆ سید محمد قادری ☆ حیدر بخش حیدری ☆ سعید احمد قادری

۱۲. شیخ یوسف سبریلی کے مرید کا نام تھا:

☆ شیخ سعدی ☆ ابن عربی ☆ ابوالعلاء معری ☆ ابن رشد

۱۳. حسرت موہانی کا اصل نام تھا:

☆ سید نجم الحسن ☆ سید فیض الحسن ☆ سید فضل الحسن ☆ ان میں سے کوئی نہیں

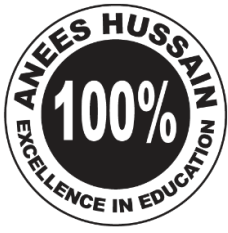
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۱۴. انھیں اردو شاعری کا ”پہلا صوتی شاعر“ کہا جاتا ہے۔
☆ میر تقی میر ☆ فیض احمد فیض ☆ میر درد ☆ مرزا غالب
۱۵. شامل نصاب منقبت کے شاعر کا نام ہے:
☆ عبد الحلیم شرر ☆ محسن کاکوروی ☆ اقبال سعظیم ☆ اعجاز رحمانی
۱۶. رشید احمد صدیقی نے ”سراقبال مرحوم“ میں اقبال کے اس نظریے کا بہ طور خاص ذکر کیا ہے:
☆ خودی ☆ عشق ☆ نیابت الہی ☆ فوق البشر
۱۷. نظم ”دو بہرے شناساؤں کی ملاقات“ کا ماخذ ہے:
☆ مافی الضمیر ☆ ضمیریات ☆ ضمیر کی آواز ☆ لہو ترنگ
۱۸. علامہ اقبال کا پہلا مجموعہ کلام ہے۔
☆ ار مغان حجاز ☆ بال جبریل ☆ بانگ درا ☆ پیام مشرق
۱۹. شاید اور گمان اس شاعر کا مجموعہ کلام ہے:
☆ میر درد ☆ نظیر اکبر آبادی ☆ جوش ملیح آبادی ☆ جون ایلیا
۲۰. ”ترکِ محبت“ ہے:
☆ مرکب اضافی ☆ مرکب عطفی ☆ مرکب توصیفی ☆ مرکب اشاری

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کل نشانات: ۸۰

وقت: ۲ گھنٹے ۳۰ منٹ

کل نشانات: ۴۰

حصہ ”ب“ (مختصر جواب کے سوالات)

(۱۰)

سوال نمبر ۲: دیئے گئے اشعار میں سے کسی دو اشعار کی تشریح شاعر کے حوالے اور مختصر تعارف کے ساتھ تحریر کیجئے۔

کیا مجھ کو داغوں نے سرو چراغاں مہربانی کو محبت نہیں کہتے اے دوست
کبھو تو نے آکر تماشا نہ دیکھا آہ! اب مجھ سے تری رنجش بے جا بھی نہیں
جنوں تھا نہ مجھ کو، نہ چپ رہ سکا زندگی کا عجب معاملہ ہے
کہ زنجیر ٹوٹی تو میں غل کیا ایک لمحے میں فیصلہ کیجے

حضرت ناصح گر آئیں، دیدہ و دل فرس راہ
کوئی مجھ کو یہ تو سمجھا دو کہ سمجھائیں گے کیا

(۲)

سوال نمبر ۳: (الف) منتخب کردہ اقتباس کے سبق اور مصنف کا نام تحریر کیجئے۔

(۸)

(ب) مندرجہ ذیل میں سے کسی ایک اقتباس کی تشریح کیجئے۔

(۱) ایک حاکم کے لیے محکوم کی زندگی، ایک محکوم کے لیے حاکم کی زندگی، ایک دولت مند کے لیے غریب کی زندگی اور ایک غریب کے لیے دولت مند کی زندگی کا مل مثال اور نمونہ نہیں بن سکتی۔ اس لیے ضروری ہے کہ عالم گیر اور دائمی پیغمبر کی زندگی ان تمام مختلف مناظر کے رنگ بہ رنگ پھولوں کا گل دستہ ہو۔

(۲) قحط میں موت ارزاں ہوتی ہے اور قحط الرجال میں زندگی۔ مرگ انبوہ کا جشن ہو تو قحط، حیات بے مصرف کا ماتم ہو تو قحط الرجال۔ ایک عالم موت کی ناحق زحمت کا، دوسری زندگی کی ناحق تہمت کا۔ ایک سماں حشر کا، دوسرا محض حشرات الارض کا۔ زندگی کے تعاقب میں رہنے والے قحط سے زیادہ قحط الرجال کا غم کھاتے ہیں۔

(۳) نعمت کے مطابق انسان کو ظرف نصیب نہ ہو تو نعمت، لعنت بن جاتی ہے۔ اس کے بعد کچھ اور لوگ آگئے۔ اب طبیعت بحال ہو گئی۔ ہر ایک پر سش حال کرتے وہ بھی اس طور پر نہیں کہ موسم اچھا ہے یا برابری بائیں تو وہ کرنا ہی نہیں جانتے تھے۔

(۲)

سوال نمبر ۴: (الف) نظم کے شاعر کا مختصر تعارف تحریر کیجئے۔

(۸)

(ب) مندرجہ ذیل میں سے کسی ایک نظم کا مرکزی خیال تحریر کیجئے۔

☆ چاند اور تارے ☆ حضرت فاطمہ زہرا کی رخصتی ☆ کتبہ کون لکھے گا؟

-یا-

(۲)

(الف) تشریح کردہ جز کے شاعر اور نظم کا نام تحریر کیجئے۔

(۸)

(ب) مندرجہ ذیل جز کی تشریح کیجئے۔

جانے کیا سپنے دیکھے تھے تو نے اپنے بچپن میں
شام کا پہلا تارا چمکا دیپ سے پہلے آنگن میں
اتنی اونچی من کی اٹریا امبر جس پر جھک جائے
رات کا پلو جھٹک کر ہاتھ میں چاندی بھر لائے

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(۲)

سوال نمبر ۵: (الف) منتخب کردہ سبق کے مصنف کا مختصر تعارف تحریر کیجیے۔

(۸)

(ب) مندرجہ ذیل میں سے کسی ایک سبق کا خلاصہ تحریر کیجیے۔

☆ زمین ☆ چار ماں دار ☆ سویرے جو کل آنکھ میری کھلی

-یا-

مندرجہ ذیل مشقی سوالات میں سے کسی پانچ کے مختصر جوابات تحریر کیجیے:

۱. ولنڈیزی بچے کی کہانی سے کیا سبق ملتا ہے؟

۲. آپ کے خیال میں اصلی خوش طبعی کی پہچان کیا ہے؟

۳. قسط کا مطلب واضح کرتے ہوئے بتائیے کہ قسط الرجال کسے کہتے ہیں؟

۴. مشاعرے کے لیے کیا شرط ہوتی ہے؟

۵. انسان اپنے ماضی کو اس قدر عزیز کیوں رکھتا ہے؟

۶. بے ادبوں سے ادب کیسے سیکھا جاسکتا ہے۔

۷. علامہ اقبال کا کلام عام شاعروں سے کیوں مختلف نظر آتا ہے؟

۸. عدی بن حاتم نے کیسے اسلام قبول کیا؟ واقعہ بیان کیجیے۔

کل نشانات: ۲۰

حصہ ”ج“ (بیانیہ جواب کے سوالات)

(۲۰)

سوال نمبر ۶: درج ذیل میں سے کسی ایک شاعر کے کلام کی دس خصوصیات تحریر کیجیے۔

☆ میر تقی میر ☆ مرزا غالب ☆ علامہ اقبال

(۲۰)

سوال نمبر ۷: درج ذیل میں سے کسی ایک نثر نگار کے طرزِ تحریر کی دس خصوصیات تحریر کیجیے۔

☆ علامہ شبلی نعمانی ☆ رشید احمد صدیقی ☆ محمد حسین آزاد

-یا-

دی گئی عبارت کو پڑھ کر سوالات کے جوابات لکھیے۔

کلاس شروع ہوئی۔ ڈاکٹر صاحب نے لسانیات کا پرچہ شروع کیا۔ نیا مضمون، مشکل اور ادق مگر پہلے ہی دن یہ اندازہ ہو گیا کہ ڈاکٹر صاحب اس جدید علم پر مکمل عبور رکھتے ہیں۔ احمد ہمدانی، سید کریم الدین، اکبر کاظمی ہم درس تھے۔ سب ڈاکٹر صاحب کے تجربہ علمی سے مسحور ہو گئے۔ پھر جب ڈاکٹر صاحب نے مومن کا ایک قصیدہ شروع کیا تو اپنی سطحی لیاقت کا بھرم بھی کھل گیا۔ بڑا ناز تھا کہ فارسی پر بڑا عبور ہے اور "اردو تو خانہ زاد مرے آشیاں کی ہے" مگر وہ نعتیہ قصیدہ:

زبانِ لال کہاں اور مدحِ تاجِ خروس

گرا ہے خاک پہ کیا تاجِ افسرِ کاؤس

ڈاکٹر صاحب نے پڑھا تو معلوم ہوا کہ لیاقت کسے کہتے ہیں اور علم کس چڑیا کا نام ہے۔ عافیت اسی میں نظر آئی کہ بڑبڑ کرنے کے بجائے کلاس میں خاموش بیٹھو۔ زیادہ سے زیادہ استفادے کی کوشش کرتے رہو۔ ادھر دور رہنے میں عافیت کے آثار، ادھر ڈاکٹر صاحب کے لطف و کرم کی یہ ارزانی کہ کلاس کے بعد روزانہ چائے نوشی اور علمی گفتگو۔

۴

۱. عبارت کا عنوان تجویز کیجیے۔

۴

۲. عبارت میں ڈاکٹر صاحب سے کونسی شخصیت مراد ہیں؟

۴

۳. مصنف نے کس بات میں عافیت سمجھی اور کیوں؟

۴

۴. ڈاکٹر صاحب کو نسا مضمون پڑھا رہے تھے اور ان کی تدریس کیسی تھی؟

۴

۵. عبارت کی تلخیص کیجیے۔

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Max. Marks: 10

Time: 15 Minutes

SECTION 'A' (MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 10 part questions and all are to be answered. Each part question carries one mark.
 - Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.

