TERM II
SAMPLE QUESTION PAPER (2021-22)
ENGLISH – CORE
CLASS-XII

Time allowed: 2 Hrs.   **Maximum Marks: 40**

> **General Instructions:**
> 1. The Question Paper contains THREE sections-READING, WRITING and LITERATURE.
> 2. Attempt questions based on specific instructions for each part.

|		**SECTION A – READING (14 marks)**	**Marks**
1.		**Read the passage given below.**	
		I saw '*Jaws'*, the popular shark movie, the summer it came out, in 1975 and became paranoid about sharks. Though I kept swimming after *Jaws*, it was always with the vague fear that a shark's teeth could tug on my leg at any moment. Never mind that there'd been only two shark bites since 1900 on the Connecticut coast, where I lived.	
	5		
		So, when I got this assignment for the *National Geographic* magazine, I decided to accept and do what I'd never wanted to do: swim with the sharks. I had to go to a place in the Bahamas known as Tiger Beach and dive with tiger sharks, the species responsible for more recorded attacks on humans than any shark except the great white. It was to be my first dive after getting certified—which meant it would be my first dive anywhere other than a swimming pool or a quarry—and without a diver's cage. Most people who got wind of this plan thought I was either very brave or very stupid.	
	10		
	15	But I just wanted to puncture an illusion. The people who know sharks intimately tend to be the least afraid of them, and no one gets closer to sharks than divers. The divers who run operations at Tiger Beach speak lovingly of the tiger sharks the way people talk about their children or their pets. In their eyes, these sharks aren't man-eaters any more than dogs are.	
	20	The business of puncturing illusions is never just black and white. My fellow divers had hundreds of dives under their belt and on the two-hour boat ride to the site in the morning of our first dive, they kept saying things like, "Seriously, I really can't believe this is your first dive." All this was okay with me until I reached the bottom and immediately had to fend off the first tiger shark, I had ever laid eyes on. However, when I watched the other divers feeding them fish and steering them gently, it became easy to see the sharks in a very benign light.	
	25		
		I think it would be unfair not to mention that though tiger sharks are apex predators. They act as a crucial balancing force in ocean ecosystems, constraining the numbers of animals like sea turtles and limit	
	30		

		their behaviour by preventing them from overgrazing the sea grass beds. Furthermore, tiger sharks love warm water, they eat almost anything, have a huge litter and are the hardiest shark species. If the planet and its oceans continue to warm, some species will be winners and others will be losers, and tiger sharks are likely to be winners.	
	Based on your understanding of the passage, answer <u>ANY EIGHT</u> questions from the nine given below.	**1*8**
i.	Cite a point in evidence, from the text, to suggest that the writer's post-*Jaws* fear was not justified.	**1**
ii.	State any one trait of the writer that is evident from lines 5-10 and provide a reason for your choice.	**1**
iii.	People thought the writer was 'either brave or very stupid'. Why did some people think that he was 'very stupid'?	**1**
iv.	Why does the writer say that people who know sharks intimately tend to be least afraid of them?	**1**
v.	Rewrite the given sentence by replacing the underlined phrase with another one, from lines 10 – 20. *Some academicians think that reward, as a form of discipline, is a simple <u>right or wrong</u> issue.*	**1**
vi.	What does the use of the phrase 'benign light' suggest in the context of the writer's viewpoint about the tiger sharks?	**1**
vii.	Select a suitable phrase from lines 15-25 to complete the following sentence appropriately. *I agree the team will find this experience tough, but competing will be easier next time after they get this tournament _____.*	**1**
viii.	Apex predators serve to keep prey numbers in check. How can we say that tiger sharks are apex predators?	**1**
ix.	Analyse why having a large litter is one of the features that empowers tiger sharks to emerge winners if global warming persists.	**1**
2.	**Read the passage given below**. Changing food preferences have brought about rapid changes in the structure of the Indian diet. The rapid proliferation of multinational fast-food companies and the influence of Western culture have replaced traditional home-cooked meals with ready-to-eat, processed foods thus 5 increasing the risk of chronic diseases in urban Indians. Therefore, nurturing	**6**

healthy eating habits among Indians from an early age would help to reduce health risks.

10   To date, little is known about the quality and quantity of foods and beverages consumed by urban Indian adolescents. This lack of evidence is a significant barrier to the development of effective nutrition promotion and disease prevention measures.

Therefore, a self-administered, semi-quantitative, 59-item meal-based food frequency questionnaire (FFQ) was developed to assess the dietary intake of adolescents. A total of 1026 students (aged 14–16 years) attending
15   private, English-speaking schools in Kolkata completed the survey.

A sample percentage of the food consumption pattern is displayed (Fig. 1)
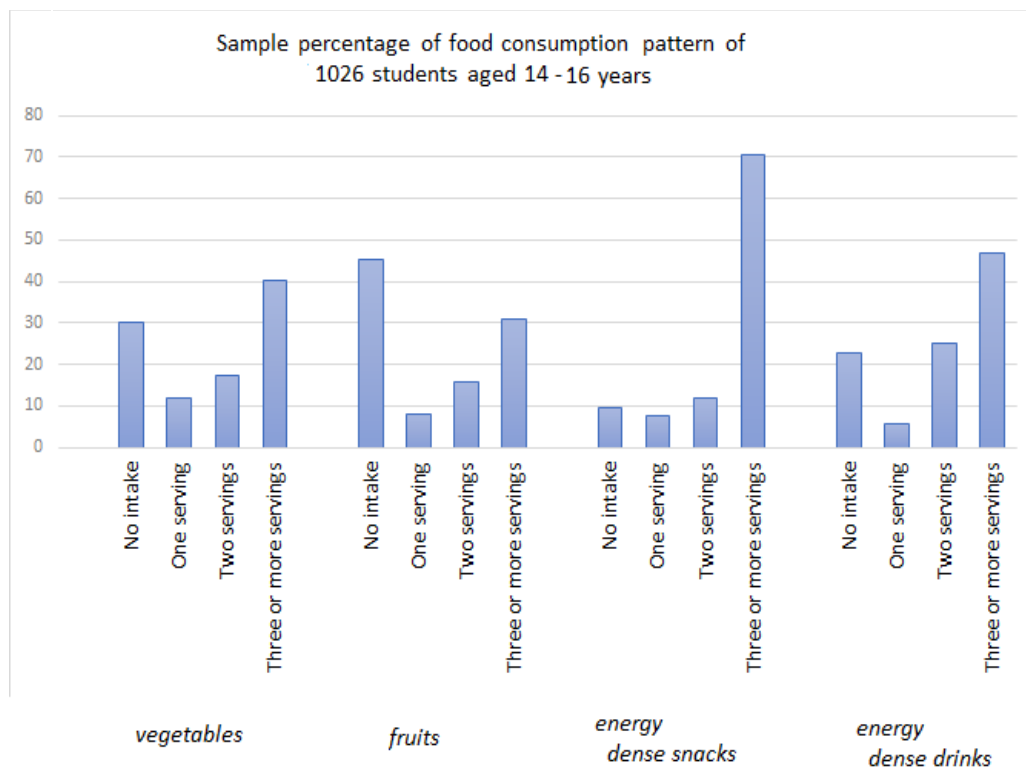
The survey results report poor food consumption patterns and highlights the need to design healthy eating initiatives. Interestingly, while there were no gender differences in the consumption of legumes and fried snacks, the survey found more females consumed cereals, vegetables and
20   fruits than their male counterparts.

In conclusion, the report suggested that schools ought to incorporate food literacy concepts into their curriculum as they have the potential of increasing the fruit and vegetable intake in teenagers. Additionally, healthy school canteen policies with improved availability, accessibility,
25   variety and affordability of healthy food choices would support the consumption of nutritious food in students.

Based on your understanding of the passage, answer <u>ANY SIX</u> out of the seven questions given below.

1*6

 i. What does the researcher mean by 'changing food preferences'?

1

 ii. Why was this survey on the food consumption of adolescents undertaken?

1

 iii. With reference to fig.1, write one conclusion about students' consumption of energy-dense drinks.

FOR THE VISUALLY IMPAIRED CANDIDATES

What do you understand by the term *food frequency*, as stated in lines 12-13?

1

 iv. What can be concluded by the 'no intake' data of fruit consumption versus energy dense snacks, with reference to fig.1?

FOR THE VISUALLY IMPAIRED CANDIDATES

Comment on the significance of incorporating food literacy concepts into student curriculum.

1

 v. There were no gender differences observed in the consumption of healthy foods, according to the survey. Substantiate.

1

 vi. Why is 'affordability' recommended as a significant feature of a school canteen policy?

1

 vii. Identify a word from lines 9 - 18 indicating that the questionnaire was specifically designed to be completed by a respondent without the intervention of the researcher collecting the data.

1

	SECTION B – WRITING	**8**
3.	You are Natasha, residing in Pune. Your cousin, from the same city is hosting your grandmother's eightieth birth anniversary and has extended an invite to you. He has also requested your assistance for arrangements needed. Draft a reply of acceptance, in not more than 50 words.	**3**
4. **A.**	Attempt <u>**ANY ONE**</u> from **A** and **B** given below. You are Shantanu, residing at Ghar B-94, Balimela Road, Malkangiri. You come across the following classified advertisement in a local daily. Write a letter, in about 120-150 words, applying for the position of a volunteer for the *Each One Teach One* campaign.	**5**

B.	**SITUATION VACANT** **WANTED** committed volunteers, aged 18 years and above, to teach underprivileged children, for one hour a week, in the district of Malkangiri. Ability to speak, read and write Odiya fluently, important. Experience not necessary. All volunteers to receive training. Contact Nethra N, Coordinator (*Each One Teach One*), *4Literacy*, Ambaguda, Malkangiri, Odisha -764045 **OR** The efforts of 400 volunteers working with the NGO, *4Literacy*, in the district of Malkangiri, Odisha, was lauded by the District Collector, Shri V. Singh (IAS). As a staff reporter of 'The Odisha Bhaskar', write a report about this in 120-150 words covering all the details of the event, such as training, teaching and infrastructure involved in the '*Each One Teach One*' campaign, initiated by the district administration in association with the NGO.	
	SECTION C - LITERATURE	**18**
5.	Attempt **ANY FIVE** of the six questions given below, within 40 words each.	**2x5=10**
	i. A mistaken identity led to a discovery of a new one for the rattrap peddler. How did this impact him?	**2**
	ii. As the host of a talk show, introduce Rajkumar Shukla to the audience by stating any two of his defining qualities. You may begin your answer like this: *Meet Rajkumar Shukla, the man who played a pivotal role in the Champaran Movement. He ……*	**2**
	iii. Adrienne Rich chose to express her silent revolt through her poem, *Aunt Jennifer's Tigers*, just as Aunt Jennifer did with her embroidery. Explain.	**2**
	iv. Rationalize why Keats uses the metaphor 'an endless fountain of immortal drink' in his poem, *A Thing of Beauty*.	**2**
	v. How do you think Derry's mother contributes to his sense of alienation and isolation? (*On the Face of It*)	**2**
	vi. Validate John Updike's open-ended title, '*Should Wizard Hit Mommy*?'.	**2**
6.	**Answer ANY TWO of the following in about 120-150 words each.**	**4*2**
i.	How does Keats' poem, *A Thing of Beauty* appeal richly to the senses, stimulating the reader's inner sight as well as the sense of touch and smell? Write your answer in about 120-150 words.	**4**

ii.	Colin Dexter, the author of *Evans Tries an O-level* employs the red herring technique of intentionally misleading readers by placing false clues to keep the plot enigmatic. Substantiate with reference to text, in about 120-150 words.	**4**
iii.	Biographies include features of non-fiction texts – factual information and different text structures such as description, sequence, comparison, cause and effect, or problem and solution. Examine *Indigo* in the light of this statement, in about 120-150 words.	**4**

