SC

Time-3:00 Hrs

M.M-80

निर्देश– (i) इस प्रश्न–पत्र के तीन खंड हैं क,ख और ग।

(ii) तीनों खंडो के प्रश्नो के उत्तर देना अनिवार्य है।

(iii) यथासंभव प्रत्येक खंड का उत्तर क्रमशः दीजिए।

प्र.1 निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए–   10

परियोजना शिक्षा का एक बहुत ही महत्वपूर्ण अंग है। इसे तैयार करने में किसी खेल की तरह का ही आनंद मिलता है। इस तरह परियोजना तैयार करने का अर्थ है–खेल–खेल में बहुत कुछ सीख जाना। उदाहरण के लिए, ऊपर कही गई दशहरों की परियोजना को ही लें। यदि आपको कहा जाए कि इस पर निबंध लिखिए, तो आपको शायद उतना आनंद नहीं आएगा। लेकिन यदि आपसे कहा जाए कि अखबारों में छपे अलग–अलग शहरों के दशहरे के चित्र काट कर अपनी कॉपी में चिपकाइए और लिखिए कि कौन–सा चित्र, किस शहर के दशहरे का है, तो शायद आपको बहुत आनंद आएगा। तो इस तरह से चित्र इकट्ठे करके चिपकाना भी एक शैक्षिक परियोजना है। यह एक प्रकार की फोटो–फीचर परियोजना कहलाएगी। इस तरह से न केवल आपने चित्र काटे और चिपकाए, बल्कि कई शहरों में मनाए जाने वाले दशहरे के तरीके को भी जाना। परियोजना पाठ्य–पुस्तक से प्राप्त जानकारियों के अलावा भी आपको देश–दुनिया की बहुत सारी जानकारियाँ प्रदान करती है। यह आपको तथ्यों को जुटाने तथा उन पर विचार करने का अवसर प्रदान करती है। इससे आप में नए–नए तथ्यों के कौशल का विकास होता है। इससे आप में एकाग्रता का विकास होता है। लेखन संबंधी नई–नई शैलियों का विकास होता हैं आप में चिंतन करने तथा किसी पूर्व घटना से वर्तमान घटना को जोड़कर देखने की शक्ति का विकास होता है। परियोजना कई प्रकार से तैयार की जा सकती है। हर व्यक्ति इसे अलग ढंग से, अपने तरीके से तैयार कर सकता है । ठीक उसी प्रकार जैसे हर व्यक्ति का बातचीत करने का, रहने का, खाने–पीने का अपना अलग तरीका होता है । ऐसा निबंध, कहानी, कविता लिखते या चित्र बनाते समय भी होता है। लेकिन ऊपर कही गई बातों के आधार पर यहाँ हम परियोजना को मोटे तौर पर दो भागों में बाँट सकते हैं– एक तो वे परियोजनाएँ जो समस्याओं के निदान के लिए तैयार की जाती हैं और दूसरी वे जो किसी विषय की समुचित जानकारी प्रदान करने के लिए तैयार की जाती हैं।

समस्याओं के निदान के लिए तैयार की जाने वाली परियोजनाओं में संबंधित समस्या से जुड़े सभी तथ्यों पर प्रकाश डाला जाता है और उस समस्या के समाधान के लिए सुझाव भी दिए जाते हैं । इस तरह की परियोजनाएँ प्रायः सरकारी अथवा संगठनों द्वारा किसी समस्या पर कार्य योजना तैयार करते समय बनाई जाती हैं। इससे उस समस्या के विभिन्न पहलुओं पर कार्य करने में आसानी हो जाती है।

किंतु दूसरे प्रकार की परियोजना को आप आसानी से तैयार कर सकते हैं। इसे शैक्षिक परियोजना भी कहा जाता है। इस तरह की परियोजनाएँ तैयार करते समय आप संबंधित विषय पर तथ्यों को जुटाते हुए बहुत सारी नई–नई बातों से अपने आप परिचित भी होते हैं।

प्रश्न (क) गद्यांश के लिए उपयुक्त शीर्षक दीजिए।

(ख) परियोजना क्या है ? इसमें क्या मिलता है ?

(ग)   शैक्षिक परियोजना क्या है ?

(घ)   परियोजना हमें क्या प्रदान करती है ?

(ड.)   परियोजना किस प्रकार तैयार की जा सकती है ?

(च)   समस्या का निदान करने वाली परियोजना कैसी होनी चाहिए ?

(छ)   परियोजना शब्द का निर्माण किस प्रकार से हुआ है ?

(ज)   'शिक्षा' और 'संबंध' शब्दों के विशेषण बनाइए।

(झ)   फोटो–फीचर परियोजना से आप क्या समझते हैं ?