Q. 1: Choose the correct answer for each from the given options:

- The demand for the establishment of Pakistan was based on.**
(a) Two Nation theory (b) Nationalism (c) Hindu Muslim conflict (d) Development of Muslim
- All India Muslim League was established in**
(a) 1905 (b) 1906 (c) 1907 (d) 1908
- The number of castes in Hindu society are**
(a) 2 (b) 3 (c) 4 (d) 8
- Pakistan become a member of the U.N.O in the year.**
(a) 1947 (b) 1948 (c) 1949 (d) 1950
- This art emerged in south Asia after arrival of Muslim.**
(a) Indo Islamic art (b) Gandhara art (c) Cultural art (d) Mughal art
- The real name of Hazrat Mujaddid Alf Sani was**
(a) Shah Abdul Raheem (b) Shah Abdul Kareem (c) Shah Rukun Uddin (d) Shaikh Ahmed Serhindi
- The poetic collection of shah Abdul lateef bhitai is called**
(a) Shah Jo risalo (b) Shah Jo majmuo (c) Shah Jo intekhab (d) Shah Jo poetry
- Pakistan carried out its first nuclear explosion in this year**
(a) 1956 (b) 1960 (c) 1970 (d) 1998
- The highest peak of Pakistan is**
(a) K-2 (b) Takht e Suleiman (c) Trich Meer (d) Nanga Perbat
- Ajrak is the Cultural symbol of _____ Province:**
(a) Sindh (b) Punjab (c) K.P.K (d) Balochistan

Max. Marks: 40

Time: 1 Hour 45 minutes

SECTION 'B' (SHORT-ANSWER QUESTIONS)

(20 Marks)

NOTE: Attempt any Five part questions. All part questions carry equal marks.

- Q2.**
- Explain the two nation theory.
OR Describe the importance of 3rd June plan.
 - State the social impact of Islam on south Asian society.
 - Describe the four main points of Lucknow pact 1916.
OR Describe the importance of khilafat Movement.
 - Write any four points of Jinnah's fourteen points.
OR Describe the importance of Allahabad address of Allama Iqbal.
 - Write the political events which occurred in the following years.
* 1906 * 1919 * 1930 * 1940
OR Describe any two provincial languages of Pakistan.
 - State any four Islamic provisions from 1973 constitution of Pakistan.
OR Write any two salient features of Pakistani culture.
 - Describe the importance of geographical location of Pakistan.
OR Describe the importance of agriculture in the economic development of Pakistan.
 - Describe the role of ombudsman in Pakistan.

SECTION 'C' (DETAILED-ANSWER QUESTIONS)

(20 Marks)

Note: Attempt any Two (02) question from this section.

- In the light of the statement of Quaid -e-Azam Muhammad Ali Jinnah explain the Ideology of Pakistan.
- Describe the important political events that took place from 1940 to 1947.
- What were the initial problems faced by Pakistan just after the establishment.
OR Explain the importance of Urdu language as a symbol of National identity.
- Explain the role of judiciary to safeguard the fundamental rights of citizen.
OR Explain the basic principles of the foreign policy of Pakistan.

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حصہ "الف" (کثیر الانتخابی سوالات)

وقت: ۱۵ منٹ

کل نشانات: ۱۰

نوٹ: (۱) اس حصہ میں ۱۰ جزوی سوالات ہیں۔ تمام جزوی سوالات کے جوابات مطلوب ہیں اور ہر جزو کا نشان ایک ہے۔
(۲) اپنی امتحانی کاپی میں جزوی سوال کو نقل نہ کیجئے۔ سوال اور اس کے جزو کا درست نمبر پرچہ کے مطابق لکھ کر صرف مکمل جواب تحریر کیجئے۔

سوال نمبر (۱): مندرجہ ذیل میں سے ہر ایک کے لئے درست جواب منتخب کیجئے۔

۱. مطالبہ پاکستان کی بنیاد اس بات پر رکھی گئی۔
☆ دو قومی نظریہ ☆ قومیت ☆ ہندو مسلم تنازعہ ☆ مسلم ترقی
۲. آل انڈیا مسلم لیگ کا قیام اس سال عمل میں آیا۔
☆ ۱۹۰۵ ☆ ۱۹۰۶ ☆ ۱۹۰۷ ☆ ۱۹۰۸
۳. ہندو معاشرے کا طبقاتی نظام اتنے حصوں پر مشتمل ہے۔
☆ ۲ ☆ ۳ ☆ ۴ ☆ ۵
۴. پاکستان اقوام متحدہ کا رکن ملک اس سن میں بنا۔
☆ ۱۹۴۷ ☆ ۱۹۴۸ ☆ ۱۹۴۹ ☆ ۱۹۵۰
۵. مسلمانوں کی جنوبی ایشیا میں آمد کے بعد یہ فن پروان چڑھا۔
☆ انڈو اسلامک آرٹ ☆ گندھار آرٹ ☆ ثقافتی آرٹ ☆ مغل آرٹ
۶. حضرت مجدد الف ثانی کا اصل نام ہے۔
☆ شاہ عبدالرحیم ☆ شاہ عبدالکریم ☆ شاہ رکن الدین ☆ شیخ احمد سرہندی
۷. شاہ عبدالطیف بھٹائی کے مجموعہ کلام کو کہا جاتا ہے۔
☆ شاہ جو رسالو ☆ شاہ جو مجموعہ ☆ شاہ جو انتخاب ☆ شاہ جو شعری
۸. پاکستان نے اپنا پہلا ایٹمی دھماکہ اس سن میں کیا۔
☆ ۱۹۵۶ ☆ ۱۹۶۰ ☆ ۱۹۷۰ ☆ ۱۹۹۸
۹. پاکستان کی بلند ترین چوٹی کہلاتی ہے۔
☆ کے ۲ ☆ تخت سلیمان ☆ تریچ میر ☆ مانگا پربت
۱۰. اجرک اس صوبے کی ثقافتی پہچان ہے:
☆ سندھ ☆ پنجاب ☆ خیبر پختونخواہ ☆ بلوچستان

وقت: اگھندہ ۲۵ منٹ

کل نشانات: ۲۰

(نشانات: ۲۰)

حصہ 'ب' (مختصر جواب کے سوالات)

سوال نمبر ۲: مندرجہ ذیل میں سے کسی پانچ جزوی سوالات کے جوابات تحریر کیجئے۔ تمام سوالات کے نشانات مساوی ہیں۔

- i. دو قومی نظریہ سے کیا مراد ہے؟
یا تین جون منصوبہ کی اہمیت تحریر کیجئے۔
- ii. جنوبی ایشیائی معاشرے پر اسلام کے سماجی اثرات تحریر کیجئے۔
- iii. معاہدہ لکھنؤ کے کوئی چار اہم نکات تحریر کیجئے۔
یا تحریک خلافت کی اہمیت تحریر کیجئے۔
- iv. قائد اعظم کے مشہور چودہ نکات میں سے کوئی چار اہم نکات تحریر کیجئے۔
یا ڈاکٹر علامہ محمد اقبال کے خطبہ الہ آباد کی اہمیت تحریر کیجئے۔
- v. دیئے گئے سال میں ہونے والے اہم سیاسی واقعات کی مختصر وضاحت کیجئے۔
یا پاکستان میں بولی جانے والی کوئی دو علاقائی زبان کے بارے میں تحریر کیجئے۔
- vi. ۱۹۷۳ء کے آئین کی چار اسلامی دفعات تحریر کیجئے۔
یا پاکستانی ثقافت کی دو نمایاں خصوصیات تحریر کیجئے۔
- vii. پاکستان کے جغرافیائی محل وقوع کی اہمیت تحریر کیجئے۔
یا پاکستان کی معاشی ترقی میں زراعت کی اہمیت تحریر کیجئے۔
- viii. پاکستان میں محتسب اعلیٰ کے کردار کی وضاحت کیجئے۔

(نشانات: ۲۰)

حصہ 'ج' (تفصیلی جواب کے سوالات)

نوٹ: مندرجہ ذیل میں سے کسی دو سوالات کے جوابات تحریر کیجئے۔ تمام سوالات کے نشانات مساوی ہیں۔

- سوال نمبر ۳: قائد اعظم محمد علی جناح کے ارشادات کی روشنی میں نظریہ پاکستان کی وضاحت کیجئے۔
- سوال نمبر ۴: ۱۹۴۰ء سے لے کر ۱۹۴۷ء تک کے اہم سیاسی واقعات تحریر کیجئے۔
- سوال نمبر ۵: اپنے قیام کے فوراً بعد پاکستان کو کن ابتدائی مسائل کا سامنا کرنا پڑا تفصیل کے ساتھ تحریر کیجئے۔
یا اردو زبان کی اہمیت بہ طور قومی شناخت کی علامت تحریر کیجئے۔
- سوال نمبر ۶: شہری کے بنیادی حقوق کے تحفظ میں عدلیہ کے کردار کی وضاحت کیجئے۔
یا پاکستان کی خارجہ پالیسی کے بنیادی اصول تحریر کیجئے۔

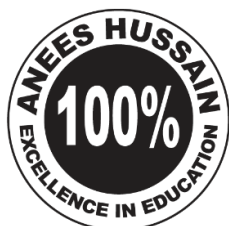
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PHYSICS PAPER-H.S.C. PART-II (PRE-ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 17

Time: 20 Minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

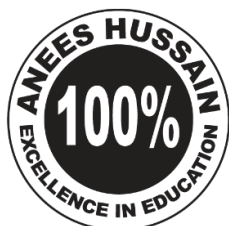
- NOTE:**
- This section consists of 17 part questions and all are to be answered. Each part question carries one mark.
 - Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.
 - The use of scientific calculator is allowed.