प्रतिदर्श प्रश्न पत्र 2021-22

विषय - हिंदी (आधार)

(विषय कोड - 302)

कक्षा - बारहवीं

निर्धारित समय : 2 घंटे   **अधिकतम अंक : 40**
अंक

सामान्य निर्देश :-

- निम्नलिखित निर्देशों को बहुत सावधानी से पढ़िए और उनका पालन कीजिए :-
- इस प्रश्न पत्र में वर्णनात्मक प्रश्न पूछे गए हैं।
- इस प्रश्न पत्र में कुल **07** प्रश्न पूछे गए हैं। आपको **07** प्रश्नों के उत्तर देने हैं।
- प्रश्नों में आंतरिक विकल्प भी दिए गए हैं। निर्देशानुसार उत्तर दीजिए।

प्रश्न संख्या	कार्यालयी हिंदी और रचनात्मक लेखन	अंक (20)
प्रश्न 1.	निम्नलिखित दिए गए 03 शीर्षकों में से किसी 01 शीर्षक का चयन कर लगभग 200 शब्दों का एक रचनात्मक लेख लिखिए :- • प्रातः काल योग करते लोग • दुर्घटना से देर भली • जिन्हें जल्दी थी, वे चले गए	5x1=5
प्रश्न 2.	अपने क्षेत्र के मुख्य चिकित्सा अधिकारी, उनके चिकित्सकों और सहायक कर्मचारियों को कोरोना काल में उनके द्वारा किये गए कार्यों की प्रशंसा और सरहाना करते हुए एक पत्र लिखिए। **अथवा**	5x1=5

	बस चालकों की असावधानी से हो रही दुर्घटनाओं पर चिंता व्यक्त करते हुए किसी समाचार पत्र के संपादक को पत्र लिखिए।	
प्रश्न 3. (i)	कहानी की परिभाषा बताते हुए इसके तत्त्वों के नाम लिखें। *अथवा* नाटक में अभिनय और संवाद योजना के महत्त्व को रेखांकित कीजिए।	3x1=3
प्रश्न 3. (ii)	रेडियो नाटक की अवधि छोटी क्यों रखी जाती है? *अथवा* कहानी में क्लाइमेक्स का क्या महत्त्व है?	2x1=2
प्रश्न 4. (i)	समाचार लेखन की रचना प्रक्रिया को स्पष्ट कीजिए। *अथवा* फ़ीचर कैसे लिखा जाता है?	3x1=3
प्रश्न 4. (ii)	समाचार और फ़ीचर में मुख्य अंतर क्या होता है? *अथवा* समाचार लेखन के छः ककार कौन से हैं?	2x1=2
प्रश्न संख्या	**पाठ्यपुस्तक आरोह भाग - 2 तथा अनुपूरक पाठ्यपुस्तक वितान भाग – 2**	**अंक (20)**
प्रश्न 5.	**निम्नलिखित 03 प्रश्नों में से किन्हीं 02 प्रश्नों के उत्तर दीजिए।**	3x2=6
(i)	शमशेर की कविता 'उषा' गाँव के जीवन का जीवंत चित्रण है। पुष्टि कीजिए।	3
(ii)	'कवितावली' के आधार पर सिद्ध कीजिए कि तुलसीदास को अपने समय की आर्थिक-सामाजिक समस्याओं की समझ थी।	3
(iii)	फ़िराक की गज़ल में अपना परदा खोलने से क्या आशय है?	3
प्रश्न 6.	**निम्नलिखित 04 प्रश्नों में से किन्हीं 03 प्रश्नों के उत्तर दीजिए।**	3x3=9
(i)	जाति प्रथा को श्रम विभाजन का ही एक अंग न मानने के पीछे डॉ. आंबेडकर के क्या तर्क थे?	3
(ii)	नमक कहानी में नमक की पुड़िया इतनी महत्त्वपूर्ण क्यों हो गई थी? कस्टम अधिकारी उसे लौटाते हुए भावुक क्यों हो उठा था?	3
(iii)	बाबा भीमराव आंबेडकर के अनुसार उनकी कल्पना का आदर्श समाज	3

	कैसा होना चाहिए? अपने शब्दों में अभिव्यक्त करें।	
(iv)	'ढोल में तो जैसे पहलवान की जान बसी थी।' 'पहलवान की ढोलक' पाठ के आधार पर तर्क सहित पंक्ति को सिद्ध कीजिए।	3
प्रश्न 7.	**निम्नलिखित प्रश्नों के उत्तर दीजिए।**	3+2=5
(i)	एन फ्रैंक की डायरी किट्टी को संबोधित कर ही क्यों लिखी गई है? यह डायरी वह किसी अपने को भी संबोधित कर सकती थी? तर्क सहित उत्तर दीजिए। *अथवा* मोहनजोदाड़ो की सभ्यता को लो - प्रोफाइल सभ्यता क्यों माना गया है?	3x1=3
(ii)	"काश, कोई तो होता जो मेरी भावनाओं को गंभीरता से समझ पाता। अफ़सोस, ऐसा व्यक्ति मुझे अब तक नहीं मिला।" एन फ्रैंक की इस पंक्ति का आशय स्पष्ट करें। *अथवा* सिंधु सभ्यता के केंद्र में समाज था, राजा या धर्म नहीं! सिद्ध कीजिए।	2x1=2

सत्रीय परीक्षा - **2**
प्रतिदर्श प्रश्नपत्र **2021-22**
विषय - हिंदी **(ऐच्छिक)**
विषय कोड - **002**
कक्षा - बारहवीं

निर्धारित समय : **2** घंटे   पूर्णांक : **40**

सामान्य निर्देश :-
• निम्ननिखित निर्देशों को बहुत सावधानी से पढ़िए और उनका पालन कीजिए ।
• इस प्रश्न पत्र में वर्णनात्मक प्रश्न पूछे गए हैं।
• इस प्रश्न पत्र में कुल 09 प्रश्न पूछे गए हैं तथा यह 2 खंडों में विभाजित है।
• प्रश्नों में आंतरिक विकल्प भी दिए गए हैं। निर्देशानुसार उत्तर दीजिए।

खंड - क

प्रश्न 1 निम्नलिखित दिए गए 3 शीर्षकों में से किसी 1 शीर्षक पर लगभग 150 शब्दों में रचनात्मक लेखन लिखिए।   (5 अंक)

(क) बारिश की वह सुबह
(ख) मेरे बगीचे में खिला गुलाब
(ग) विद्यालय में मेरा प्रिय कोना

प्रश्न 2 आप अपने विद्यालय के खेल कप्तान हैं। टोक्यो ओलंपिक और पैरा ओलंपिक में भारतीय प्रदर्शन से अति उत्साहित हैं। खेलों के प्रति रुचि जाग्रत करने के लिए अपने विचार व्यक्त करते हुए लगभग 120 शब्दों में किसी समाचार पत्र के संपादक को पत्र लिखिए।   (5 अंक)

अथवा

आप निवासी कल्याण संघ (रेजिडेंट्स वेलफेयर एसोसिएशन) के अध्यक्ष मुकेश बदरप्पा हैं।नगर विकास प्राधिकरण के सचिव को अपने क्षेत्र के पार्क के समुचित विकास के लिए लगभग 120 शब्दों में पत्र लिखिए।

प्रश्न 3. निम्नलिखित प्रश्नों के उत्तर लगभग 50 शब्दों में लिखिए। (5 अंक)

(क) कहानी में पात्रों के चरित्र-चित्रण का क्या स्थान होता है ?   (3×1=3)

 अथवा

नाटक क्या होता है? यह कहानी से किस प्रकार भिन्न है?

(ख)समय का बंधन सभी के लिए आवश्यक है। नाटक लिखने के लिए 'समय के बंधन' का औचित्य स्थापित कीजिए।   (2×1=2)

अथवा

कहानी का कथानक क्या होता है? उदाहरण सहित स्पष्ट कीजिए।

प्रश्न 4 निम्नलिखित प्रश्नों के उत्तर लगभग 50 शब्दों में लिखिए। (5 अंक)

(क) माना जाता है कि पत्रकारिता जल्दी में लिखा गया साहित्य है। क्या आप इस कथन से सहमत हैं? इस संदर्भ में अपने विचार तर्कपूर्ण ढंग से प्रस्तुत कीजिए। (3×1=3)

अथवा

 पत्रकारीय लेखन का सबसे जाना पहचाना रूप समाचार लेखन है। समाचार को कैसे लिखा जाता है?

(ख) बीट रिपोर्टिंग और विशेषीकृत रिपोर्टिंग में क्या अंतर है? स्पष्ट कीजिए। (2×1=2)

अथवा

स्तंभ लेखन क्या है? स्पष्ट कीजिए।

खंड - ख (पाठ्य पुस्तक एवं पूरक पाठ्यपुस्तक)

प्रश्न 5. निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लगभग 50-60 शब्दों में लिखिए। (2 × 3 =6 अंक)

(क) निम्नलिखित पंक्तियों में निहित काव्य सौंदर्य लिखिए।

पुलकि सरीर सभाँ भए ठाढ़े।
नीरज नयन नेह जल बाढ़े।।
कहब मोर मुनिनाथ निबाहा।
एहि ते अधिक कहौं मैं काहा।।

(ख) आशय स्पष्ट कीजिए -

जनम अबधि हम रूप निहारल नयन न तिलपित भेल।।
सेहो मधुर बोल श्रवनहि सूनल श्रुति पथ परस न गेल।।

(ग) बारहमासा का प्रतिपाद्य स्पष्ट कीजिए।

प्रश्न 6 निम्नलिखित में से किसी एक प्रश्न का उत्तर लगभग 30-40 शब्दों में लिखिए। (1×2 =2 अंक)

(क) अपने द्वारा इस सत्र में पढ़ी किन्हीं दो कविताओं में प्रयुक्त अलंकारों के महत्व का वर्णन कीजिए।

(ख) वियोगावस्था में सुख देने वाली वस्तुएँ भी दुख देने लगती हैं। 'गीतावली' से संकलित पदों के आधार पर सिद्ध कीजिए।

प्रश्न 7 निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लगभग 50-60 शब्दों में लिखिए। (2 × 3 =6 अंक)

(क) 'जहाँ कोई वापसी नहीं' पाठ के लिए कोई दूसरा शीर्षक लिखें तथा इसे चुनने के लिए अपने तर्क दें ।

(ख) असगर वजाहत द्वारा लिखी लघुकथाओं में से कौन-सी लघुकथा आपको सर्वाधिक प्रभावित करती है और क्यों? स्पष्ट कीजिए।

(ग) पारो और संभव में से आप किसके प्रति अधिक सहानुभूति रखते हैं और क्यों? 'दूसरा देवदास' पाठ के आधार पर उस पात्र की मन:स्थिति का वर्णन कीजिए।

प्रश्न 8 निम्नलिखित में से किसी एक प्रश्न का उत्तर लगभग 30-40 शब्दों में लिखिए। (1×2 =2 अंक)

(क) "व्यापार यहाँ भी था।" - 'दूसरा देवदास' पाठ के आधार पर इस कथन का आशय स्पष्ट कीजिए।

(ख) औद्योगीकरण ने पर्यावरण को कैसे प्रभावित किया है ? "जहाँ कोई वापसी नहीं" पाठ के आधार पर बताइए।

प्रश्न 9 निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लगभग 30-40 शब्दों में लिखिए। (2 × 2 =4अंक)

(क) लेखक बिसनाथ ने किन आधारों पर अपनी माँ की तुलना बतख से की है?