(ञ)   'देश', 'दुनिया'–शब्दों के एक–एक पर्यायवाची शब्द लिखिए।

प्र.2   निम्नलिखित पद्यांश को ध्यानपूर्वक पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए –   6

रोटी उसकी, जिसका अनाज, जिसकी ज़मीन, जिनका श्रम है;

अब कौन उलट सकता स्वतंत्रता का सुसिद्ध , सीधा क्रम है।

आजादी है अधिकार परिश्रम का पुनीत फल पाने का,

आज़ादी है अधिकार शोषणों की धज्जियाँ उड़ाने का।

गौरव की भाषा नई सीख, भिखमंगों की आवाज़ बदल,

सिमटी बाँहों को खोल गरूड़, उड़ने का अब अंदाज बदल।

स्वाधीन मनुज की इच्छा के आगे पहाड़ हिल सकते हैं;

रोटी क्या? ये अंबरवाले सारे सिंगार मिल सकते हैं।

प्रश्न   (क)   आजादी क्यों आवश्यक है ?   1

(ख)   सच्चे अर्थों में रोटी पर किसका अधिकार है ?   1

(ग)   कवि ने किन पंक्तियों में गिड़गिड़ाना छोड़कर स्वाभिमानी बनने को कहा है।   2

(घ)   कवि व्यक्ति को क्या परामर्श देता है ?   1

(ड.)   आज़ाद व्यक्ति क्या कर सकता है ?   1

अथवा

(ii)   यह मजूर, जो जेठ मास के इस निर्धूम अनल में

कर्ममग्न है अविकल दग्ध हुआ पल–पल में ;

यह मजूर, जिसके अंगों पर लिपटी एक लँगोटी ;

यह मजूर, जर्जर कुटिया में जिसकी वसुधा छोटी ;

किस तप में तल्लीन यहाँ है भूख–प्यास को जीते,

किस कठोर साधन में इसके युग के युग हैं बीते !

कितने महा महाधिप आए, हुए विलीन क्षितिज में,

नहीं दृष्टि तक डाली इसने, निर्विकार यह निज में।

यह अविकम्प न जाने कितने घूँट पिए हैं विष के,

आज इसे देखा जब मैंने बात नहीं की इससे ।

अब ऐसा लगता है, इसके तप से विश्व विकल है,

नया इंद्रपद इसके हित ही निश्चित है निस्संशय।

प्रश्न (क) जेठ के महीने में अपने काम में लगा हुआ मजदूर क्या अनुभव कर रहा है ?   1

(ख) उसकी दीन–हीन दशा को कवि न किस तरह प्रस्तुत किया है ?   1

(ग) उसका पूरा जीवन कैस बीता है? उसने बड़े–से–बड़े लोगों को भी अपना कष्ट क्यों नहीं बताया?   1

(घ) उसने जीवन को कैसा जिया है? उसकी दशा को देखकर कवि को किस बात का आभास होने लगा है?   1

(ड.) आशय स्पष्ट कीजिए :–   2

'नया इंद्रपद इसके हित ही निश्चित है निस्संशय।'

खण्ड 'ख'

प्र.3 बस में गुंडों के द्वारा घेर लिए जाने पर एक महिला यात्री की सहायता करने वाले बस–संवाहक के साहस और कर्तव्य–भावना की प्रशंसा करते हुए परिवहन–निगम के मुख्य प्रबंधक को पत्र लिखिए।   5

प्र.4 निम्नलिखित में से किसी एक विषय पर 250 शब्दों में एक निबंध लिखिए।   8

(i) पाश्चात्य संस्कृति की ओर बढ़ते कदम

(ii) इंटरनेट का प्रभाव

(iii) छात्र जीवन में अनुशासन का महत्व

(iv) युवाओं में बढ़ती नशाखोरी–समस्या और समाधान

प्र.5 निम्नलिखित प्रश्नों के उत्तर संक्षेप में दीजिए –   4

क मुद्रित माध्यम की दो कमियाँ लिखिए।

ख उल्टी पिरामिड शैली को परिभाषित कीजिए।

ग भारत का कौन–सा अखबार सिर्फ़ इंटरनेट पर उपलब्ध है ?

घ ड्राई एंकर से क्या तात्पर्य है ?