Q. 1: Select the correct answer for each from the given options:

- Number of photoelectrons emitted from a metal depends upon:**
 - Frequency of light
 - Wavelength of light
 - Intensity of light
 - Speed of light
- The temperature at which all gases become liquid is _____.**
 - 273K
 - 273K
 - Absolute zero
 - None of these
- Which device is not used in a diesel engine**
 - Outlet Valve
 - Sparking Plug
 - Piston
 - Injector
- The process violates the 2nd law of thermodynamics is:**
 - Refrigerator cooling.
 - Gases mixing
 - Heat engine working.
 - Heat flowing from cold to hot.
- A charged particle enters from the left on the plane of paper, perpendicularly on the vertically downward magnetic field. The direction of force on it would be:**
 - Perpendicularly on the plane of paper
 - Along the plane of paper
 - Inward on the plane of paper
 - outward on the plane of paper
- Purpose of step-down transformer is to make the:**
 - Input current same as output current
 - Output current higher than input current
 - Output voltage lower than input voltage
 - Output current lower than input current
- The frequency of standard household alternating current in Pakistan is:**
 - 50 Hz
 - 60 Hz
 - 100 Hz
 - 120 Hz
- A type of a circuit characterized by equal values of resistance and reactance is**
 - Resistive
 - Inductive
 - Capacitive
 - Resonant
- The reciprocal of the bulk modulus is called**
 - Compressibility
 - Volume stress
 - Modulus of rigidity
 - Volume strain
- Rubber has less elastic modulus than steel because for a given load the strain produced in rubber as compared to that produced in steel is**
 - Less
 - More
 - Equal
 - None of them
- In a circuit with a 2-input OR gate, the status of the lamp if either switch is closed**
 - OFF
 - ON
 - Blinking
 - Flickering
- What is the speed of a proton if its mass is twice its rest mass?**
 - 0.50c
 - 0.68c
 - 0.73c
 - 0.87c
- Minimum energy required for pair production is:**
 - 939 MeV
 - 942 MeV
 - 1.02 MeV
 - 0.511 MeV
- If the frequency of light causing photo electric emission is doubled, the kinetic energy of photo electrons will be:**
 - The same
 - Zero
 - Doubled
 - Halved
- Existence of photon was confirmed by:**
 - Compton
 - De-Broglie
 - Einstein
 - Max plank
- Population inversion occurs in:**
 - Active medium
 - Passive medium
 - Gaseous medium
 - Vapor medium
- Doubling the voltage of an X-ray tube:**
 - Halves the intensity
 - Keeps the intensity unchanged
 - Doubles the intensity
 - Quadruples the intensity

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COMPREHENSIVE EXAMINATION 2025-2026

PHYSICS PAPER-H.S.C. PART-II (PRE-ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 68

Time: 2 hours 40 Minutes

SECTION 'B'

(36 Marks)

(SHORT-ANSWER QUESTIONS)

NOTE: Answer any **Nine** part questions from this section. All questions carry equal marks. Draw diagram where necessary. Use of Scientific calculator is allowed. All notations are used in their usual meanings.

Q. 2:

i. A coil stores energy in form of electric potential energy of 0.2J when it carries a current of 2A. Calculate the inductance of coil.

OR In an RLC circuit, the resistance is 50 ohms, the inductance is 0.1 H, and the capacitance is 50 μ F. Calculate the resonance frequency?

ii. Prove the following relation. (Any Two)

(i) $\overline{K.E} \propto T$ (ii) $F = BIL \sin \theta$ (iii) $R_x = \frac{V}{I_g} - R_g$

iii. How fast would a rocket have to go relative to an observer for its length to be contracted to 99% of its length at rest?

OR A transformer has 1000 turns in its primary coil and 200 turns in its secondary coil. If the primary voltage is 120 V, calculate the secondary voltage for a step-down transformer.

iv. Using First law of thermodynamic in two isotherms of an ideal gas at different temperature, Show that $C_p - C_v = R$.

OR What is superconductor? Discuss its application in MRI.

OR Explain the force extension graph (stress and strain curve).

v. A Ge diode has a drop voltage of 0.4Volt when 12mA current flow through it. If the same 470 Ω resistor is used what battery voltage is needed

OR A 50.0 g sample of carbon is taken from the pelvis bone of a skeleton and is found to have a carbon-14 decay rate of 200.0decays/min. It is known that carbon from a living organism has a decay rate of 15.0 decays/min-g and that C-14 has a half-life of 5730 years. Find the age of the skeleton.

vi. A solenoid has length $L = 1.23\text{m}$ and inner diameter $d = 3.55\text{cm}$ and it carries a current $I = 5.57\text{A}$. it consists of five close-packed layers, each with 850 turns along length. what is B at its center?

($\mu_0 = 4\pi \times 10^{-7}$ web/A.m.)

OR An AC circuit has a resistance of 40 Ω , an inductive reactance of 30 ohms, and a capacitive reactance of 20 ohms. Draw the impedance triangle and calculate the total impedance?

vii. State Faraday's law of electromagnetic induction. Explain the phenomenon of mutual induction and derive an expression for mutual inductance of two coils, also give its unit.

OR What is the principle of laser? Explain the construction and working of He-Ne Laser.

viii. Explain the process of pair production briefly

OR Explain the behavior of an RLC series circuit in terms of impedance, resonance, and phase angle.

ix. Temperature difference between the surface water and bottom water in Manchester Lake might be 5°C. Assuming the surface water to be at 20°C. What highest efficiency a steam engine could have if it operates between these two temperatures?

OR A heat engine performing 400J of work in each cycle has an efficiency of 25%. How much heat is absorbed and rejected in each cycle.

x. Calculate the root mean square speed of hydrogen molecules at 0°C and 1.0 atm pressure. Assuming hydrogen to be an ideal gas. The density of hydrogen is $8.99 \times 10^{-2} \text{ kg/m}^3$.

OR Cut-off frequency for the photoelectric effect in some materials is $8 \times 10^{13} \text{ Hz}$. When the incident light has a frequency of $1.2 \times 10^{14} \text{ Hz}$, the stopping potential is measured as 0.16 V. Estimate a value of Planck's constant from these data and determine the percentage error of your estimation.

xi. The pole of a horseshoe magnet measures 8cm x 3.2cm, the magnetic flux density between the magnet pole is 80mT outside of the magnet the magnetic flux density is zero. Calculate the magnetic flux density between the poles of a magnet.

OR What is the wavelength of light for the least energetic photon emitted in the Balmer series of the hydrogen atom?

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According to the syllabus of the Board of Intermediate Education, Karachi



- xii. Give the Kelvin's and Clausius statement for the second law of thermodynamic and prove that they are equivalent.
OR What is half-life of a radioactive element? Explain how half-life of radioactive element can be determined.
- xiii. A galvanometer whose resistance is 50Ω deflects full scale for potential difference 100 mV across its terminals. How can it be converted into a voltmeter of 50V range?
OR A farmer making juice fills a glass bottle to the brim and caps it tightly. The juice expands more than the glass when it warms up in such a way that the volume increases by 0.2% (i.e., $=2 \times 10^{-3}V$) relative to the space available. Calculate the normal force exerted by the juice per square centimeter if its bulk modulus is $1.8 \times 10^9 \text{ N/m}^2$. Assuming that the bottle does not break.

SECTION 'C'

(32 Marks)

(DETAILED-ANSWER QUESTIONS)

NOTE: Answer any Two questions from this section. All questions carry equal marks. Draw diagrams where necessary.

Q. 3:

- (a) What is generator? Describe the working of an AC generator and derive the equation for the induced e.m.f?

OR Based on K.M.T of gases, derive an expression for pressure equation and show that $P = \frac{1}{3} \rho \bar{V}^2$.

- (b) State and explain the First law of thermodynamics. Based on the First Law of thermodynamics, explain **any two** of the following: (i) Isobaric process (ii) Isothermal process (iii) Adiabatic process

OR State and explain the law which governs the determination of magnetic field of different geometrical shaped conductors? How it can be applied to determine the flux density of uniform length cylindrical shape conductor

Q. 4:

- (a) Give the construction and working of a moving coil Galvanometer. Show that current is directly proportional to the angle of twist. On what factors does the sensitivity of Galvanometer depend?

OR What is Photoelectric Effect? What remarkable experimental results are obtained about the photoelectric emission? Give Einstein's explanation of the photoelectric effect based on quantum theory of radiation.

- (b) What is mass spectrograph? Describe its principle, working and derive its relevant mathematical expression

OR Write down the important postulate of Bohr's atomic model derive the relation for the radius of n'th orbit of hydrogen atom and also show that the radius of hydrogen atom is in the ratio of 1:4:9:16.....

Q. 5:

- (a) What is a Carnot engine? Describe its working cycle. Prove that the efficiency of a Carnot engine is less than 100 % above absolute temperature of the sink

OR Synthesize hysteresis loop for relation between magnetic field strength and magnetizing current

- (b) Describe the operating principle of Geiger-Muller counter how does it detect and quantify ionizing radiations

OR Describe the experiment for the determination of charge to mass (e/m) ratio of an electron. Derive relevant mathematical expression?

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MATHEMATICS PAPER-HSC PART-II (GENERAL SCIENCE)

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Max. Marks: 20

Time: 20 Minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 20 part questions and all are to be answered. Each part question carries one mark.
 - This section "A" of Multiple Choice Question (MCQS) must be solved on the MCQs/OMR sheet enclosed on the last page provided E-Sheet & OMR (Examination Copy)
 - The correct answer bubble must be filled on MCQs / OMR sheet 1) (A) (B) (C) (D)
 - Use only blue / black ball point on MCQs/OMR sheet.
 - Avoid pencil / White-o-open/ correction pen/ink remover and gel pen to solve the question on MCQs/ OMR sheet.
 - All notations are used in their usual meanings. The use of scientific Calculator is allowed.

Q. 1: Choose the correct answer for each from the given options:

1. This Maple command $> \text{Matrix}(2)$; returns.

- A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ B) $\begin{bmatrix} 2 & 2 \\ 2 & 2 \end{bmatrix}$ C) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ D) $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$

2. $> \text{plot}(\sin(x), x=0..\pi)$ means.

- A) plot a graph of $\sin x$ on the interval $[0, \pi]$ B) plot a graph of $\sin x$ in $[0, 2\pi]$
C) plot $\sin x$ w.r.t degree measures D) None of these

3. $[3, 5] - (3, 5) =$ _____

- A) (3, 5) B) (0, 0) C) {3, 5} D) [3, 5]

4. $\lim_{x \rightarrow 0} x e^{-\frac{1}{x}} =$ _____

- A) 0 B) 1 C) ∞ D) $-\infty$

5. The derivative of $\tan x$ w.r.t $\cot x$ is

- A) $\sec^2 x \operatorname{cosec}^2 x$ B) $-\tan^2 x$ C) $\frac{\sec^2 x}{\operatorname{cosec}^2 x}$ D) $\cot^2 x$

6. Let (f) is the function with rule $f(x) = \ln 2x$ and $(x > 0)$ if g is inverse of f then $g'(x) =$

- A) $\frac{2}{x}$ B) $\frac{1}{2x}$ C) $\frac{2}{e^x}$ D) $\frac{e^x}{2}$

7. A function $f(x)$ is said to be a decreasing function when $x_1 < x_2$ and

- A) $f(x_1) < f(x_2)$ B) $f(x_1) > f(x_2)$ C) $f(x_1) \geq f(x_2)$ D) $f(x_1) \leq f(x_2)$

8. 3rd order derivative of 2^x is

- A) $(\ln 3)^2 e^{x \ln 2}$ B) $(\ln 2)^3 e^{x \ln 3}$ C) $(\ln 2)^3 e^{x \ln 2}$ D) None of these