(ख) 'छप्पन के काल ने देशभर में हाय-हाय मचाई हो लेकिन मालवा में लोग न प्यासे मरे न भूखे क्योंकि उसके पहले के साल खूब पानी था और बाद के साल में भी अपने नदी, नाले, तालाब सँभाल के रखो तो दुष्काल का साल मजे में निकल जाता है। लेकिन हम जिसे विकास की औद्योगिक सभ्यता कहते हैं वह उजाड़ की अपसभ्यता है।'

लेखक को क्यों लगता है कि हम जिसे विकास की औद्योगिक सभ्यता कहते हैं वह उजाड़ की अपसभ्यता है। आप क्या मानते हैं? कथन के आलोक में अपने विचार व्यक्त कीजिए।

(ग) शरद में ही हरसिंगार फूलता है। पितर-पक्ख (पितृपक्ष) में मालिन दाई घर के दरवाजे पर हरसिंगार की राशि रख जाती थीं रख जाती थीं, तो खड़ी बोली हुई। गाँव की बोली में 'कुरइ जात रहीं।' बहुत ढेर सारे फूल मानो इकट्ठे ही अनायास उनसे गिर पड़ते थे। 'कुरइ देना' है तो सकर्मक लेकिन सहजता अकर्मक की है।

उपर्युक्त पंक्तियाँ किसकी आत्मकथा का वर्णन कर रही हैं और इस कथा के केंद्र में क्या है?

Sample Question Paper
CLASS: XII
Session: 2021-22
Applied Mathematics (Code-241)
Term - II

Time Allowed: 2 hrs   **Maximum Marks: 40**

General Instructions:

- **The question paper is divided into 3 sections – A, B and C**
- **Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.**
- **Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.**
- **Section C comprises of 4 questions. It contains one case study based question. Internal choice has been provided in one question.**

SECTION – A

1.	The marginal revenue function for a commodity is given by $MR = 9 + 2x - 6x^2$. Find the demand function. **OR** The marginal cost of producing x pairs of tennis shoes is given by $$MC = 50 + \frac{300}{x+1}$$ If the fixed cost is ₹2000, find the total cost function.	2
2.	Find the present value of perpetuity of ₹600 at end of each quarter if money is worth 8% compounded quarterly.	2
3.	What effective rate is equivalent to a nominal rate of 8% per annum compounded quarterly? **OR** Find the present value of an annuity of ₹1000 payable at the end of each year for 5 years if money is worth 6% compounded annually. $$[Given\ (1.06)^{-5} = 0.7473]$$	2
4.	A sampling distribution of the sample means $\overline{X}$ is formed from a population with mean weight $\mu = 60kg$ and standard deviation $\sigma = 9kg$. What is the expected value and standard deviation of $\overline{X}$, if sample size is 36?	2
5.	Find the trend values using 3 yearly moving average for the loans sanctioned to farmers by a particular branch of a bank in a village.	2

Year	2016	2017	2018	2019	2020	2021
Amount (in ₹ lakh)	25	30	32	40	45	50

6.	The feasible region of the LPP	2

Min $Z = 3x + 2y$

subject to constraints

$2x + y \geq 6, \ x - y \geq 0, \ x \geq 0, y \geq 0$ is given below:

Determine the optimal solution. Justify your answer.

SECTION – B

7.	The supply function for a commodity is given by $p = x^2 + 4x + 3$, where x is the quantity supplied at the price p. Find the producers surplus when the price of the commodity is ₹48.	3

8	The following table shows the quarterly sales (in ₹crore) of a real estate company. Compute the trend by quarterly moving averages.	3

Quarters / Years	Q_1	Q_2	Q_3	Q_4
2018	12	14	18	20
2019	18	16	20	22
2020	27	24	30	36

OR

Fit a straight line trend by the method of least squares and estimate the trend for the year 2023.

Year	2014	2015	2016	2017	2018	2019	2020
Sales (in ₹ lacs)	26	26	44	42	108	120	166

9.	A machine produces washers of thickness 0.50 mm. To determine whether the machine is in proper working order, a sample of 10 washers is chosen for which the mean thickness is 0.53mm and the standard deviation is 0.03 mm. Test the hypothesis at 5% level of significance that the machine is working in proper order.	3

$[Given\ critical\ value, t_{0.025} = 2.262\ at\ v(d.f) = 9]$

10.	A person invested ₹15000 in a mutual fund and the value of investment at the time of redemption was ₹25000. If CAGR for this investment is 8.88%, Calculate the time period for which the amount was invested? $[Given \log(1.667) = 0.2219 \ \& \ \log(1.089) = 0.037]$	3

SECTION – C

11.	S & D chemicals produces two products, an alkaline solution and a base oil that are sold as raw material to companies manufacturing soaps and detergents. On the basis of current inventory levels and estimated demand for the coming month, S & D's management has decided that combined production of alkaline solution and base oil must be at least 3500 gallons. S & D chemicals are also committed to supply 1250 gallons of alkaline solution to one of its major customer. The alkaline solution and base oil requires respectively 2 hours and 1 hour of processing time per gallon. The total processing time available for the coming month is 6000 hours. The production cost is ₹200 per gallon for the alkaline solution and ₹300 per gallon for base oil. Formulate the above as a L.P.P and solve it by graphical method to help S & D chemicals determine the minimum production cost.	4
12.	A machine costing ₹50,000 is to be replaced at the end of 10 years, when it will have a salvage value of ₹5000. In order to provide money at that time for a machine costing the same amount, a sinking fund is set up. If equal payments are placed in the fund at the end of each quarter and the fund earns 8% compounded quarterly, then what should each payment be? $[Given \ (1.02)^{40} = 2.208]$	4
13.	A couple wishes to purchase a house for ₹15,00,000 with a down payment of ₹4,00,000. If they can amortize the balance at an interest rate 9% per annum compounded monthly for 10 years, find the monthly installment **(EMI)**. Also find the total interest paid. $[Given \ (1.0075)^{-120} = 0.4079]$ **OR** A ₹2000, 8% bond is redeemable at the end of 10 years at ₹105. Find the purchase price to yield 10% effective rate. $[Given(1.1)^{-10} = 0.3855]$	4
14.	**CASE STUDY** General anesthesia is used for major operations to cure the patients and conduct pain free surgeries. Propofol is a commonly used anesthetic injected for major operations such as knee replacement or open heart surgery. It also acts as a sedative and an analgesic.	

A patient is rushed to operation theatre for a 2-hour cardiac surgery. A person is anesthetized when its blood stream contains at least 3 mg of propofol per kg of body weight. The rate of change of propofol(x), in the body is proportional to the quantity of propofol present at that time. Based on the above information. Answer the following questions:

a. Show that propofol given intravenously is eliminated exponentially from the patients' blood stream

2

b. What dose of propofol should be injected to induce unconsciousness in a 50 Kg adult for a two hours operation?

(Given $(2)^{\frac{1}{5}} = 1.1487$ & assume half-life of propofol = 5 hours)

2

Sample Question Paper
CLASS: XII
Session: 2021-22
Mathematics (Code-041)
Term - 2

Time Allowed: 2 hours   **Maximum Marks: 40**

<u>General Instructions</u>:
1. This question paper contains **three sections – A, B and C**. Each part is compulsory.
2. **Section - A** has 6 **short answer type (SA1) questions** of 2 marks each.
3. **Section – B** has 4 **short answer type (SA2) questions** of 3 marks each.
4. **Section - C** has 4 **long answer type questions (LA)** of 4 marks each.
5. There is an **internal choice** in some of the questions.
6. Q14 is a **case-based problem** having 2 sub parts of 2 marks each.

SECTION – A

1.	Find $\int \frac{\log x}{(1+\log x)^2} dx$ OR Find $\int \frac{\sin 2x}{\sqrt{9-\cos^4 x}} dx$	2
2.	Write the sum of the order and the degree of the following differential equation: $$\frac{d}{dx}\left(\frac{dy}{dx}\right) = 5$$	2
3.	If $\hat{a}$ and $\hat{b}$ are unit vectors, then prove that $\left|\hat{a} + \hat{b}\right| = 2\cos\frac{\theta}{2}$, where θ is the angle between them.	2
4.	Find the direction cosines of the following line: $$\frac{3-x}{-1} = \frac{2y-1}{2} = \frac{z}{4}$$	2
5.	A bag contains 1 red and 3 white balls. Find the probability distribution of the number of red balls if 2 balls are drawn at random from the bag one-by-one without replacement.	2
6.	Two cards are drawn at random from a pack of 52 cards one-by-one without replacement. What is the probability of getting first card red and second card Jack?	2

SECTION – B

7.	Find: $\int \frac{x+1}{(x^2+1)x} dx$	3
8.	Find the general solution of the following differential equation: $$x\frac{dy}{dx} = y - x\sin\left(\frac{y}{x}\right)$$ OR Find the particular solution of the following differential equation, given that y = 0 when x = $\frac{\pi}{4}$: $$\frac{dy}{dx} + y\cot x = \frac{2}{1+\sin x}$$	3
9.	If $\vec{a} \neq \vec{0}$, $\vec{a}.\vec{b} = \vec{a}.\vec{c}$, $\vec{a} \times \vec{b} = \vec{a} \times \vec{c}$, then show that $\vec{b} = \vec{c}$.	3

10.	Find the shortest distance between the following lines: $\vec{r} = (\hat{\imath} + \hat{\jmath} - \hat{k}) + s(2\hat{\imath} + \hat{\jmath} + \hat{k})$ $\vec{r} = (\hat{\imath} + \hat{\jmath} + 2\hat{k}) + t(4\hat{\imath} + 2\hat{\jmath} + 2\hat{k})$ OR Find the vector and the cartesian equations of the plane containing the point $\hat{\imath} + 2\hat{\jmath} - \hat{k}$ and parallel to the lines $\vec{r} = (\hat{\imath} + 2\hat{\jmath} + 2\hat{k}) + s(2\hat{\imath} - 3\hat{\jmath} + 2\hat{k})$ and $\vec{r} = (3\hat{\imath} + \hat{\jmath} - 2\hat{k}) + t(\hat{\imath} - 3\hat{\jmath} + \hat{k})$	3

SECTION – C

11.	Evaluate: $\int_{-1}^{2}|x^3 - 3x^2 + 2x|dx$	4
12.	Using integration, find the area of the region in the first quadrant enclosed by the line x + y = 2, the parabola y ^{2} = x and the x-axis. OR Using integration, find the area of the region $\{(x,y): 0 \le y \le \sqrt{3}x, x^2 + y^2 \le 4\}$	4
13.	Find the foot of the perpendicular from the point (1, 2, 0) upon the plane x – 3y + 2z = 9. Hence, find the distance of the point (1, 2, 0) from the given plane.	4
14.	**CASE-BASED/DATA-BASED** Fig 1 An insurance company believes that people can be divided into two classes: those who are accident prone and those who are not. The company's statistics show that an accident-prone person will have an accident at sometime within a fixed one-year period with probability 0.6, whereas this probability is 0.2 for a person who is not accident prone. The company knows that 20 percent of the population is accident prone. **Based on the given information, answer the following questions.**	
	(i)what is the probability that a new policyholder will have an accident within a year of purchasing a policy?	2
	(ii) Suppose that a new policyholder has an accident within a year of purchasing a policy. What is the probability that he or she is accident prone?	2

MM : 35   TIME : 2 Hours

General Instructions:

(i)   **There are 12 questions in all. All questions are compulsory.**

(ii)   **This question paper has three sections: Section A, Section B and Section C.**

(iii) **Section A contains three questions of two marks each, Section B contains eight questions of three marks each, Section C contains one case study-based question of five marks.**

(iv)   **There is no overall choice. However, an internal choice has been provided in one question of two marks and two questions of three marks. You have to attempt only one of the choices in such questions.**

(v)   **You may use log tables if necessary but use of calculator is not allowed.**

SECTION A

Q1. In a pure semiconductor crystal of Si, if antimony is added then what type of extrinsic semiconductor is obtained. Draw the energy band diagram of this extrinsic semiconductor so formed.