प्र.6 'धरती पर स्वर्गः कश्मीर' विषय पर फ़ीचर लिखिए।   3

अथवा

'भारतीय किसानों की दुर्दशा' पर एक आलेख लिखिए।

नहीं दृष्टि तक डाली इसने, निर्विकार यह निज में।

यह अविकम्प न जाने कितने घूँट पिए हैं विष के,

आज इसे देखा जब मैंने बात नहीं की इससे।

अब ऐसा लगता है, इसके तप से विश्व विकल है,

नया इंद्रपद इसके हित ही निश्चित है निस्संशय।

प्रश्न (क) जेठ के महीने में अपने काम में लगा हुआ मजदूर क्या अनुभव कर रहा है ?   1

(ख) उसकी दीन–हीन दशा को कवि न किस तरह प्रस्तुत किया है ?   1

(ग) उसका पूरा जीवन कैस बीता है? उसने बड़े–से–बड़े लोगों को भी अपना कष्ट क्यों नहीं बताया?   1

(घ) उसने जीवन को कैसा जिया है? उसकी दशा को देखकर कवि को किस बात का आभास होने लगा है?   1

(ड.) आशय स्पष्ट कीजिए :–   2

'नया इंद्रपद इसके हित ही निश्चित है निस्संशय।'

खण्ड 'ख'

प्र.3 बस में गुंडों के द्वारा घेर लिए जाने पर एक महिला यात्री की सहायता करने वाले बस–संवाहक के साहस और कर्त्तव्य–भावना की प्रशंसा करते हुए परिवहन–निगम के मुख्य प्रबंधक को पत्र लिखिए।   5

प्र.4 निम्नलिखित में से किसी <u>एक विषय</u> पर 250 शब्दों में एक निबंध लिखिए।   8

(i) पाश्चात्य संस्कृति की ओर बढ़ते कदम

(ii) इंटरनेट का प्रभाव

(iii) छात्र जीवन में अनुशासन का महत्व

(iv) युवाओं में बढ़ती नशाखोरी–समस्या और समाधान

प्र.5 निम्नलिखित प्रश्नों के उत्तर संक्षेप में दीजिए –   4

क मुद्रित माध्यम की दो कमियाँ लिखिए।

ख उल्टी पिरामिड शैली को परिभाषित कीजिए।

ग भारत का कौन–सा अखबार सिर्फ़ इंटरनेट पर उपलब्ध है ?

घ ड्राई एंकर से क्या तात्पर्य है ?

प्र.6 'धरती पर स्वर्ग: कश्मीर' विषय पर फ़ीचर लिखिए।   3

अथवा

'भारतीय किसानों की दुर्दशा' पर एक आलेख लिखिए।

प्र.7   निम्नलिखित काव्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए—:   6

घर में विधवा रही पतोहू,   खैर, पैर की जूती, जोरू
लछमी थी, यद्यपि पति घातिन,   न सही एक, दूसरी आती,
पकड़ मँगाया कोतवाल ने,   पर जवान लड़के की सुध कर
डूब कुएँ में मरी एक दिन!   साँप लोटते, फटती छाती।

क   किसान की पतोहू ने अपने प्राण क्यों त्याग दिए?

ख   किसान को सबसे ज्यादा याद किसकी आती थी?

ग   काव्यांश में नारी के प्रति कैसे भाव व्यक्त किए गए हैं ?

अथवा

कहाँ तो तय था चिरागाँ हरेक घर के लिए,   यहाँ दरख्तों के साये में धूप लगती है,
कहाँ चिराग मयस्सर नहीं   शहर के लिए।   चलो यहाँ से चलें और उम्र भर के लिए।

क   आज़ादी के बाद क्या 'तय' किया गया था ?

ख   'दरख्तों के साये में धूप लगती है' पंक्ति में क्या व्यंग्य निहित है ?

ग   कवि ने किस विरोधाभासी स्थिति के बारे में बताया है?

प्र.8   निम्नलिखित काव्यांश को ध्यानपूर्वक पढ़कर पूछे गए सौंदर्य बोध संबंधी प्रश्नों के उत्तर
दीजिए।   6

अंसुवन जल सींचि—सींचि, प्रेम—बेलि बोयी   दधि मथि घृत काढ़ि लियो, डारि दयी छोयी
अब त बेलि फैलि गयी, आणंद—फल होयी   भगत देखि राजी हुयी, जगत देखि रोयी
दूध की मथनियाँ बड़े प्रेम से विलोयी   दासि मीरां लाल गिरधर! तरो अब मोही

क   काव्यांश में रूपक अलंकार को स्पष्ट कीजिए।

ख   काव्यांश की भाषा—शैली पर प्रकाश डालते हुए भक्ति रस की अभिव्यक्ति पर चर्चा कीजिए।

प्र.9   निम्नलिखित प्रश्नों के उत्तर दीजिए—कोई दो   4

क   'आआ, मिलकार बचाएँ' कविता के आधार पर आदिवासी समाज की बुराइयाँ बताइए।

ख   कवि ने 'मेहनत की लूट सबसे खतरनाक नहीं होती है' से कविता का आरंभ करके फिर इसी से
अंत क्यों किया? 'सबसे खतरनाक' कविता के आधार पर बताइए।

ग   क्या अक्क महादेवी को 'कन्नड़ की मीरा' कहा जा सकता है ?