9. The domain of vector function $\vec{r}(t) = t^3 \hat{i} + \frac{1}{t-1} \hat{j} + \ln(t-2) \hat{k}$

- A) $\{t > 2, t \in \mathbb{R}\}$ B) $t < 2, t \in \mathbb{R}\}$ C) $t > 0, t \in \mathbb{R}\}$ D) $t > 1, t \in \mathbb{R}\}$

10. $\int \frac{e^{x+3 \ln x}}{x^3} dx =$ _____

- A) $\frac{1}{3} e^{x+3 \ln x} + c$ B) $e^x + c$ C) $e^{x+3 \ln x}$ D) $3 \ln x + c$

11. $\int_2^2 (x^3 + 3x^2 - 5x) dx =$ _____

- A) $12 - 10\sqrt{2}$ B) $24 - 20\sqrt{2}$ C) $20\sqrt{2}$ D) 0

12. Distance of the point (-6, -7) from y-axis is

- A) 6 B) $\sqrt{34}$ C) -6 D) -7

13. The point of intersection of points of the line $ax^2 + 2hxy + by^2 = 0$

- A) (a, b) B) (a, 0) C) (0, 0) D) (0, b)

14. For what value of K the line $y = 2x + 3$ is tangent to $x^2 + y^2 = k^2$

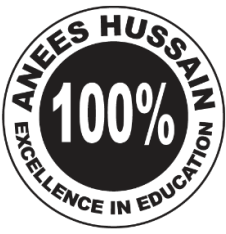
- A) $\pm \frac{5}{\sqrt{2}}$ B) $\pm \frac{3}{\sqrt{5}}$ C) $\pm \sqrt{\frac{3}{5}}$ D) $\pm \frac{\sqrt{5}}{3}$

15. Auxiliary circle of ellipse $\frac{x^2}{6} + \frac{y^2}{5} = 1$ is

- A) $x^2 + y^2 = 36$ B) $x^2 + y^2 = 25$ C) $x^2 + y^2 = 5$ D) $x^2 + y^2 = 6$

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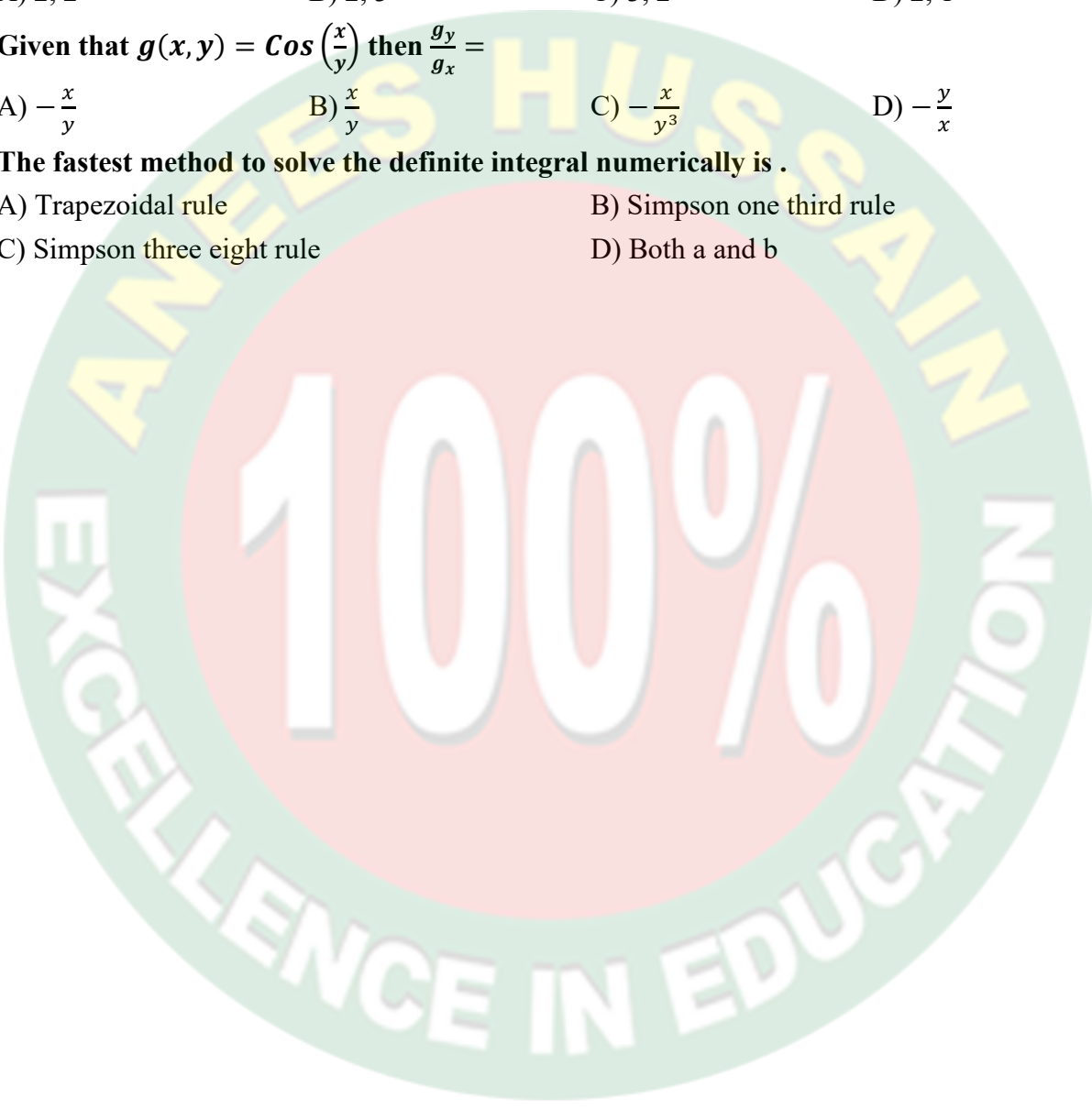
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16. The eccentricity of $y^2 - x^2 = 4$ is
A) 0 B) 1 C) $\frac{1}{2}$ D) $\sqrt{2}$
17. The general solution of the differential equation $9y \frac{dy}{dx} + 4x = 0$ is
A) $4x^2 + 9y^2 = c$ B) $\frac{x^2}{9} - \frac{y^2}{4} = c$ C) $4x^2 + y^2 = c$ D) $9x^2 - 4y^2 = 0$
18. The order and degree of differential equation $\frac{d^2y}{dx^2} = \sqrt{1 + \left(\frac{dy}{dx}\right)^3}$ is
A) 2, 2 B) 2, 3 C) 3, 2 D) 2, 1
19. Given that $g(x, y) = \cos\left(\frac{x}{y}\right)$ then $\frac{g_y}{g_x} =$
A) $-\frac{x}{y}$ B) $\frac{x}{y}$ C) $-\frac{x}{y^3}$ D) $-\frac{y}{x}$
20. The fastest method to solve the definite integral numerically is .
A) Trapezoidal rule B) Simpson one third rule
C) Simpson three eight rule D) Both a and b



NORTH NAZIMABAD CAMPUS I	NORTH NAZIMABAD CAMPUS II	GULSHAN	NORTH KARACHI	BAHADURABAD	GULISTAN-E-JOHAR	MAYMAR	MALIR
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EXCELLENCE IN EDUCATION SINCE 1989

COMPREHENSIVE EXAMINATION 2025-2026

MATHEMATICS PAPER-HSC PART-II (GENERAL SCIENCE)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 80

Time: 2 hours 40 Minutes

INSTRUCTIONS: i) SECTION 'B' and SECTION 'C' must be solved on provided E-Sheet (Examination Copy).
ii) Student are instructed to write their answers on page allocated for the respective question number.
iii) All notations are used in their usual meanings. The use of scientific Calculator is allowed.

SECTION 'B'

(Marks: 40)

(SHORT-ANSWER QUESTIONS)

NOTE: Answer All part questions from this section. All questions carry equal marks.

Q.2:

i) If $f(x) = \begin{cases} \sqrt{2x+5} - \sqrt{x+7} & x \neq 2 \\ k & x = 2 \end{cases}$ Find the value of k so that f is continuous at $x = 2$

OR Find the value of m and n so that $f(x) = \begin{cases} mx & \text{if } x < 3 \\ n & \text{if } x = 3 \\ -2x + 9 & \text{if } x > 3 \end{cases}$ is continuous at $x = 3$.

ii) Find derivatives by using 1st principle method of $f(x) = (6x + 7)^{\frac{5}{2}}$

OR $f(x) = \sec\sqrt{x}$ OR $f(x) = \sqrt{\tan x}$ OR $f(x) = \sin 4x$ OR $f(x) = \cos^{-1} x$

iii) Show that function $\vec{R}(t) = \sin^2 t \hat{i} + \tan t \hat{j} + \frac{1}{t} \hat{k}$ is continuous at $t = \frac{\pi}{4}$

OR A particle move so that its position as a function of time is given by $\vec{r}(t) = \hat{i} + 4t^2 \hat{j} + t \hat{k}$ write expression for its a) velocity b) acceleration as function of time.

iv) By using Base properties of definite integral find:

$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^2 x \cos^2 x dx$ OR $\int_{-1}^1 \sin^{-1} x dx$ OR $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \tan^2 x dx$

v) Attempt either part (a) or part (b):

a) Evaluate $\int \cos 3x \cos 5x dx$ OR $\int \sec^4 x \sqrt{\tan x} dx$ OR $\int \frac{e^{2x}}{e^x + e^{-x}} dx$

b) Use Newton Raphson method to find a real root of $f(x) = 2x^3 - 2x - 5$ upto two iterations with initial guess $x_0 = 2$

vi) Attempt either part (a) or part (b):

a) Find the area above the x-axis under the curve $y = \cos^4 x$ $x = 0, x = \frac{\pi}{2}$

OR $x^2 + y^2 = 36$ $x = -1, x = 1$ OR $y = 4x^3 + 3x^2 + 2x + 1$ $x = 0, x = 2$

b) Find the Orthogonal trajectory of the curve $y^2 = 4ax$ OR $y = ax^2$

vii) Attempt either part (a) or part (b):

a) The x-intercept of a line is the reciprocal of its y-intercept and the line passes through (2, -1) find its equation

OR If a point P(K, 7) divides the line segment joining A(8, 9) and B(1, 2) in a ratio $m : n$ then find $m : n$ and also find K.

b) Find the equation of the parabola whose vertex is at (3, 4) and equation of directrix is $x = 5$

OR Find the equation of the parabola whose vertex is (2, 3) and focus is (2, 7).

viii) Attempt either part (a) or part (b):

a) The gradient of one of the lines of $ax^2 + 2hxy + by^2 = 0$ is twice that of the other show that $8h^2 = 9ab$

OR For what value of k will the three lines $y = 3x - 1$, $2y = x + 3$ and $3y = kx + 4$ be concurrent.

b) Find the equation of the circle passing through (-3, -4) and is concentric with the circle whose equation is $x^2 + y^2 - 6x + 8y - 24 = 0$

OR Find the equation of circle passing through the origin and having intercepts 6 and 8.

ix) Attempt either part (a) or part (b):

a) Find the equation of the ellipse with centre at origin and foci at $(\pm 3, 0)$ and vertices at $(\pm 5, 0)$.