Q2.   Consider two different hydrogen atoms. The electron in each atom is in an excited state. Is it possible for the electrons to have different energies but same orbital angular momentum according to the Bohr model? Justify your answer.

OR

Explain how does (i) photoelectric current and (ii) kinetic energy of the photoelectrons emitted in a photocell vary if the frequency of incident radiation is doubled, but keeping the intensity same? Show the graphical variation in the above two cases.

Q3. Name the device which converts the change in intensity of illumination to change in electric current flowing through it. Plot I-V characteristics of this device for different intensities. State any two applications of this device.

SECTION B

Q4. Derive an expression for the frequency of radiation emitted when a hydrogen atom de-excites from level n to level $(n - 1)$. Also show that for large values of n, this frequency equals to classical frequency of revolution of an electron.

Q5. Explain with a proper diagram how an ac signal can be converted into dc (pulsating)signal with output frequency as double than the input frequency using pn junction diode. Give its input and output waveforms.

Q6. How long can an electric lamp of 100 W be kept glowing by fusion of 2 kg of deuterium?
Take the fusion reaction as

$$^2_1H + ^2_1H \rightarrow ^3_2He + n + 3.27 \text{ MeV}$$

Q7. Define wavefront. Draw the shape of refracted wavefront when the plane incident wave undergoes refraction from optically denser medium to rarer medium. Hence prove Snell's law of refraction.

Q8. (a) Draw a ray diagram of compound microscope for the final image formed at least distance of distinct vision?

(b) An angular magnification of 30X is desired using an objective of focal length 1.25 cm and an eye piece of focal length 5 cm. How will you set up the compound microscope for the final image formed at least distance of distinct vision?

OR

(a) Draw a ray diagram of Astronomical Telescope for the final image formed at infinity.

(b) A small telescope has an objective lens of focal length 140 cm and an eyepiece of focal length 5.0 cm. Find the magnifying power of the telescope for viewing distant objects when

(i) the telescope is in normal adjustment,

(ii) the final image is formed at the least distance of distinct vision.

Q9. Light of wavelength 2000 Å falls on a metal surface of work function 4.2 eV.

(a) What is the kinetic energy (in eV) of the fastest electrons emitted from the surface?

(b) What will be the change in the energy of the emitted electrons if the intensity of light with same wavelength is doubled?

(c) If the same light falls on another surface of work function 6.5 eV, what will be the energy of emitted electrons?

Q10. The focal length of a convex lens made of glass of refractive index (1.5) is 20 cm.

What will be its new focal length when placed in a medium of refractive index 1.25 ?

Is focal length positive or negative? What does it signify?

Q11. (a) Name the e.m. waves which are suitable for radar systems used in aircraft navigation. Write the range of frequency of these waves.

(b) If the Earth did not have atmosphere, would its average surface temperature be higher or lower than what it is now? Explain.

(c) An e.m. wave exerts pressure on the surface on which it is incident. Justify.

OR

(a) "If the slits in Young's double slit experiment are identical, then intensity at any point on the screen may vary between zero and four times to the intensity due to single slit".

Justify the above statement through a relevant mathematical expression.

(b) Draw the intensity distribution as function of phase angle when diffraction of light takes place through coherently illuminated single slit.
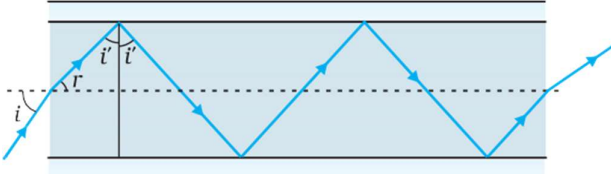
Q12. **CASE STUDY**: <u>**MIRAGE IN DESERTS**</u>

MIRAGE
AN OPTICAL ILLUSION
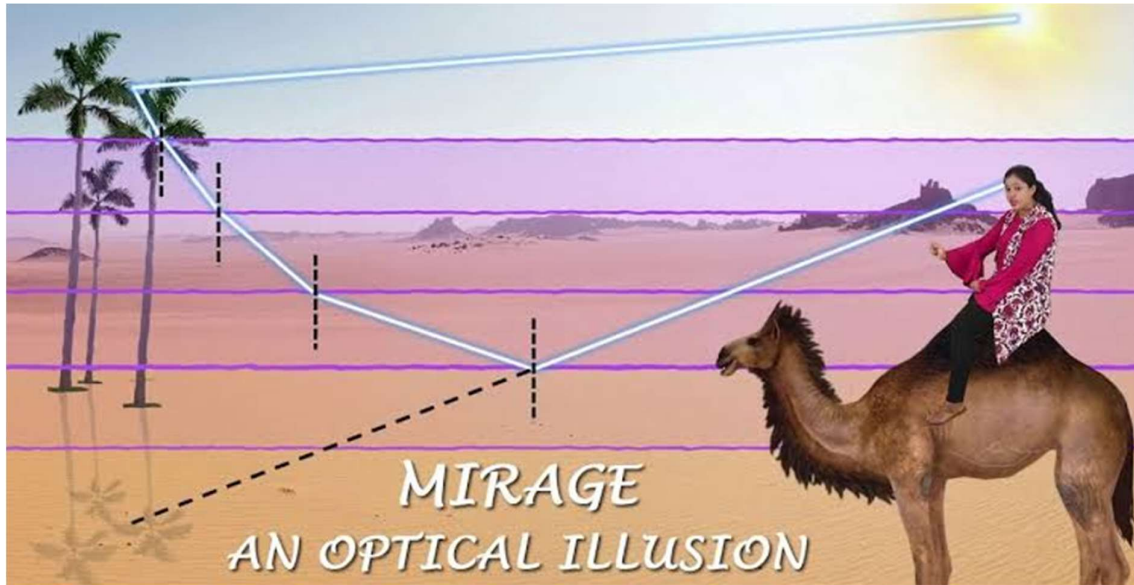
To a distant observer, the light appears to be coming from somewhere below the ground. The observer naturally assumes that light is being reflected from the ground, say, by a pool of water near the tall object.

Such inverted images of distant tall objects cause an optical illusion to the observer. This phenomenon is called mirage. This type of mirage is especially common in hot deserts.

Based on the above facts, answer the following questions:

(a)	Which of the following phenomena is prominently involved in the formation of mirage in deserts?	1

(i) Refraction, Total internal Reflection	(ii) Dispersion and Refraction
(iii) Dispersion and scattering of light	(iv) Total internal Reflection and diffraction.

(b)	A diver at a depth 12 m inside water $\left(a_{\mu_\omega} = \frac{4}{3} \right)$ sees the sky in a cone of semi- vertical angle	1

(i) $\sin^{-1} \frac{4}{3}$	(ii) $\tan^{-1} \frac{4}{3}$
(iii) $\sin^{-1} \frac{3}{4}$	(iv) $90°$

(c)	In an optical fibre, if n_1 and n_2 are the refractive indices of the core and cladding, then which among the following, would be a correct equation?	1

(i) $n_1 < n_2$	(ii) $n_1 = n_2$
(iii) $n_1 << n_2$	(iv) $n_1 > n_2$

(d)	A diamond is immersed in such a liquid which has its refractive index with respect to air as greater than the refractive index of water with respect to air. Then the critical angle of diamond-liquid interface as compared to critical angle of diamond -water interface will	1

(i) depend on the nature of the liquid only	(ii) decrease
(iii) remain the same	(iv) increase.

(e)	The following figure shows a cross-section of a 'light pipe' made of a glass fiber of refractive index 1.68. The outer covering of the pipe is made of a material of refractive index 1.44. What is the range of the angles of the incident rays with the axis of the pipe for the following phenomena to occur.	1

(i) $0 < i < 90°$	(ii) $0 < i < 60°$
(iii) $0 < i < 45°$	(iv) $0 < i < 30°$

SAMPLE PAPER QUESTION (2021-22)
TERM – II
CHEMISTRY THEORY (043)

MM:35   Time: 2 Hours

GENERAL INSTRUCTIONS:

 Read the following instructions carefully.
 1. There are **12** questions in this question paper with internal choice.
 2. **SECTION A - Q. No. 1 to 3** are very short answer questions carrying 2 marks each.
 3. **SECTION B - Q. No. 4 to 11** are short answer questions carrying 3 marks each.
 4. **SECTION C- Q. No. 12** is case based question carrying 5 marks.
 5. **All questions are compulsory.**
 6. **Use of log tables and calculators is not allowed**

SECTION A

1. Arrange the following in the increasing order of their property indicated (any 2):
   a. Benzoic acid, Phenol, Picric acid, Salicylic acid (pka values).
   b. Acetaldehyde, Acetone, Methyl tert butyl ketone (reactivity towards NH_2OH).
   c. ethanol, ethanoic acid, benzoic acid (boiling point)   (1x2=2)

2. Solutions of two electrolytes 'A' and 'B' are diluted. The Λ_m of 'B' increases 1.5 times while that of A increases 25 times. Which of the two is a strong electrolyte? Justify your answer. Graphically show the behavior of 'A' and 'B'.   (2)

3. Give reasons to support the answer:
   a. Presence of Alpha hydrogen in aldehydes and ketones is essential for aldol condensation.
   b. 3 –Hydroxy pentan-2-one shows positive Tollen's test.   (1x2=2)
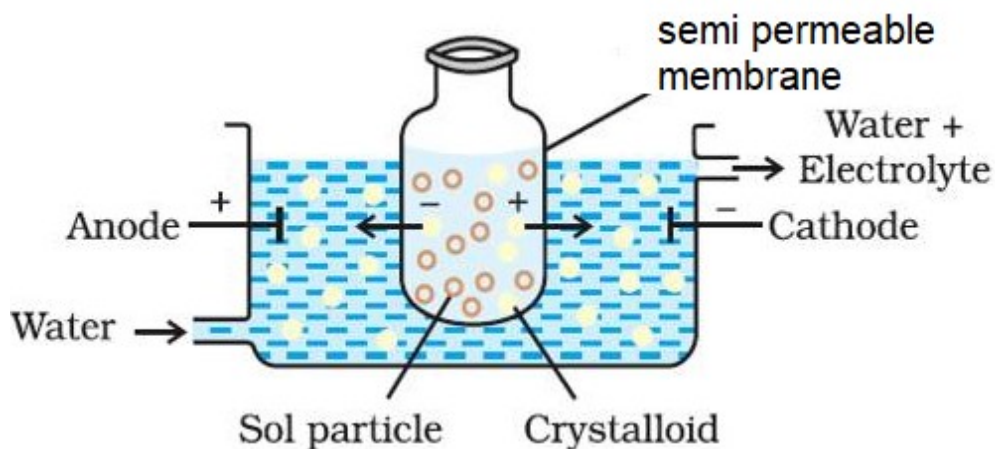
SECTION B
4. Account for the following:
   a. Aniline cannot be prepared by the ammonolysis of chlorobenzene under normal conditions.
   b. N-ethylethanamine boils at 329.3K and butanamine boils at 350.8K, although both are isomeric in nature.
   c. Acylation of aniline is carried out in the presence of pyridine.   (1x3=3)

OR

4. Convert the following:
   a. Phenol to N-phenylethanamide.
   b. Chloroethane to methanamine.
   c. Propanenitrile to ethanol. (1x3=3)