OR Find the eccentricity of ellipse if its axes are 32 and 24 units.

b) Show that circle $x^2 + y^2 - 6x - y + 10 = 0$ and $x^2 + y^2 = 2$ touch each other and find the point of contact.

OR Find the condition that the line $3x + 4y = c$ may touch the circle $x^2 + y^2 = 8x$

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According to the syllabus of the Board of Intermediate Education, Karachi



- x) Attempt either part (a) or part (b):
- a) Find 1st three non zero terms of the Maclaurin's series for $f(x) = \ln(1 + x)$
OR Find 1st four terms of Taylor's series of the function $f(x) = \sin x$ centered at $a = \frac{\pi}{4}$
- b) Find f_x and f_y if $f(x, y) = \frac{1}{2} \ln(x^2 + y^2)$
OR Verify Euler's theorem for $f(x, y) = xy + y^2$
OR If $u = x^2(y - x) + y^2(x - y)$ show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = -2(x - y)^2$

SECTION 'C'

(Marks: 40)

(DETAILED-ANSWER QUESTIONS)

Note: Answer all questions from this section. All part questions carry equal marks.

Q3. Evaluate any two of the following :

- a) $\int (\ln x)^2 dx$ **OR** $\int 2x \sec^{-1} x$ **OR** $\int e^{ax} \sin bx dx$
b) $\int \frac{\sec^2 x}{(1 + \tan x)(2 + \tan x)} dx$ **OR** $\int \frac{(2x+1)}{(x-3)(x^2+1)} dx$ **OR** $\int \frac{5 \cos x}{6 + \sin x - \sin^2 x} dx$
c) $\int_{-6}^{-2\sqrt{3}} \frac{dx}{x\sqrt{x^2-9}}$ **OR** $\int_0^{2\sqrt{3}} \frac{x^3 dx}{\sqrt{x^2+4}}$ **OR** $\int \frac{dx}{(4+x^2)^{\frac{3}{2}}}$

Q4. Attempt either part (a) or part (b):

a) Solve the differential equation:

$(2x + y + 1)dx + (2x + y - 1)dy = 0$ **OR** $(x^2 + 3y^2)dx - 2xydy = 0$ **OR** $\frac{dy}{dx} = \frac{x+y+1}{x-y}$

b) If the population of a certain town doubles in 10 years in how many years will it triple under the assumptions that the rate of increase in population is proportional to the number of inhabitants

OR When the temperature of air is 290k a certain substance cools from 400k to 350k in 20 minutes

Find i) the temperature after 40 minutes ii) after how much time temperature is 300 k

Q5. Attempt either part (a) or part (b):

a) Evaluate any two of the following:

$\lim_{x \rightarrow e} \frac{\ln x - 1}{x - e}$ **OR** $\lim_{x \rightarrow e} \frac{3e^{-5x} - 5e^{-2x} + 2}{x}$ **OR** $\lim_{x \rightarrow 0} \frac{1 - \cos mx}{1 - \cos nx}$ **OR** $\lim_{x \rightarrow 1} \frac{\frac{1}{\sqrt{x}} - 1}{1 - x}$

b) Evaluate $\frac{dy}{dx}$ of any two of the following:

i) $x^y \cdot y^x = 1$ ii) $y = \tan^{-1}\left(\frac{\sin 2x}{1 + \cos 2x}\right)$ iii) $\ln[\cosh^{-1} x] + \sinh^{-1} y = c$

iv) $y = \ln[\tanh(x^2 + 2x + 1)]$ v) $x = 4(t - \sin t)$ and $y = 4(1 + \cos t)$

Q6. Attempt either part (a) or part (b):

a) Find the maximum and minimum values of $f(x) = e^x \sin x$ **OR** $f(x) = x^3 - 9x^2 + 15x + 3$

OR Find a right angled triangle of maximum area with hypotenuse of length h.

b) Evaluate $\int_0^1 e^x dx$ by Simpsons $\frac{1}{3}$ rule with n = 6

OR Evaluate $\int_0^{\frac{\pi}{2}} \sin x dx$ with 7 intervals by using Trapezoidal rule.

Q7. Attempt either part (a) or part (b):

a) Find the equation of a line through the intersection of the lines $3x - 4y + 1 = 0$, $5x + y - 1 = 0$ and cutting off equal intercepts from the axes.

OR If A(2, 5), B(3, 7) and C(0, 8) are the vertices of triangle then find the equation of right bisectors of side \overline{AC}

OR The vertices A, B and C of a triangle are (2, 1), (5, 2) and (3, 4) respectively, find the coordinates of the Circum centre and also the radius of the Circum circle of the triangle.

b) Find the centre, Foci, vertices and latus rectum of the curve $25x^2 - 150x - 9y^2 + 72y + 306 = 0$

OR Find the equation of the circle passing through the focus of the parabola $y^2 + 8x = 0$ and foci of ellipse $25x^2 + 16y^2 = 400$.

OR Find the equation of the hyperbola with centre (1, 2), Focus(2, 3) and eccentricity is $\sqrt{3}$ where as transverse axis is parallel to x-axis.

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COMPREHENSIVE EXAMINATION 2025-2026

MATHEMATICS PAPER-HSC PART-II (PRE-ENGINEERING)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 20

Time: 20 Minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 20 part questions and all are to be answered. Each part question carries one mark.
 - Do not copy the part questions in your answerscript. Write only the answer in full against the proper number of the question and its part.
 - All notations are used in their usual meanings. The use of scientific Calculator is allowed.

Q. 1: Choose the correct answer for each from the given options:

1. This Maple command \gt Matrix(2); returns.

- a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ b) $\begin{bmatrix} 2 & 2 \\ 2 & 2 \end{bmatrix}$ c) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ d) $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$

2. \gt plot (sin(x), x=0..pi)i means.

- a) plot a graph of sinx on the interval $[0, \pi]$ b) plot a graph of sinx in $[0, 2\pi]$
c) plot Sinx w.r.t degree measures d) None of these

3. $[3, 5] - (3, 5) =$ _____

- a) (3, 5) b) (0, 0) c) {3, 5} d) [3, 5]

4. $\lim_{x \rightarrow 0} e^{-\frac{1}{x}} =$ _____

- a) 0 b) 1 c) ∞ d) $-\infty$

5. The derivative of tanx w.r.t Cotx is

- a) $\sec^2 x \operatorname{cosec}^2 x$ b) $-\tan^2 x$ c) $\frac{\sec^2 x}{\operatorname{cosec}^2 x}$ d) $\cot^2 x$

6. Let (f) is the function with rule $f(x) = \ln 2x$ and $(x > 0)$ if g is inverse of f then $g'(x) =$

- a) $\frac{2}{x}$ b) $\frac{1}{2x}$ c) $\frac{2}{e^x}$ d) $\frac{e^x}{2}$

7. A function $f(x)$ is said to be a decreasing function when $x_1 < x_2$ and

- a) $f(x_1) < f(x_2)$ b) $f(x_1) > f(x_2)$ c) $f(x_1) \geq f(x_2)$ d) $f(x_1) \leq f(x_2)$

8. 3rd order derivative of 2^x is

- a) $(\ln 3)^2 e^{x \ln 2}$ b) $(\ln 2)^3 e^{x \ln 3}$ c) $(\ln 2)^3 e^{x \ln 2}$ d) None of these

9. The domain of vector function $\vec{r}(t) = t^3 \hat{i} + \frac{1}{t-1} \hat{j} + \ln(t-2) \hat{k}$

- a) $\{t > 2, t \in \mathbb{R}\}$ b) $\{t < 2, t \in \mathbb{R}\}$ c) $\{t > 0, t \in \mathbb{R}\}$ d) $\{t > 1, t \in \mathbb{R}\}$

10. $\int \frac{e^{x+3 \ln x}}{x^3} dx =$ _____

- a) $\frac{1}{3} e^{x+3 \ln x} + c$ b) $e^x + c$ c) $e^{x+3 \ln x}$ d) $3 \ln x + c$

11. $\int_2^2 (x^3 + 3x^2 - 5x) dx =$ _____

- a) $12 - 10\sqrt{2}$ b) $24 - 20\sqrt{2}$ c) $20\sqrt{2}$ d) 0

12. Distance of the point (-6, -7) from y-axis is

- a) 6 b) $\sqrt{34}$ c) -6 d) -7

13. The point of intersection of points of the line $ax^2 + 2hxy + by^2 = 0$

- a) (a, b) b) (a, 0) c) (0, 0) d) (0, b)

14. For what value of K the line $y = 2x + 3$ is tangent to $x^2 + y^2 = k^2$

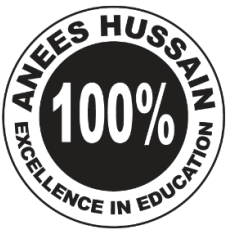
- a) $\pm \frac{5}{\sqrt{2}}$ b) $\pm \frac{3}{\sqrt{5}}$ c) $\pm \frac{\sqrt{3}}{5}$ d) $\pm \frac{\sqrt{5}}{3}$

15. Auxiliary circle of ellipse $\frac{x^2}{6} + \frac{y^2}{5} = 1$ is

- a) $x^2 + y^2 = 36$ b) $x^2 + y^2 = 25$ c) $x^2 + y^2 = 5$ d) $x^2 + y^2 = 6$

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MATHEMATICS PAPER-HSC PART-II (PRE-ENGINEERING)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 80

Time: 2 hours 40 Minutes

INSTRUCTIONS: The use of scientific calculator is allowed. All notations are used in their usual meanings.

SECTION 'B'

(Marks: 40)

(SHORT-ANSWER QUESTIONS)

Note: Attempt any ten questions from this section. All questions carry equal marks.

- Q.2:
- i) Find the limit of any one :
 $\lim x \rightarrow e \frac{\ln x - 1}{x - e}$ OR $\lim x \rightarrow 0 \frac{3e^{-5x} - 5e^{-2x} + 2}{x}$ OR $\lim x \rightarrow 0 \frac{1 - \cos mx}{1 - \cos nx}$
 OR If $f(x) = x + 2$ and $g(x) = 3x - 2$ are two functions then show that $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$
- ii) If $f(x) = \begin{cases} \frac{\sqrt{2x+5} - \sqrt{x+7}}{(x-2)} & x \neq 2 \\ k & x = 2 \end{cases}$ Find the value of k so that f is continuous at $x = 2$
 OR Find the value of m and n so that $f(x) = \begin{cases} mx & \text{if } x < 3 \\ n & \text{if } x = 3 \\ -2x + 9 & \text{if } x > 3 \end{cases}$ is continuous at $x = 3$.
- iii) Find derivatives by using 1st principle method of $f(x) = (6x + 7)^{\frac{5}{2}}$
 OR $f(x) = \sec \sqrt{x}$ OR $f(x) = \sqrt{\tan x}$ OR $f(x) = \sin 4x$ OR $f(x) = \cos^{-1} x$
- iv) Find 1st three non-zero terms of the Maclaurin's series for $f(x) = \ln(1 + x)$
 OR Find 1st four terms of Taylor's series of the function $f(x) = \sin x$ centered at $a = \frac{\pi}{4}$
- v) Show that function $\vec{R}(t) = \sin^2 t \hat{i} + \tan t \hat{j} + \frac{1}{t} \hat{k}$ is continuous at $t = \frac{\pi}{4}$
 OR A particle move so that its position as a function of time is given by $\vec{r}(t) = \hat{i} + 4t^2 \hat{j} + t \hat{k}$ write expression for its a) velocity b) acceleration as function of time.
- vi) Find the area above the x-axis under the curve $y = \cos^4 x$ $x = 0, x = \frac{\pi}{2}$
 OR $x^2 + y^2 = 36$ $x = -1, x = 1$ OR $y = 4x^3 + 3x^2 + 2x + 1$ $x = 0, x = 2$
- vii) By using basic properties of definite integrals find $\int_{\frac{\pi}{2}}^{\pi} \sin^2 x \cos^2 x dx$ OR $\int_{-1}^1 \sin^{-1} x dx$
 OR Evaluate any one:
 i) $\int_0^4 \frac{dx}{\sqrt{2+x} + \sqrt{x}}$ ii) $\int \sec^4 x \sqrt{\tan x} dx$ iii) $\int \frac{e^{2x}}{e^x + e^{-x}} dx$
- viii) A (2,7) and B(-4, -8) are coordinates of the line segment AB, there are two points that trisect the segment AB. Find the points of trisection.
 OR The x-intercept of a line is the reciprocal of its y-intercept and the line passes through (2, -1) find its equation.
- ix) The gradient of one of the lines of $ax^2 + 2hxy + by^2 = 0$ is twice that of the other show that $8h^2 = 9ab$
 OR For what value of k will the three lines $y = 3x - 1$, $2y = x + 3$ and $3y = kx + 4$ be concurrent.
- x) Find the equation of the circle passing through (-3, -4) and is concentric with the circle whose equation is $x^2 + y^2 - 6x + 8y - 24 = 0$
 OR Show that circle $x^2 + y^2 - 6x - y + 10 = 0$ and $x^2 + y^2 = 2$ touch each other and find the point of contact.
 OR Find the equation of circle passing through the origin and having intercepts 6 and 8.
- xi) Find the equation of the circle whose centre is at the focus and whose diameter is the latus rectum of the parabola $x^2 = 12y$.
 OR Find the equation of the parabola whose vertex is at (3, 4) and equation of directrix is $x = 5$
- xii) Find the equation of the ellipse with centre at origin and foci at $(\pm 3, 0)$ and vertices at $(\pm 5, 0)$.
 OR Find the eccentricity of ellipse if its axes are 32 and 24 units.
- xiii) Find the orthogonal trajectory of the curve $y = ax^2$ OR $y^2 = 4ax$
 OR Show that $y = Ae^{2x} + Be^{3x}$ is the general solution of $\frac{d^2y}{dx^2} - 5 \frac{dy}{dx} + 6y = 0$
- xiv) If $u = x^2(y - x) + y^2(x - y)$ show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = -2(x - y)^2$
 OR Find f_x and f_y if $f(x, y) = \frac{1}{2} \ln(x^2 + y^2)$

NORTH NAZIMABAD CAMPUS I	NORTH NAZIMABAD CAMPUS II	GULSHAN	NORTH KARACHI	BAHADURABAD	GULISTAN-E-JOHAR	MAYMAR	MALIR
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MATHEMATICS PAPER-HSC PART-II (PRE-ENGINEERING)

According to the syllabus of the Board of Intermediate Education, Karachi



(Marks: 40)

SECTION 'C'

(DETAILED-ANSWER QUESTIONS)

Note: Attempt any five questions from this section. All questions carry equal marks.

Marks: 40

Q3. Evaluate any two of the following integral:

a) $\int (\ln x)^2 dx$ OR $\int 2x \sec^{-1} x$ OR $\int e^{ax} \sin bx dx$

b) $\int \frac{\sec^2 x}{(1+\tan x)(2+\tan x)} dx$ OR $\int \frac{(2x+1)}{(x-3)(x^2+1)} dx$ OR $\int \frac{5 \cos x}{6+\sin x - \sin^2 x} dx$

c) $\int_{-6}^{-2\sqrt{3}} \frac{dx}{x\sqrt{x^2-9}}$ OR $\int_0^{2\sqrt{3}} \frac{x^3 dx}{\sqrt{x^2+4}}$ OR $\int \frac{dx}{(4+x^2)^{\frac{3}{2}}}$

Q4. Evaluate $\frac{dy}{dx}$ of any two of the following:

i) $x^y \cdot y^x = 1$ ii) $y = \tan^{-1}\left(\frac{\sin 2x}{1+\cos 2x}\right)$ iii) $\ln[\cosh^{-1} x] + \sinh^{-1} y = c$

iv) $y = \ln[\tanh(x^2 + 2x + 1)]$ v) $x = 4(t - \sin t)$ and $y = 4(1 + \cos t)$

Q5. Find the maximum and minimum values of $f(x) = e^x \sin x$ OR $f(x) = x^3 - 9x^2 + 15x + 3$
OR Find a right angled triangle of maximum area with hypotenuse of length h.

Q6. Find the equation of a line through the intersection of the lines $3x - 4y + 1 = 0$, $5x + y - 1 = 0$ and cutting off equal intercepts from the axes.

OR If A(2, 5), B(3, 7) and C(0, 8) are the vertices of triangle then find the equation of right bisectors of side \overline{AC}

OR The vertices A, B and C of a triangle are (2, 1), (5, 2) and (3, 4) respectively, find the coordinates of the Circum centre and also the radius of the Circum circle of the triangle.

Q7. Find the centre, Foci, vertices and latus rectum of the curve $25x^2 - 150x - 9y^2 + 72y + 306 = 0$

OR Find the equation of the circle passing through the focus of the parabola $y^2 + 8x = 0$ and foci of ellipse $25x^2 + 16y^2 = 400$.

Q8. Solve the differential equation $(2x + y + 1)dx + (2x + y - 1)dy = 0$ OR $\frac{dy}{dx} = \frac{x+2y-3}{2x+y-3}$

OR $(x^2 + 3y^2)dx - 2xydy = 0$

OR When the temperature of the air is 290K a certain substance cools from 400k to 350k in 20 minutes. Find i) the temperature after 40 minutes ii) after how much time temperature is 300K.

OR If the population of a certain town doubles in 10 years in how many years will it triple under the assumptions that the rate of increase in population is proportional to the number of inhabitants.

Q9. Use Newton Raphson method to find a real root of $f(x) = 2x^3 - 2x - 5$ upto three iterations with initial guess $x_0 = 2$

OR Evaluate $\int_0^1 e^x dx$ by Simpsons $\frac{1}{3}$ rule with n = 6

OR Evaluate $\int_0^{\frac{\pi}{2}} \sin x dx$ with 7 intervals by using Trapezoidal rule.

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BIOLOGY PAPER-HSC-II (SCIENCE PRE-MEDICAL GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 08

BOTANY (THEORY)

Time: 15 minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 16 part questions and all are to be answered. Each part question carries ½ mark.
 - Do not copy the part questions in your answerbook. Write only the answer **in full** against the proper number of the question and its part.

Q. 1: Choose the most appropriate answer for each from the given options:

- The genetic material of a fertilized egg is a combination of :**
 - Mother's DNA only
 - Father's DNA only
 - both father and mother DNA
 - None of the above
- Genomic map are useful for:**
 - study gene expression
 - creating genetically modified interaction
 - identify genetic variation
 - detecting protein-protein interaction
- The Nitrogenous base present in RNA but not in DNA:**
 - Adenine
 - Guanine
 - Cytosine
 - Uracil
- The allele of holandric gene is located at:**
 - X-Chromosomes
 - Y-Chromosomes
 - Autosomes
 - All of them
- The DNA strand which continuously replicate in the direction of 5' to 3' called:**
 - lagging strand
 - primer
 - leading strand
 - Oakazaki fragments
- The complex of histone octamer and two loops of duplex DNA is:**
 - chromomer
 - nucleosome
 - chromatin
 - heterochromatin
- A boy is colorblind which could be the genotype of his mother:**
 - $X^N X^N$
 - $X^N Y$
 - $X^n Y$
 - $X^n X^n$
- International society of blood transfusion has found blood system more than?**
 - 20
 - 40
 - 10
 - 30
- Archaeopteryx is the connecting link between:**
 - Amphibian and reptiles
 - Aves and mammals
 - reptiles and Aves
 - fish and amphibians
- All of the followings are homologous organs except:**
 - wings of bats
 - wings of birds
 - wings of butterfly
 - flippers of dolphin
- Which of the following cannot be the disruptive force of hardy Weinberg theorem?**
 - selection
 - mutation.
 - non-random mating
 - random mating
- Factors that effect the flow of energy at the tropic level are:**
 - non predatory deaths.
 - growth and reproduction
 - heatloss.
 - sunlight
- Conversion of nitrates to nitrogen is called:**
 - denitrification
 - ammonification
 - Nitrification
 - nitrogen fixation
- DNA sequencing is a technique used to determine the sequence of nucleotides in a DNA molecule. What is the significance of DNA sequencing.**
 - To identify genetic variation
 - To create a transgenic organism
 - To identify genetic variation
 - All of the above
- DNA analysis is used to identify genetic disorders . What is the purpose of DNA analysis:**
 - sequence of nucleotide in a DNA
 - To study gene expression
 - To identify genetic variation
 - all of the above
- What is the significance of monoclonal antibodies in biotechnology:**
 - To study gene expression
 - used to diagnose diseases
 - genetically modified organisms
 - used to create new drugs

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BIOLOGY PAPER-HSC-II (SCIENCE PRE-MEDICAL GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 32

BOTANY (THEORY)

Time: 1 hour 45 minutes

SECTION 'B' (SHORT-ANSWER QUESTIONS)

(Marks: 16)

Q. 2: Answer any eight part questions. Each part question carries equal marks.

- i. Give site of ribosome and their function during translation?
OR Describe speciation and its types.
- ii. Differentiate between invagination theory and endosymbiotic theory?
OR Differentiate between bottle neck effect and founder effect.
- iii. Why hemophilia common in human male?
- iv. Differentiate between nitrification and de nitrification?
- v. How neo Darwinism differs from Darwinism?
- vi. Enlist enzymes that are used in rDNA technology?
- vii. Explain Hardy Weinberg law and its equation.
- viii. What are the causes of ozone layer depletion?
- ix. What do you mean by RFLPs?
- x. Why Ligase is considered as molecular glue.
- xi. How does homologous organs support the evolution theory?
- xii. What is genetic drift?
- xiii. What do you mean by dichromacy and monochromacy?
- xiv. Give changes occurs in mRNA during transport from nucleus to cytoplasm?