5. Answer the following questions:
   a. $[Ni(H_2O)_6]^{2+}$ (aq) is green in colour whereas $[Ni(H_2O)_4 (en)]^{2+}$(aq)is blue in colour , give reason in support of your answer .
   b. Write the formula and hybridization of the following compound:
      tris(ethane-1,2–diamine) cobalt(III) sulphate (1+2)

OR

5. In a coordination entity, the electronic configuration of the central metal ion is $t_2g^3\ e_g^1$
   a. Is the coordination compound a high spin or low spin complex?
   b. Draw the crystal field splitting diagram for the above complex. (1+2)

6. Account for the following:
   a. Ti(IV) is more stable than the Ti (II) or Ti(III).
   b. In case of transition elements, ions of the same charge in a given series show progressive decrease in radius with increasing atomic number.
   c. Zinc is a comparatively a soft metal, iron and chromium are typically hard. (1x3=3)

7. An alkene 'A' (Mol. formula C_5H_{10}) on ozonolysis gives a mixture of two compounds 'B' and 'C'. Compound 'B' gives positive Fehling's test and also forms iodoform on treatment with I_2 and NaOH. Compound 'C' does not give Fehling's test but forms iodoform. Identify the compounds A, B and C. Write the reaction for ozonolysis and formation of iodoform from B and C. (3)

8. Observe the figure given below and answer the questions that follow:

Anode

Water →

semi permeable membrane

Water + Electrolyte

Cathode

Sol particle   Crystalloid
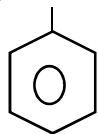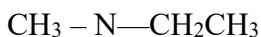
   a. Which process is represented in the figure?

b. What is the application of this process?

c. Can the same process occur without applying electric field? Why is the electric field applied?
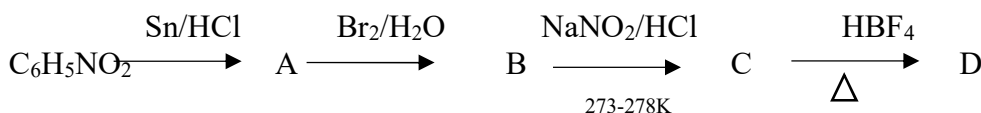
9. What happens when reactions:
   a. N-ethylethanamine reacts with benzenesulphonyl chloride.
   b. Benzylchloride is treated with ammonia followed by the reaction with Chloromethane.
   c. Aniline reacts with chloroform in the presence of alcoholic potassium hydroxide. (1x3=3)
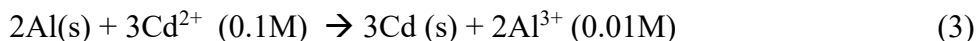
OR

9. a. Write the IUPAC name for the following organic compound:

$CH_3 - N—CH_2CH_3$

   b.Complete the following:

$$C_6H_5NO_2 \xrightarrow{\text{Sn/HCl}} A \xrightarrow{\text{Br}_2/\text{H}_2\text{O}} B \xrightarrow[\text{273-278K}]{\text{NaNO}_2/\text{HCl}} C \xrightarrow[\Delta]{\text{HBF}_4} D$$

(1x3=3)

10. Represent the cell in which the following reaction takes place.The value of E° for the cell is 1.260 V. What is the value of E_{cell} ?

$$2Al(s) + 3Cd^{2+} \ (0.1M) \rightarrow 3Cd \ (s) + 2Al^{3+} \ (0.01M)$$ (3)

11. a. Why are fluorides of transition metals more stable in their higher oxidation state as compared to the lower oxidation state?

   b. Which one of the following would feel attraction when placed in magnetic field: Co^{2+}, Ag^+, Ti^{4+}, Zn^{2+}

   c. It has been observed that first ionization energy of 5 d series of transition elements are higher than that of 3d and 4d series, explain why? (1x3=3)

OR

11. On the basis of the figure given below, answer the following questions:
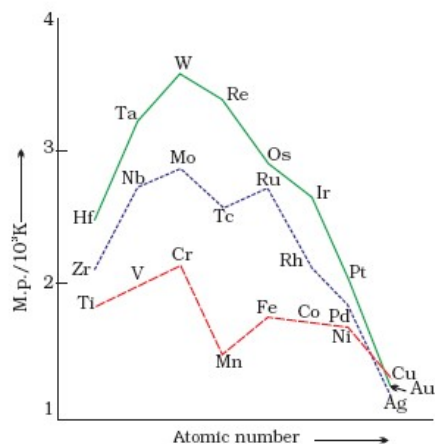
(source: NCERT)

a. Why Manganese has lower melting point than Chromium?
b. Why do transition metals of 3d series have lower melting points as compared to 4d series?
c. In the third transition series, identify and name the metal with the highest melting point.

(1x3=3)

SECTION C

12. Read the passage given below and answer the questions that follow.
Are there nuclear reactions going on in our bodies?

There are nuclear reactions constantly occurring in our bodies, but there are very few of them compared to the chemical reactions, and they do not affect our bodies much. All of the physical processes that take place to keep a human body running are chemical processes. Nuclear reactions can lead to chemical damage, which the body may notice and try to fix.

The nuclear reaction occurring in our bodies is radioactive decay. This is the change of a less stable nucleus to a more stable nucleus. Every atom has either a stable nucleus or an unstable nucleus, depending on how big it is and on the ratio of protons to neutrons. The ratio of neutrons to protons in a stable nucleus is thus **around 1:1** for small nuclei ($Z < 20$). Nuclei with too many neutrons, too few neutrons, or that are simply too big are unstable. They eventually transform to a stable form through radioactive decay. Wherever there are atoms with unstable nuclei (radioactive atoms), there are nuclear reactions occurring naturally. The interesting thing is that there are small amounts of radioactive atoms everywhere: in your chair, in the ground, in the food you eat, and yes, in your body.

The most common natural radioactive isotopes in humans are carbon-14 and potassium-40. Chemically, these isotopes behave exactly like stable carbon and potassium. For this reason, the body uses carbon-14 and potassium-40 just like it does normal carbon and potassium; building them into the different parts of the cells, without knowing that they are radioactive. In time,

carbon-14 atoms decay to stable nitrogen atoms and potassium-40 atoms decay to stable calcium atoms. Chemicals in the body that relied on having a carbon-14 atom or potassium-40 atom in a certain spot will suddenly have a nitrogen or calcium atom. Such a change damages the chemical. Normally, such changes are so rare, that the body can repair the damage or filter away the damaged chemicals.

The natural occurrence of carbon-14 decay in the body is the core principle behind carbon dating. As long as a person is alive and still eating, every carbon-14 atom that decays into a nitrogen atom is replaced on average with a new carbon-14 atom. But once a person dies, he stops replacing the decaying carbon-14 atoms. Slowly the carbon-14 atoms decay to nitrogen without being replaced, so that there is less and less carbon-14 in a dead body. The rate at which carbon-14 decays is constant and follows first order kinetics. It has a half - life of nearly 6000 years, so by measuring the relative amount of carbon-14 in a bone, archeologists can calculate when the person died. All living organisms consume carbon, so carbon dating can be used to date any living organism, and any object made from a living organism. Bones, wood, leather, and even paper can be accurately dated, as long as they first existed within the last 60,000 years. This is all because of the fact that nuclear reactions naturally occur in living organisms.

(source: The textbook Chemistry: The Practical Science by Paul B. Kelter, Michael D. Mosher and Andrew Scott states)

a. Why is Carbon -14 radioactive while Carbon -12 not? (Atomic number of Carbon: 6)
b. Researchers have uncovered the youngest known dinosaur bone, dating around 65 million years ago. How was the age of this fossil estimated?
c. Which are the two most common radioactive decays happening in human body?
d. Suppose an organism has 20 g of Carbon -14 at its time of death. Approximately how much Carbon -14 remains after 10,320 years? (Given antilog 0.517 = 3.289)

OR

d. Approximately how old is a fossil with 12 g of Carbon -14 if it initially possessed 32 g of Carbon -14? (Given log 2.667 = 0.4260)
(1+1+1+2)

SAMPLE QUESTION PAPER

CLASS XII

BIOLOGY (044)

TERM II (2021-22)

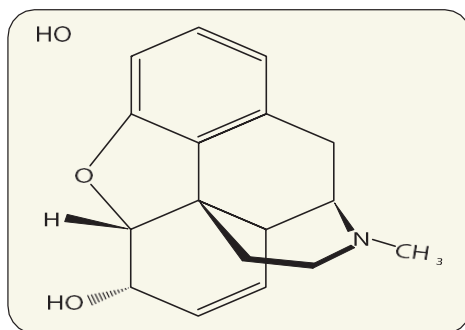**Max. Marks 35**   **Time allowed: 2 hours**

General Instructions:

i)   All questions are compulsory.

ii) The question paper has three sections and 13 questions. All questions are compulsory.

iii) Section–A has 6 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has a case-based question of 5 marks.

iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

v)   Wherever necessary, neat and properly labeled diagrams should be drawn.

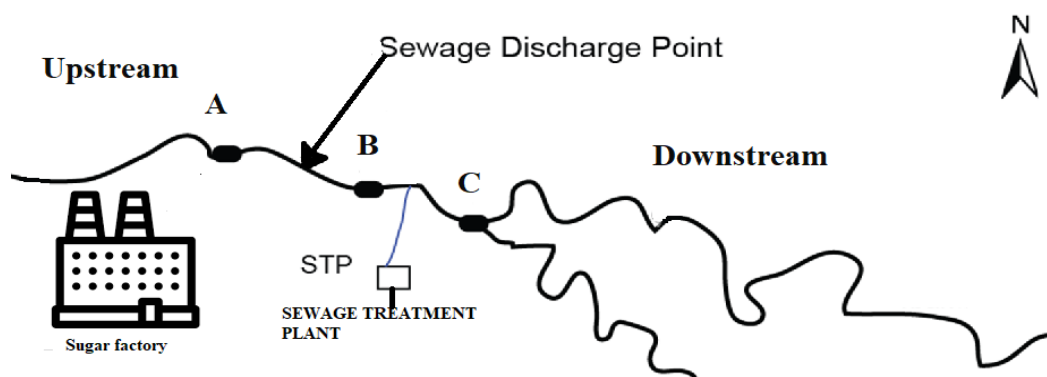| Q. No.		Marks
	Section A	
1	Humans have innate immunity for protection against pathogens that may enter the gut along with food. What are the **two** barriers that protect the body from such pathogens?	2
2	A patient admitted in ICU was diagnosed to have suffered from myocardial infarction. The condition of coronary artery is depicted in the image below. Name **two** bioactive agents and their mode of action that can improve this condition. **OR** Substantiate by giving two reasons as to why a holistic understanding of the flora and fauna the cropland is required before introducing an appropriate biocontrol method.	2