SECTION 'C' (DETAILED-ANSWER QUESTIONS)

(Marks: 16)

Note: Answer any two questions from this section. All questions carry equal marks.

- Q3.** Describe the process of transcription during gene expression.
OR What is succession? Describe Hydrach **OR** Xerach.
- Q4.** Explain Darwin's theory of evolution along with the objection raised on the theory.
- Q5.** Describe inheritance of two traits with the help of genetic cross.

NORTH NAZIMABAD CAMPUS I	NORTH NAZIMABAD CAMPUS II	GULSHAN	NORTH KARACHI	BAHADURABAD	GULISTAN-E-JOHAR	MAYMAR	MALIR
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BIOLOGY PAPER-HSC-II (SCIENCE PRE-MEDICAL GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 09

ZOOLOGY (THEORY)

Time: 20 minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 18 part questions and all are to be answered. Each part question carries ½ mark.
 - Do not copy the part questions in your answerbook. Write only the answer **in full** against the proper number of the question and its part.

Q. 1: Choose the most appropriate answer for each from the given options:

- The maintenance of a constant internal environment in an organism despite changes in the external environment is called:**
A) Homeostasis B) Metabolism C) Adaptation D) Feedback
- Which structure acts as the thermoregulatory center in humans?**
A) Medulla oblongata B) Cerebellum C) Hypothalamus D) Pituitary gland
- In humans, which process directly reduces body temperature when it rises above normal?**
A) Vasoconstriction B) Shivering C) Increased metabolism D) Vasodilation
- Which of the following is a part of the appendicular skeleton?**
A) Vertebral column B) Pelvic girdle C) Ribs D) Sternum
- The sliding filament theory explains muscle contraction by interaction between:**
A) Myosin and troponin B) Actin and tropomyosin
C) Actin and myosin D) Troponin and tropomyosin
- Which hormone is responsible for lowering blood glucose level?**
A) Glucagon B) Insulin C) Thyroxine D) Adrenaline
- The fight-or-flight response is mainly mediated by secretion of:**
A) Adrenaline B) Cortisol C) Thyroxine D) Melatonin
- Transmission of nerve impulse across a synapse involves release of:**
A) Hormones B) Enzymes C) Neurotransmitters D) Antibodies
- The refractory period of a neuron ensures:**
A) Continuous backward transmission B) Saltatory conduction
C) Rapid depolarization D) One-way conduction of impulse
- Fixed action patterns in animals are:**
A) Learned behaviors B) Random movements
C) Trial-and-error responses D) Innate stereotyped responses
- Imprinting in birds usually occurs during:**
A) Adulthood B) Critical early period of life
C) Migration D) Hibernation
- In humans, fertilization normally occurs in the:**
A) Uterus B) Ovary C) Vagina D) Fallopian tube
- Which hormone maintains the uterine lining during pregnancy?**
A) Progesterone B) Estrogen C) FSH D) LH
- Which of the following changes is commonly associated with aging?**
A) Increased cell division rate B) Enhanced immune response
C) Reduced elasticity of tissues D) Increased metabolic rate
- During negative feedback control of thyroxine, increased thyroxine level inhibits secretion of:**
A) TSH from anterior pituitary B) Calcitonin from thyroid
C) ADH from posterior pituitary D) Insulin from pancreas
- Which type of joint allows movement in only one plane?**
A) Hinge joint B) Pivot joint C) Gliding joint D) Ball and socket joint
- The role of calcium ions in muscle contraction is to:**
A) Break down ATP B) Bind to troponin and expose active sites
C) Pump sodium out of the cell D) Stimulate myelin formation
- Which of the following behaviors increases an animal's chances of survival and reproductive success through social cooperation?**
A) Territorial aggression B) Hibernation
C) Altruistic behavior D) Reflex action

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COMPREHENSIVE EXAMINATION 2025-2026

BIOLOGY PAPER-HSC-II (SCIENCE PRE-MEDICAL GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 36

ZOOLOGY (THEORY)

Time: 1 hour 40 minutes

SECTION 'B'

(SHORT-ANSWER QUESTIONS)

(Marks: 18)

Note: Attempt Nine (09) part questions in all. Select Five (05) Reasoning questions and four (04) Non-Reasoning questions. All part questions carry equal marks.

Q. 2:

(a) Reasoning Questions

- Why are reflex actions considered protective responses?
- Why does progesterone level drop if fertilization does not occur?
- Why is calcium essential for muscle contraction?
- Why does hypothalamus act as a link between nervous and endocrine systems?
- Why do animals excrete different types of excretory waste?
- Pancreas classified as both an exocrine and endocrine gland. Why?
- Why is cleavage in birds and reptiles called meroblastic?
- Why do cardiac muscles not fatigue?

(b) Non-Reasoning Questions

- Differentiate between Diabetes mellitus Type I and Type II
- Define taxis. Mention positive and negative taxis with examples.
- List the causes of male OR female infertility.
- Differentiate between innate behavior and learned behavior.
- Mention the types of joints found in human body with examples.
- Draw neat and labeled diagram of Neuron
- Explain briefly spermatogenesis.
- List the hormones of the anterior pituitary.

SECTION 'C'

(DETAILED-ANSWER QUESTIONS)

(Marks: 18)

Note: Attempt any two questions from this section. All questions carry equal marks.

Q.3 Define the sliding filament model of muscle contraction and explain the cross-bridge cycle with a labeled diagram.

OR Explain female reproductive system with labelled diagram.

Q.4 Describe the functions of the kidneys and explain the structure of the human kidney with a labeled diagram.

OR Define a nerve impulse and explain the mechanism of action potential in the neuron membrane.

Q.5 Explain the structure of skeletal muscles and the ultrastructure of skeletal muscle fibers with a labeled diagram.

OR Explain blastocyst with emphasis on segmentation cavity (explain the process of development of embryo up till gastrulation)

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COMPREHENSIVE EXAMINATION 2025-2026

CHEMISTRY H.S.C. PART-II (PRE-ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 17

Time: 20 Minutes

SECTION 'A' (MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 17 part questions and all are to be answered. Each part question carries one mark.
 - Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.
 - The use of scientific calculator is allowed.

Q. 1: Choose the correct answer for each from the given options:

- Electronic configuration of Cu^{+1} ion is**
a) $4s^0, 3d^{10}$ b) $4s^0, 3d^9$ c) $4s^1, 3d^{10}$ d) $4s^2, 3d^{10}$
- This element is solid at room temperature and pressure**
a) Fluorine b) Chlorine c) Bromine d) Iodine
- The oxidation number of Pt in $[\text{Pt}(\text{en})_2\text{Cl}_2]$ is**
a) +1 b) +4 c) +2 d) +5
- Which of the following is chelating agent**
a) EDTA b) CN^{-1} c) F^{-1} d) NH_3
- The general formula for ester is:**
a) RNH_2 b) RCOOH c) RCOR d) RCOOR
- This catalyst is used as knock inhibitor**
a) Pt b) Zeolite c) Raney Ni d) $\text{Pb}(\text{C}_2\text{H}_5)_4$
- Destructive distillation of coal gives coke, coal tar, coal gas and**
a) Natural gas b) Ammonia liquor c) Petroleum d) Naphtha
- It is m-directing group:**
a) $-\text{CH}_3$ b) $-\text{OH}$ c) $-\text{NH}_2$ d) $-\text{NO}_2$
- The number of acidic hydrogen present in 1-butyne**
a) 0 b) 1 c) 2 d) 3
- Acylation of benzene in the presence of AlCl_3 gives**
a) Toluene b) Phenol c) Acetophenone d) Xylene
- The following composition justifies the secondary alkyl halides**
a) R_3CX b) R_2CHX c) RCH_2X d) CH_3X
- The following is a trihydric phenol**
a) Resorcinol b) Cresol c) Pyrogallol d) Catechol
- Ethanol reacts with PCl_3 to form**
a) Diethyl ether b) Ethene c) Ethyl chloride d) Ethanoic acid
- The most reactive molecule towards nucleophilic addition in the following is**
a) Formaldehyde b) Acetaldehyde c) Acetophenone d) Diethyl ketone
- The compound not used in preparation acetyl chloride from acetic acid is:**
a) SOCl_2 b) HCl c) PCl_3 d) PCl_5
- The sweetest sugar is:**
a) Fructose b) Glucose c) Sucrose d) Lactose
- What kind of sample can be studied in a mass spectrometer?**
a) Gas b) Solid c) Liquid d) All

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COMPREHENSIVE EXAMINATION 2025-2026

CHEMISTRY H.S.C. PART-II (PRE-ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 68

Time: 2 hours 40 Minutes
(36 Marks)

SECTION 'B'

(SHORT-ANSWER QUESTIONS)

NOTE: Answer any **Nine** part questions. Select **Four** part questions from **Inorganic – General Chemistry** and **Five** part questions from **Organic Chemistry**. All part questions carry equal marks.

Q. 2

INORGANIC CHEMISTRY

i) What is Diagonal relationship? Mention three pair of element which are diagonally related along with two properties.

OR Give reasons for any **four** of the following:

- Boiling point of halogens increases down the group in the periodic table.
- Electronegativity decreases regularly from top to bottom in s-block elements.
- Alkali metals are good conductor of electricity
- Fluorine is the strongest oxidizing agent.
- Multidentate ligands are known as chelating agents.
- Irregular trend of ionization energy in group IIIA.

ii) Give the preparation and chemical properties of Bleaching powder.

OR How Caustic soda is prepared on large scale by Castner Kellner process. Explain its working along with reaction at anode and cathode.

iii) d-block elements show magnetic behavior as well as catalytic property. Explain with relevant example.

OR Define Alloy and Give the composition and applications of stainless steel, brass and bronze.

iv) Write IUPAC names of the following complexes:

- a) $[Pt(H_2O)_5Cl](NO_3)_3$ b) $[Cr(NH_3)_4]^{+3}$ c) $K_2[Cu(CN)_4]$ d) $[AlF_6]^{-3}$

v) What are adhesives? Explain the significance of super glue and silicon resins.

OR Explain the preparation of Nylon 6,6 and Polyvinyl chloride

vi) What is the main cause of Global warming? How does it effect on weather pattern?

OR What is industrial smog? How it is formed?

vii) What information about the structure of a molecule we can get from mass spectroscopy? Give the applications of mass spectroscopy.

"ORGANIC CHEMISTRY"

viii) Explain the destructive distillation of Coal.

OR Define functional group mention any five oxygen containing functional group with their structures.

OR Define Bucky ball. Write its structure and uses.

ix) Explain the Orbital structure of Ethene also write Epoxidation and ozonolysis of ethene.

OR Give the equations and write the name of the final product in the following process.

- * Ethyne is treated with silver nitrate in the presence of ammonia.
- * 1,2-dibromoethane is heated with alcoholic KOH.
- * Propene is treated with HBr
- * Ethyne is treated with H_2O in the presence of $H_2SO_4/HgSO_4$.

OR Identify each of the following with one laboratory test:

- * Alcohol * Phenol * Alkene * Aldehyde

x) Give the preparation of Ether by Williamson synthesis. Also explain how Diethyl ether form oxonium ion

xi) What are phenol? Write its classification along with example. Mention its preparation by Dows process.

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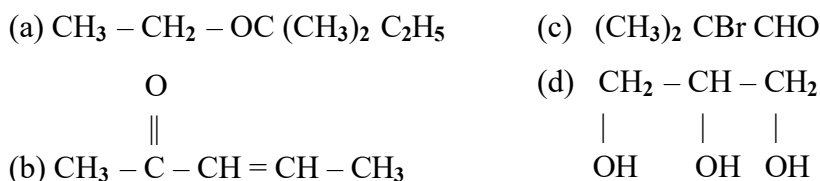
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CHEMISTRY H.S.C. PART-II (PRE-ENGINEERING & MEDICAL)

According to the syllabus of the Board of Intermediate Education, Karachi



xii) Write the IUPAC names of any four of the following:



OR Name four derivative of carboxylic acid and write the equations of their preparation.

xiii) What is Grignard reagent? Give two examples of organo metallic compounds other than Grignard reagent. Write the equation of methyl magnesium iodide with:



OR Define β - elimination reaction. Discuss the mechanism of E_1 OR E_2 reactions with example.

xiv) Why are amines basic in nature? How can we prepare ethyl amine from the following compounds?



OR Outline stepwise mechanism of

- (a) SN_1 mechanism between Ter. Butyl bromide and NaCN.
(b) SN_2 mechanism between Bromoethene and NaOH.

OR Explain acid catalyzed nucleophilic addition reaction of Aldehyde and Ketone. Mention the reaction of Acetaldehyde with Hydroxal amine and hydrazine

SECTION 'C'

(32 Marks)

(DETAILED-ANSWER QUESTIONS)

Note : Answer any Four questions — Two question from Inorganic – General Chemistry and Two from Organic Chemistry. All questions carry equal marks.

(INORGANIC CHEMISTRY)

(16 marks)

Q.3 Explain Contact process in detail with labelled diagram. Write two chemical reaction of Sulphuric acid in which it act as dehydrating agent and sulphonating agent.

OR Describe various steps involve in the extraction of 99.99% pure copper from its chalcopyrite ore. (Draw diagram where necessary)

Q.4 Write the balance chemical equations for the following:

- * A mixture of carbon and silicon is heated under elevated temperature.
- * Phosphorus is put into water.
- * Bleaching powder is treated with hydrochloric acid.
- * Chlorine gas is passed through hot aqueous solution of caustic soda.
- * Copper is treated with concentrated nitric acid.
- * A piece of chromium is put into dilute hydrochloric acid.
- * Reaction between KMnO_4 and FeSO_4 in the presence of H_2SO_4 (write ionic equation)
- * Reaction between $\text{K}_2\text{Cr}_2\text{O}_7$ and FeSO_4 in the presence of H_2SO_4 (write ionic equation)

Q.5 Write the name of four segments of atmosphere and mention in which segment we live. Describe the chemistry involves due to the presence of oxides of nitrogen and sulphur in the troposphere.

OR What is acid rain? What are its primary causes? What is the effect of acid rain on human health and what measures can be taken to prevent acid rain?

(ORGANIC CHEMISTRY)

(16 marks)

Q.6 Why benzene undergoes electrophilic substitution reaction? Explain the mechanism of Nitration and Alkylation of benzene.

OR What is meant by orientation of benzene? Explain ortho-para and meta directing group. Write the equation for the preparation of TNT and m-nitro toluene from benzene.

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Q.7 Draw the structure of the following organic molecules:

- * Ter.butyl ethyl ether
- * Ethyl neo-pentyl ketone
- * Vinylacetylene
- * Iso propyl valerate
- * 1,2,3 Benzentriol
- * Neo pentyl alcohol
- * 2-propaneamine
- * Caproaldehyde

OR Write the equations for the following reactions:

- * Oxidation of 2°-alcohol with $K_2Cr_2O_7/H_2SO_4$
- * Reaction of phenol with H_2SO_4 at 20°C
- * Reaction of Methyl cyanide with water in the presence of acid.
- * Ethanol, in excess, is heated up to 140 °C in presence of H_2SO_4
- * Dehydration of ethyl alcohol at 170°C in conc. H_2SO_4
- * Reaction of ethylene glycol with periodic acid.
- * Reduction of acetone with $LiAlH_4$
- * Oxidation of 1°-alcohol with PCC.

Q.8 Explain the following isomerism along with example

- a) Geometrical b) Optical c) Position d) Metamerism e) Functional group

OR Explain the mechanism of chlorination of methane along with Homolytic and Heterolytic fission

OR Define protein. Discuss types of protein on the bases of their function (any three). Write two properties and two biological importance of protein.

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COMPREHENSIVE EXAMINATION 2025-2026

COMPUTER STUDIES PAPER-HSC PART-II (SCIENCE GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 15

Time: 20 minutes

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS)

- NOTE:**
- This section consists of 15 part questions and all are to be answered. Each question carries one mark.
 - Do not copy the part question in your answerbook. Write only the answer in full against the proper number of the question and its part.

Q. 1: Choose the correct answer for each from the given options:

- In the context of while and do while loop in C, this is not true**
 - Both the loops are repetitive
 - Both will be executed at least once
 - Both loop has multiple executed
 - Both loop as unexpected conditions
- Collection of related files is called.**
 - Files
 - Records
 - Reports
 - Database
- One-to-Many refers to:**
 - Cardinality
 - Constraints
 - Join
 - Union
- This statements suspends the control structure.**
 - Continue
 - break
 - getch()
 - default
- This is correct input statement to take 'gender as char'.**
 - getche(gender);
 - gender=getche();
 - getche()==gender;
 - getche()==gender();
- It Is an organized collection of related data, typically stored on desk and accessible by possibly many concurrent users:**
 - Source code
 - text file
 - object file
 - database
- This database model arrange data in a parent child relationship:**
 - Relational model
 - Network model
 - Hierarchical Model
 - Flat model
- In database columns are called:**
 - Tuples
 - Attributes
 - Keys
 - File
- If int a = 10+4.867 then the value of 'a' is:**
 - a=10
 - a=15
 - a=14.876
 - 14
- This statement can only test for equality:**
 - break
 - switch
 - return
 - if
- If n has the value 3, then the output of the statement, printf(“%d %d”,n++,++n).**
 - 4 5
 - 3 5
 - 4 4
 - 2 5
- The rules/formats for using programming language are called.**
 - Sematic
 - Rule
 - Syntax
 - Module
- This variable has limited scope to a procedure.**
 - Global Variable
 - Auto Variable
 - Auto Variable
 - Local Variable
- A person who is responsible for managing the overall database management system is called:**
 - Database administrator
 - Network Supervisor
 - System analyst
 - Programmer
- This loop uses post testing**
 - for()
 - while()
 - do-while()
 - none of these

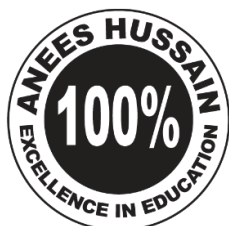
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COMPUTER STUDIES PAPER-HSC PART-II (SCIENCE GROUP)

According to the syllabus of the Board of Intermediate Education, Karachi



Max. Marks: 60

Time: 2 hours 40 minutes

SECTION 'B' (SHORT-ANSWER QUESTIONS)

(Marks: 30)

Note: Answer any Ten (10) part questions from this Section, All part questions carry equal marks.

Q. 2:

- Define format specifiers in C-language.
- Write a C program that swap two inputted numbers.
OR Write a C program to find the factorial of an inputted number.
- What is the main difference between while and do-while loop?
- What will be the output of the following program

```
int main()
{
int n = 5;
if(n<1)
printf("hello");
if(n==5)
printf("hi");
else
printf("no");
return 0;
}
```
- What do you mean by function prototype?
- What is the difference between primary key and foreign key?
- Convert the following, mathematical expression into C expression:
a. $y = (x+y) - (a^2+b^3)$ b. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ c. $A = \pi r^2$
- What is the purpose of the statement `#include<stdio.h>` in c program?
- What is meant by case-sensitive language? Write the structure of C program.
- What is a pointer in C language? How is it initialized?
- Write a program to display the following output.(any one)
 - ```
2 4 6 8 10
3 6 9 12 15
4 8 12 16 20
5 10 15 20 25
```
  - ```
*
* *
* * *
* * * *
* * * * *
```
- Write the differences between variable and constant.
- Write a C language program to input cost price and selling price and determine whether the user made a profit or loss. (Hint Profit=SP-CP & Loss=CP-SP).
- Write any four rules of naming variable
- How does else-if ladder differ from switch statement?

SECTION 'C'

(DETAILED-ANSWER QUESTIONS)

(Marks:30)

Note: Attempt any three questions from this section. All questions carry equal marks.

- Define control structure used in C language. Explain Selection Control Structure with syntax and example.
- Explain operators and their types in detail.
- Explain various types of database models.
- What is user-defined function? How is it differ from library function? Write any two with example.
- Explain all input and output functions used in language.

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