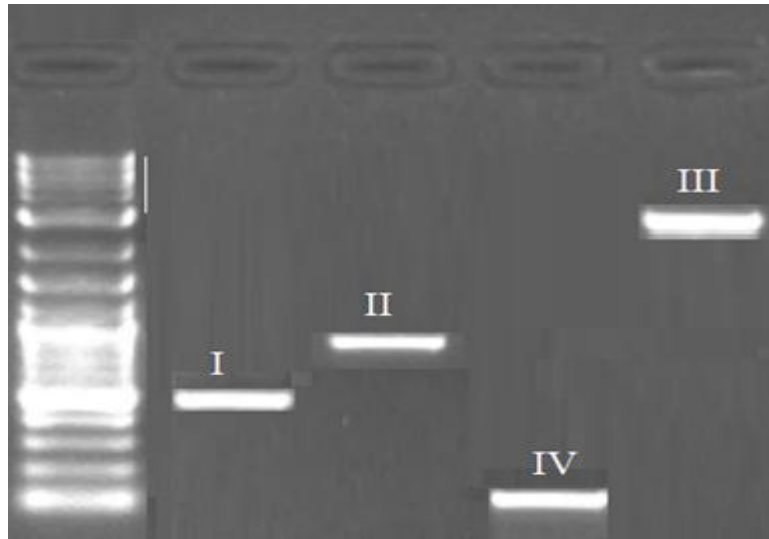| 3	Identify the compound chemical structure is shown below. State any three of its physical properties.	2
4	Water samples were collected at points A, B and C in a segment of a river near a sugar factory and tested for BOD level. The BOD levels of samples A, B and C were 400 mg/L, 480 mg/L and 8 mg/L respectively. What is this indicative of? Explain why the BOD level gets reduced considerably at the collection point C? 	2
5	An ecologist study an area with population A, thriving on unlimited resources and showing exponential growth, introduced population B and C to the same area. What will be the effect on the growth pattern of the population A, B and C when living together in the same habitat?	2
6	With the decline in the population of fig species it was noticed that the population of wasp species also started to decline. What is the relationship between the two and what could be the possible reason for decline of wasps? **OR** With the increase in the global temperature, the inhabitants of Antarctica are facing fluctuations in the temperature. Out of the *regulators* and the *conformers*, which of the two will have better chances of survival? Give two adaptations that support them to survive in the ambient environment? Give one suitable example.	2

	SECTION B	
7	How do normal cells get transformed into cancerous neoplastic cells? Elaborate giving three examples of inducing agent. **OR** A person is suffering from a high-grade fever. Which symptoms will help to identify if he/she is suffering from Typhoid, Pneumonia or Malaria?	3
8	Recognition of an antigenic protein of a pathogen or exposure to a pathogen occurs during many types of immune responses, including active immunity and induced active immunity. Specify the types of responses elicited when human beings get encountered by a pathogen.	3
9	In a pathological lab, a series of steps were undertaken for finding the gene of interest. Describe the steps, or make a flow chart showing the process of amplification of this gene of interest.	3
10	a. 'The Evil Quartet' describes the rates of species extinction due to human activities. Explain how the population of organisms is affected by fragmentation the habitats. b. Introduction of alien species has led to environmental damage and decline of indigenous species. Give any one example of how it has affected the indigenous species? c. Could the extinction of Steller's sea cow and passenger pigeon be saved by man? Give reasons to support your answer.	3
11	a. The image shown below is of a sacred grove found in India. Explain how has human involvement helped in the preservation of these biodiversity rich regions. b. Value of Z (regression coefficient) is considered for measuring the species richness of an area. If the value of Z is 0.7 for area A ,and 0.15 for area B, which area has higher species richness and a steeper slope?	3

12	The image below depicts the result of gel electrophoresis	3
	If the ladder represents sequence length upto 3000 base pairs (bp),	
	a. Which of the bands (I - IV) correspond to 2500 bp and 100 bp respectively?	
	b. Explain the basis of this kind of separation and also mention the significance of this process.	

SECTION C

| 13	Some restriction enzymes break a phosphodiester bond on both the DNA strands, such that only one end of each molecule is cut and these ends have regions of single stranded DNA. BamH1is one such restriction enzyme which binds at the recognition sequence, 5'-GGATCC- 3'and cleaves these sequences just after the 5'- guanine on each strand.	5
	a. What is the objective of this action?	
	b. Explain how the gene of interest is introduced into a vector.	
	c. You are given the DNA shown below.	
	5' ATTTTGAGGATCCGTAATGTCCT 3'	
	3' TAAAACTCCTAGGCATTACAGGA 5'	
	If this DNA was cut with BamHI, how many DNA fragments would you expect? Write the sequence of these double-stranded DNA fragments with their respective polarity.	
	d. A gene M was introduced into *E.coli* cloning vector PBR322 at BamH1 site. What will be its impact on the recombinant plamids? Give a possible way by which you could differentiate non recombinant to recombinant plasmids.	

OR

GM crops especially Bt crops are known to have higher resistance to pest attacks. To substantiate this an experimental study was conducted in 4 different farmlands growing Bt and non Bt-Cotton crops. The farm lands had the same dimensions, fertility and were under similar climatic conditions. The histogram below shows the usage of pesticides on Bt crops and non-Bt crops in these farm lands.
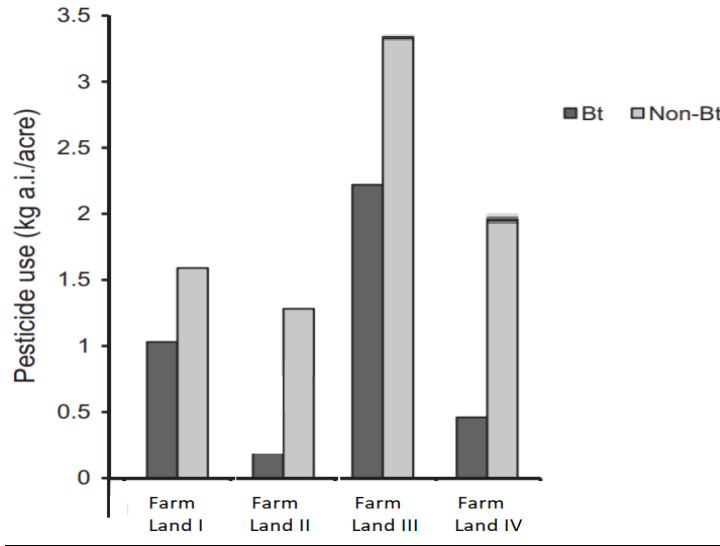
a. Which of the above 4 farm lands has successfully applied the concepts of Biotechnology to show better management practices and use of agrochemicals? If you had to cultivate, which crop would you prefer (Bt or Non- Bt) and why?

b. Cotton Bollworms were introduced in another experimental study on the above farm lands **wherein no pesticide was used**. Explain what effect would a Bt and Non Bt crop have on the pest.

***

SAMPLE QUESTION PAPER 2021-22
TERM II-CLASS XII
HISTORY - CODE 027

Time Allowed: 2 Hours   Maximum Marks: 40

General Instructions :

i. *This Question paper is divided into four sections-Section A, B, C and D*
ii. *All questions are compulsory.*
iii. ***Section-A****: Question no. 1 to 4 are Short Answer type questions of 3 marks each. Answer to each question should not exceed 80 words.*
iv. ***Section-B****: Question no. 5 to 7 are   Long Answer type questions, carrying 6 marks. Answer to this question should not exceed 150-200 words.*
v. ***Section-C:*** *Question no. 8 and 9 are Case Based questions, carrying 4 marks each with subparts.*
vii. ***Section-D****: Question no. 10 is map based, carrying 2 marks*
viii. *There is no overall choice in the question paper. However, an internal choice has been provided in a few questions. Only one of the choices in such questions have to be attempted.*
ix. *In addition to this, separate instructions are given with each section and question, wherever necessary.*

S.NO	**SECTION A** **Short Answer Type Questions**	**3X4=** **12M**
1.	Describe the role of Dr BR Ambedkar in the Constituent Assembly of India.	3K
2.	Critically analyse the Fifth Report which was submitted to the British Parliament in 1813. **OR** Examine the policies adopted by the British towards Paharias during 18th century**.**	3E 3E
3.	Rumours and Prophecies played a part in moving people to action.' Explain the statement in the context of the Revolt of 1857.	3U
4.	Why have many scholars written the months after Independence as being Gandhiji's "finest hours? Explain.	3U

		SECTION B __Long Answer Type Questions	**6X3=18**
5.		Describe the role of any six prominent leaders of northern India who fought against the British in the Revolt of 1857.	6K
6.		Quit India movement was genuinely a mass movement bringing into its ambit hundreds of thousands of ordinary Indians. Elucidate the statement with suitable examples. OR 'Gandhiji had mobilized a wider discontentment against the British rule in the Salt Satyagraha.' Elucidate the statement with suitable examples	6A 6A
7.		Abul Fazal describes the ideal of Sulh- i -Kul (absolute peace) as the cornerstone of Akbar enlightened rule". Support the statement with few examples. **OR** 'The officer corps of the Mughals were described as bouquet of flowers held together by loyalty to the emperor.' Justify the statements with suitable arguments	6H 6H
		SECTION C __Case Based Questions	**4X2=8**
8.		Read the source given below and answer the questions that follows. **The flight of the written word** In Abu'l Fazl's words: *The written word may embody the wisdom of bygone ages and may become a means to intellectual progress. The spoken word goes to the heart of those who are present to hear it. The written word gives wisdom to those who are near and far. If it was not for the written word, the spoken word would soon die, and no keepsake would be left us from those who are passed away. Superficial observers see in the letter a dark figure, but the deep sighted see in it a lamp of wisdom (chirag-i shinasai).* *The written word looks black, notwithstanding the thousand rays within it, or it is a light with a mole on it that wards off the evil eye. A letter (khat) is the portrait of wisdom; a rough sketch from the realm of ideas; a dark light ushering in day; a black cloud pregnant with knowledge; speaking though dumb; stationary yet travelling; stretched on the sheet, and yet soaring upwards.* Source from '*The Kings and Chronicles',* Theme9, pg-227 NCERT Unit-II	1+1+2 =4H

	8.1 Why were words considered as the lamp of wisdom? (1) 8.2 How has Abul Fazal related words with knowledge? (1) 8.3 How did Abul Fazal refer difference between a 'common viewer's observation' and the 'observation of a learned person?2	
9.	Read the source given below and answer the questions that follows. "**There cannot be any divided loyalty**" *Govind Ballabh Pant argued that in order to become loyal citizens people had to stop focusing only on the community and the self:* *For the success of democracy one must train himself in the* *art of self-discipline. In democracies one should care less for* *himself and more for others. There cannot be any divided* *loyalty. All loyalties must exclusively be centred round the State.* *If in a democracy, you create rival loyalties, or you create a system* *in which any individual or group, instead of suppressing* *his extravagance, cares nought for larger or other interests, then* *democracy is doomed.* *Cad, Vol.Ii* *Source from Theme-15 – "Framing the Constitution' PG-419 NCERT* 9.1 How did G.B Pant encourage citizens to make a unified nation? (1) 9.2 Why did he urge citizens for loyalty towards nation? (1) 9.3How was loyalty considered as the base of social pyramid? (2)	1+1+2 =4H
	Section-D **Map Skill Base Question**	
10.	**On the given political outline map of India, locate and label ANY ONE of the following with appropriate symbol**: I. The place where Gandhiji withdrew Non-Cooperation Movement (1) **OR**	1+1=2

II. The place where Gandhiji started satyagraha for the indigo planters (1)

b) On the same outline map of India, a place related to the centres of the Revolt of 1857 is marked as **A**. Identify it and write its name on the line drawn near them. (1)
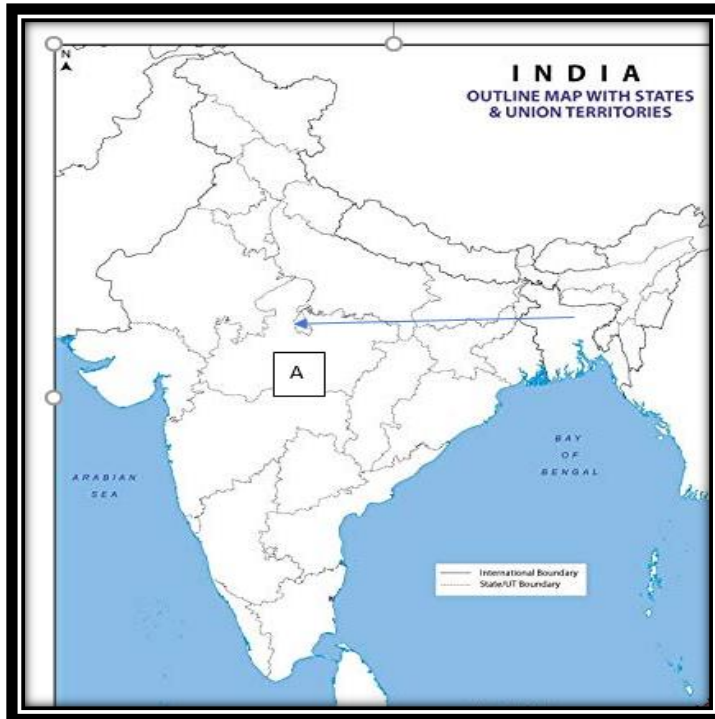
Note: The following questions are for the Visually Impaired Candidates only in lieu of Q. No. 10

10. Name any two Capital cities of Mughal empire. (2)

OR

Mention any two places related to the Revolt of 1857. (2)

SAMPLE QUESTION PAPER
ECONOMICS (030)
Class XII (TERM II) 2021-22

MM: 40   **Time: 2 Hours**

General Instructions:
- This is a Subjective Question Paper containing 13 questions.
- This paper contains 5 questions of 2 marks each, 5 questions of 3 marks each and 3 questions of 5 marks each.
- 2 marks questions are Short Answer Type Questions and are to be answered in 30-50 words.
- 3 marks questions are Short Answer Type Questions and are to be answered in 50-80 words.
- 5 marks questions are Long Answer Type Questions and are to be answered in 80-120 words.
- This question paper contains Case/Source Based Questions.

Q.No.	QUESTIONS	MARKS
1	Distinguish between Final Goods and Intermediate Goods.	2
	Or	
	Distinguish between positive externalities and negative externalities.	2
2	Calculate equilibrium level of income for a hypothetical economy, for which it is given that:	
	a) Autonomous Investments = ₹ 500 crores, and	2
	b) Consumption function, C = 100 + 0.80Y	
	Or	
	Calculate Change in Income (ΔY) for a hypothetical economy. Given that:	
	a) Marginal Propensity to Consume (MPC) = 0.8, and	
	b) Change in Investment (ΔI) = ₹1,000 crores	2
3	'As the income increases, people tend to save more'. Justify the given statement.	2
4	State and discuss any two indicators that help in measuring the health status of a country.	2
	Or	
	Compare and analyze the 'Women Worker Population Ratio' in Rural and Urban areas based on following information:	

Worker-Population Ratio in India, 2017-2018

Sex	Worker-Population Ratio		
	Total	Rural	Urban
Men	52.1	51.7	53.0
Women	16.5	17.5	14.2
Total	**34.7**	**35.0**	**33.9**

5	'Investment in infrastructure contributes to the economic development of a country.' Justify the given statement with a valid argument.	2

6 Giving valid reasons explain which of the following will not be included in estimation of National Income of India?

    a) Purchase of shares of X. Ltd. by an investor in the National Stock Exchange.

    b) Salaries paid by the French Embassy, New Delhi to the local workers of the housekeeping department.   **3**

    c) Compensation paid by the Government of India to the victims of floods.

Or

Estimate the value of Nominal Gross Domestic Product for a hypothetical economy, the value of Real Gross Domestic Product and Price Index are given as ₹500 crores and 125 respectively.   **3**

7 Study the following information and compare the Economies of India and Singapore on the grounds of 'Investment in infrastructure as a percentage of GDP'

Some Infrastructure in India and other Countries, 2018

Country	Investment* in Infrastructure as a % GDP	Percentage of people using safely managed		Mobile Subscribers/100 People	Consumption of energy (ml. tonnes of oil equivalent)
		Drinking Water Sources	Sanitation Services		
China	44	96	72	115	3274
Hong Kong	22	100	92	259	31
India	**30**	**94**	**40**	**87**	**809**
South Korea	31	98	100	130	301
Pakistan	16	35	64	73	85
Singapore	28	100	100	146	88
Indonesia	34	87	61	120	186

Sources: *World Development Indicators 2019, World Bank website: www.worldbank.org.; BP Statistical Review of World Energy 2019, 69th Edition.*
Note: *(*) refers to Gross Capital Formation.*

    3

Read the following text carefully and answer question number 8 and 9 given below:

SINO-PAK FRIENDSHIP CORRIDOR

The China-Pakistan Economic Corridor (CPEC) has deepened the decades-long strategic relationship between the two nations. But it has also sparked criticism for burdening Pakistan with mountains of debt and allowing China to use its debt-trap diplomacy to gain access to strategic assets of Pakistan.

The foundations of CPEC, part of China's Belt and Road Initiative, were laid in May 2013. At the time, Pakistan was reeling under weak economic growth. China committed to play an integral role in supporting Pakistan's economy.

Pakistan and China have a strategic relationship that goes back decades. Pakistan turned to China at a time when it needed a rapid increase in external financing to meet critical investments in hard infrastructure, particularly power plants and highways. CPEC's early

harvest projects met this need, leading to a dramatic increase in Pakistan's power generation capacity, bringing an end to supply-side constraints that had made rolling blackouts a regular occurrence across the country.

Pakistan leaned into CPEC, leveraging Chinese financing and technical assistance in an attempt to end power shortages that had paralyzed its country's economy. Years later, China's influence in Pakistan has increased at an unimaginable pace.

China As Pakistan's Largest Bilateral Creditor: China's ability to exert influence on Pakistan's economy has grown substantially in recent years, mainly due to the fact that Beijing is now Islamabad's largest creditor. According to documents released by Pakistan's finance ministry, Pakistan's total public and publicly guaranteed external debt stood at $44.35 billion in June 2013, just 9.3 percent of which was owed to China. By April 2021, this external debt had ballooned to $90.12 billion, with Pakistan owing 27.4 percent —$24.7 billion — of its total external debt to China, according to the International Monetary Fund (IMF).

Additionally, China provided financial and technical expertise to help Pakistan build its road infrastructure, expanding north-south connectivity to improve the efficiency of moving goods from Karachi all the way to Gilgit-Baltistan (POK). These investments were critical in better integrating the country's ports, especially Karachi, with urban centers in Punjab and Khyber-Pakhtunkhwa provinces.

Despite power asymmetries between China and Pakistan, the latter still has tremendous agency in determining its own policies, even if such policies come at the expense of the long-term socioeconomic welfare of Pakistani citizens.

(https://www.usip.org/publications/2021/05/pakistans-growing-problem-its-china-economic-corridor - Modified)

8	Outline and discuss any two economic advantages of China Pakistan Economic Corridor (CPEC) accruing to the economy of Pakistan.	3
9	Analyse the implication of bilateral 'debt-trap' situation of Pakistan vis-à-vis the Chinese Economy.	3
10	Explain how 'Non-Monetary Exchanges' impact the use of Gross Domestic Product as an index of economic welfare.	3

11 'Monetary measures offer a valid solution to the problem of Inflationary gap in an economy'. State and discuss any two monetary measures to justify the given statement. **5**

12 a) From the following data calculate the value of Domestic Income: **3**

S.No.	ITEMS	Amount (in ₹ Crores)
i)	Compensation of Employees	2,000
ii)	Rent and Interest	800
iii)	Indirect Taxes	120
iv)	Corporate Tax	460
v)	Consumption of Fixed Capital	100
vi)	Subsidies	20
vii)	Dividend	940
viii)	Undistributed Profits	300
ix)	Net Factor Income from Abroad	150
x)	Mixed Income of Self Employed	200

b) Distinguish between 'Value of Output' and 'Value Added'. **2**

Or

a) Given the following data, find Net Value Added at Factor Cost by Sambhav (a farmer) producing Wheat:

	Items	(₹ in crore)
i)	Sale of wheat by the farmer in the local market	6800
ii)	Purchase of Tractor	5000
iii)	Procurement of wheat by the Government from the farmer	200
iv)	Consumption of wheat by the farming family during the Year	50
v)	Expenditure on the maintenance of existing capital stock	100
vi)	Subsidy	20

3

2

b) State any two components of 'Net Factor Income from Abroad'.

13 a) 'Pesticides are chemical compounds designed to kill pests. Many pesticides can also pose health risks to people even if exposed to nominal quantities. ' **2**
In the light of the above statement, suggest any two traditional methods for replacement of the chemical pesticides.

b) 'In recent times the Indian Economy has experienced the problem of Casualisation of the workforce. This problem has only been aggravated by the outbreak of COVID-19.' **3**
Do you agree with the given statement? Discuss any two disadvantages of casualisation of the workforce in the light of the above statement.

CLASS 12

Time: 2 Hrs.   Max. Marks 35

GENERAL INSTRUCTIONS-

I.   Question paper is divided into 5 sections A ,B,C,D&E

II. In section A question number 1 to 3 are Very Short Answer type questions. Attempt any 3 questions.

III. In section B question number 4 is Source based question.

IV. In section C question number 5 & 6 are Short Answer based questions.

V.   In section D question number 7 to 9 are Long Answer based questions.

VI. In section E question number 10 is a Map based question.

SECTION A (VSA)

Attempt all questions   2x3=6

Q.1. Explain the prominent features of Traditional Large Scale industrial regions.
Q.2. Define Tertiary Activities.
Q.3. Differentiate between retail trading and wholesale trading.
                                              OR
   Differentiate between departmental stores and chain stores.

SECTION B (SOURCE BASED QUESTION)

Q.4. 'Manufacturing Industry'   3x1=3

Manufacturing literally means 'to make by hand'. However, now it includes goods 'made by machines'. It is essentially a process which involves transforming raw materials into finished goods of higher value for sale in local or distant markets. Conceptually, an industry is a geographically located manufacturing unit maintaining books of accounts and records under a management system. As the term industry is comprehensive, it is also used as synonymous with 'manufacturing'. When one uses terms like 'steel industry' and 'chemical industry', one thinks of factories and processes. But there are many secondary activities which are not carried on in factories such as what is now called the 'entertainment industry' and 'Tourism industry', etc. So for clarity, the longer expression 'manufacturing industry' is used.

Attempt all questions

     4.1. What do you understand by the term Manufacturing?
     4.2. "Manufacturing involves value addition." Explain with any one suitable example.
     4.3. Name two industries which provide services rather than production of goods.

SECTION C (SHORT ANSWER)

Question no. 5 & 6   **2x3=6**

Q.5. Road transport plays a vital role in the promotion of trade and tourism in the world.
    Support this statement with three suitable arguments.

Q.6. Satellites and computers have brought revolutionary changes in the present life of the people.
Elaborate the statement with three suitable examples.

OR

Evaluate the role and importance of roads in the economic development of India?

SECTION D (LONG ANSWER)

Question no. 7 to 9   **3x5=15**

Q.7. How do Quaternary services differ from Tertiary services? Give three reasons why the service sector in developing and developed countries is growing faster than the manufacturing sector?

Q.8. How is the use of plastic bags harmful for environmental degradation? Evaluate it by citing suitable reasons.

OR

The disposal of urban waste has become a serious concern for the local authorities. Analyze the statement with suitable examples.

Q.9. Attaining Sustainable development in the command area requires major thrust upon the measures to achieve ecological sustainability. Highlight the measures proposed to promote sustainable development in the command area of Indira Gandhi Rajasthan Canal.

SECTION E (MAP)

Q. 10. On the outline map of India indicate and mark the following features **(Attempt any 5).** 1x5=5

a) Iron ore mines of Chhattisgarh

b) Oil Refinery located in Uttar Pradesh.

c) The largest Lignite coal mines.

d) Easternmost terminal of East-West Corridor

e) Southernmost Metropolitan city connected by Golden Quadrilateral.

f) Oldest Copper mines of Rajasthan

For visually impaired students in lieu of Question no. 10(Attempt any 5). 1x5=5

a) Name an important Iron Ore mine of Chhattisgarh.

b) An important Oil Refinery located in Uttar Pradesh

c) Where is the largest Lignite coal mine, located in India and what is the name of that mine?

d) Write down the name of Easternmost terminal of East-West Corridor

e) Which is the Southernmost Metropolitan city connected by the Golden Quadrilateral?

f) What is the name of the Oldest Copper mines of Rajasthan?
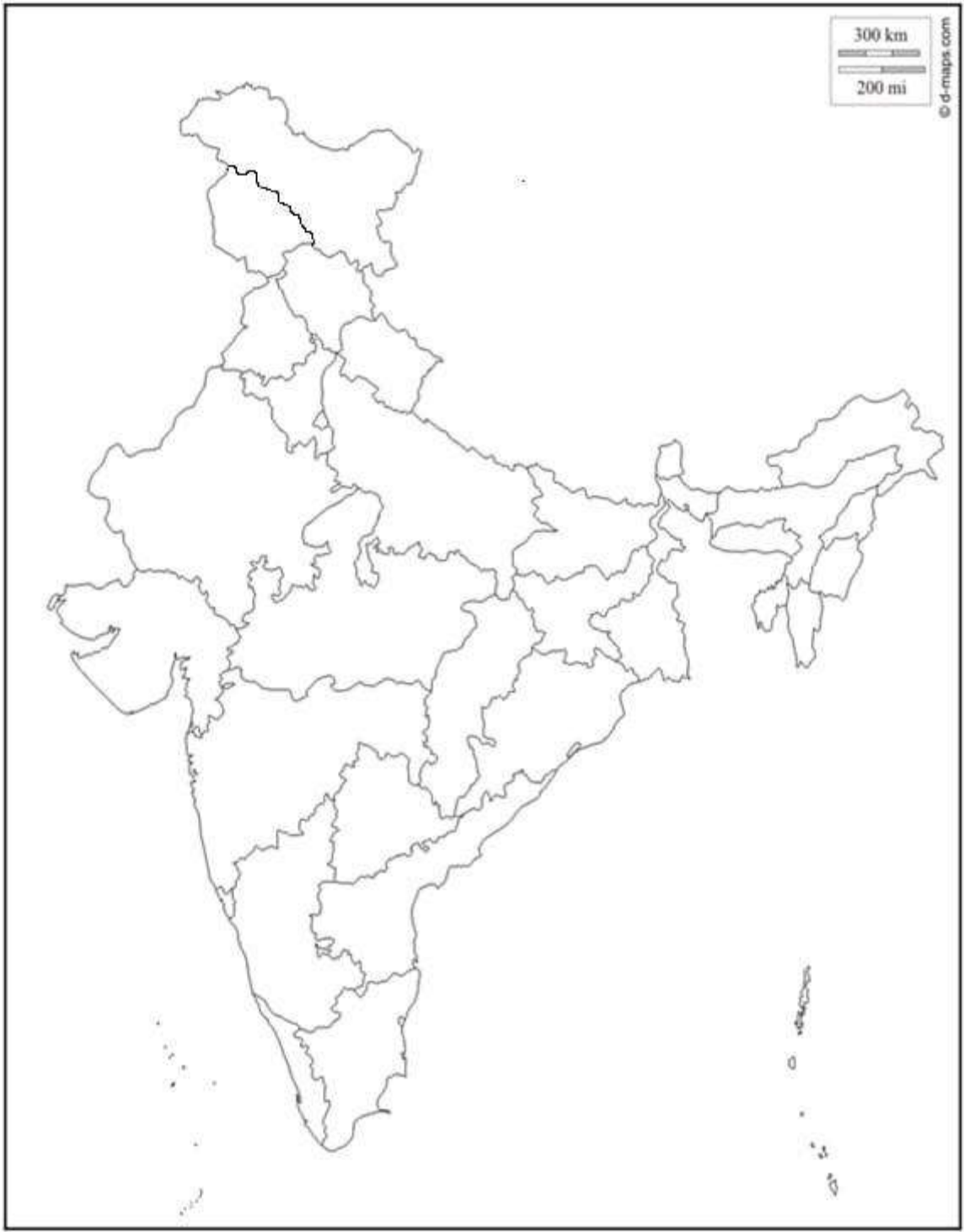
COMPUTER SCIENCE (Code: 083)

Maximum Marks: 35   Time: 2 hours

General Instructions

- The question paper is divided into 3 sections – A, B and C
- Section A, consists of 7 questions (1-7). Each question carries 2 marks.
- Section B, consists of 3 questions (8-10). Each question carries 3 marks.
- Section C, consists of 3 questions (11-13). Each question carries 4 marks.
- Internal choices have been given for question numbers 7, 8 and 12.

Q. No	Part No.	Section -A Each question carries 2 marks Question	Marks
1.		Give any two characteristics of stacks.	(2)
2.	(i)	Expand the following: `SMTP , XML`	(1)
	(ii)	Out of the following, which is the fastest wired and wireless medium of transmission? `Infrared,  coaxial  cable,  optical  fibre, microwave, Ethernet cable`	(1)
3.		Differentiate between char(n) and varchar(n) data types with respect to databases.	(2)
4.		A resultset is extracted from the database using the cursor object (that has been already created) by giving the following statement. `Mydata=cursor.fetchone()` (a) How many records will be returned by fetchone() method? (b) What will be the datatype of Mydata object after the given command is executed?	(2)

5.		Write the output of the queries (a) to (d) based on the table, Furniture given below:	(2)
		Table: FURNITURE	

FID	NAME	DATEOFPURCHASE	COST	DISCOUNT
B001	Double Bed	03-Jan-2018	45000	10
T010	Dining Table	10-Mar-2020	51000	5
B004	Single Bed	19-Jul-2021	22000	0
C003	Long Back Chair	30-Dec-2016	12000	3
T006	Console Table	17-Nov-2019	15000	12
B006	Bunk Bed	01-Jan-2021	28000	14

```
(a)   SELECT SUM(DISCOUNT)
      FROM FURNITURE
      WHERE COST>15000;

(b)   SELECT MAX(DATEOFPURCHASE)
      FROM FURNITURE;

(c)   SELECT * FROM FURNITURE
       WHERE DISCOUNT>5 AND FID LIKE "T%";

 (d) SELECT DATEOFPURCHASE FROM FURNITURE
     WHERE NAME IN ("Dining Table", "Console
Table");
```

6.	(i)	Which command is used to view the list of tables in a database?	(1)
	(ii)	Give one point of difference between an equi-join and a natural join.	(1)
7.		Consider the table, **MOVIEDETAILS** given below:	(2)

Table: MOVIEDETAILS

MOVIEID	TITLE	LANGUAGE	RATING	PLATFORM
M001	Minari	Korean	5	Netflix
M004	MGR Magan	Tamil	4	Hotstar

M010	Kaagaz	Hindi	3	Zee5
M011	Harry Potter and the Chamber of Secrets	English	4	Prime Video
M015	Uri	Hindi	5	Zee5
M020	Avengers: Endgame	English	4	Hotstar

(a) Identify the degree and cardinality of the table.
(b) Which field should be made the primary key? Justify your answer.

OR

(a) Identify the candidate key(s) from the table **MOVIEDETAILS.**
(b) Consider the table **SCHEDULE** given below:

Table: SCHEDULE

SLOTID	MOVIEID	TIMESLOT
S001	M010	10 AM to 12 PM
S002	M020	2 PM to 5 PM
S003	M010	6 PM to 8 PM
S004	M011	9 PM to 11 PM

Which field will be considered as the foreign key if the tables **MOVIEDETAILS** and **SCHEDULE** are related in a database?

		SECTION – B **Each question carries 3 marks**	
8.		Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations: ● Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75. ● Pop and display the content of the stack. For example: If the sample content of the dictionary is as follows:	(3)

```
R={"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90,
"TOM":82}
```

The output from the program should be:
```
TOM ANU BOB OM
```

OR

Alam has a list containing 10 integers. You need to help him create a program with separate user defined functions to perform the following operations based on this list.
- Traverse the content of the list and push the even numbers into a stack.
- Pop and display the content of the stack.

For Example:
If the sample Content of the list is as follows:
```
N=[12, 13, 34, 56, 21, 79, 98, 22, 35, 38]
```

Sample Output of the code should be:
```
38 22 98 56 34 12
```

9.	(i)	A table, **ITEM** has been created in a database with the following fields: **ITEMCODE, ITEMNAME, QTY, PRICE** Give the SQL command to add a new field, **DISCOUNT** (of type Integer) to the **ITEM** table.	(1)
	(ii)	Categorize following commands into DDL and DML commands? **INSERT INTO, DROP TABLE, ALTER TABLE, UPDATE...SET**	(2)
10.		Charu has to create a database named **MYEARTH** in MYSQL. She now needs to create a table named **CITY** in the database to store the records of various cities across the globe. The table **CITY** has the following structure:	(3)

Table: CITY

FIELD NAME	DATA TYPE	REMARKS
CITYCODE	CHAR(5)	Primary Key
CITYNAME	CHAR(30)	
SIZE	INTEGER	

AVGTEMP	INTEGER	
POLLUTIONRATE	INTEGER	
POPULATION	INTEGER	

Help her to complete the task by suggesting appropriate SQL commands.

Section C
Each question carries 4 marks

11. Write queries (a) to (d) based on the tables **EMPLOYEE** and **DEPARTMENT** given below:

Table: EMPLOYEE

EMPID	NAME	DOB	DEPTID	DESIG	SALARY
120	Alisha	23-Jan-1978	D001	Manager	75000
123	Nitin	10-Oct-1977	D002	AO	59000
129	Navjot	12-Jul-1971	D003	Supervisor	40000
130	Jimmy	30-Dec-1980	D004	Sales Rep	
131	Faiz	06-Apr-1984	D001	Dep Manager	65000

Table: DEPARTMENT

DEPTID	DEPTNAME	FLOORNO
D001	Personal	4
D002	Admin	10
D003	Production	1
D004	Sales	3

(a) To display the average salary of all employees, department wise.

(b) To display name and respective department name of each employee whose salary is more than 50000.

(4)

[5]

		(c) To display the names of employees whose salary is not known, in alphabetical order. (d) To display DEPTID from the table **EMPLOYEE** without repetition.	
12.	(i)	Give two advantages and two disadvantages of star topology **OR** Define the following terms: **www, web hosting**	(2)
	(ii)	How is packet switching different from circuit switching?	(2)
13.		BeHappy Corporation has set up its new centre at Noida, Uttar Pradesh for its office and web-based activities. It has 4 blocks of buildings. **BeHappy Corporation** Block B Block A Block C Block D Distance between the various blocks is as follows: A to B 40 m B to C 120m C to D 100m A to D 170m B to D 150m A to C 70m Numbers of computers in each block Block A - 25	(4)

Block B - 50
Block C - 125
Block D - 10

(a) Suggest and draw the cable layout to efficiently connect various blocks of buildings within the Noida centre for connecting the digital devices.

(b) Suggest the placement of the following device with justification
　　　i.　　Repeater
　　　ii.　　Hub/Switch

(c) Which kind of network (PAN/LAN/WAN) will be formed if the Noida office is connected to its head office in Mumbai?

(d) Which fast and very effective wireless transmission medium should preferably be used to connect the head office at Mumbai with the centre at Noida?