प्र.10 निम्नलिखित गद्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर दीजिए–: 7

हाँ! कॉपी लौटाते हुए कहा था कि तुमने किया तो अच्छा है पर यह तो हाफ़ ईयरली है .... बहुत आसान पेपर होता है इसका तो। अब अगर ईयरली में भी पूरे नंबर लेने हैं तो तुरंत ट्यूशन लेना शुरू कर दो। वरना रह जाआगे। सात लड़कों ने तो शुरू भी कर दिया था। पर मैंने जब मम्मी–पापा से कहा, हमेशा बस एक ही जवाब (मम्मी की नकल उतारते हुए) मैथ्स में तो तू वैसे ही बहुत अच्छा है, क्या करेगा ट्यूशन लेकर? देख लिया अब? सिक्स्थ पोजीशन आई है मेरी। जो आज तक कभी नहीं आई थी। (अमित की आँखों से फिर आँसू टपक पड़ते हैं।)

क   गणित के अध्यापक ने अमित से क्या कहा? 2

ख   अमित की मम्मी ने उसे गणित का ट्यूशन क्यों नहीं लेने दिया ? 2

ग   अमित अपने कम अंक के लिए किसे दोष देता है ? और क्यों? 3

प्र.11 निम्नलिखित प्रश्नों के उत्तर दीजिए – कोई तीन 9

क   नेहरू जी भारत के सभी किसानों से कौन–सा प्रश्न बार–बार करते थे?

ख   मोहन के लखनऊ आने के बाद के समय को लेखक ने उसके जीवन का एक नया अध्याय क्यों कहा है ?

ग   'नमक का दारोगा' कहानी के कोई दो अन्य शीर्षक बताते हुए उसके आधार को भी स्पष्ट कीजिए।

घ   नादिर से भी बढ़कर आपकी जिद्द है– कर्ज़न के संदर्भ में क्या आपको यह बात सही लगती है ? पक्ष या विपक्ष में तर्क दीजिए।

खण्ड–घ

प्र.12 निम्नलिखित प्रश्नों के उत्तर दीजिए – कोई एक 4

1   आलो–आँधारि रचना बेबी की व्यक्तिगत समस्याओं के साथ–साथ कई सामाजिक मुद्दों को समेटे है। किन्हीं दो मुख्य समस्याओं पर अपने विचार प्रकट कीजिए ।

2   चेलवांजी की कुई के भीतर कार्य करने की प्रक्रिया पर प्रकाश डालिए।

प्र.13 निम्नलिखित प्रश्नों के उत्तर दीजिए – कोई दो 8

1   लता ने चित्रपट–संगीत में मुख्यतया किस प्रकार के गाने गाए हैं और क्यों ?

2   चेजारों के साथ गाँव–समाज के व्यवहार में पहले की तुलना में आज क्या फर्क आया है– राजस्थान की रजत बूँदे पाठ के आधार पर बताइए ?

3   तातुश लेखिका का अपनी बेटी की तरह ध्यान रखते थे। उदाहरण सहित समझाइए।

Time : 3:00 Hrs { + 15 Minutes Reading Time }   **Max. Marks : 100**

General Instructions :-

i.   The question paper consists of 29 questions divided into four sections A, B, C and D.
   SECTION A : Comprises of 4 questions of 1 mark each.
   SECTION B : Comprises of 8 questions of 2 marks each.
   SECTION C : Comprises of 11 questions of 4 marks each.
   SECTION D : Comprises of 6 questions of 6 marks each.
ii. All questions are compulsory; in some question internal choice is given.
iii. Try to attempt the question in serial order.
iv. Use of calculator is not allowed.

SECTION – A

{ Question number 1 to 4 carry 1 mark each }

1.   Prove that : $(\operatorname{Sin}3x + \operatorname{Sin}x).\operatorname{Sin}x + (\operatorname{Cos}3x - \operatorname{Cos}x).\operatorname{Cos}x = 0$.

OR

   Prove that : $\operatorname{Sin}4x = 4.\operatorname{Sin}x.\operatorname{Cos}^3x - 4.\operatorname{Cos}x.\operatorname{Sin}^3x$.

2.   Solve the quadratic equation : $x^2 + x + 1 = 0$.

3.   A man starts repaying a loan as first installments of ₹100. If he increases the installment by ₹5 every month, what amount will he pay in the 30th installment?

4.   A coin is tossed 3 times and the outcomes are recorded. How many possible outcomes are there?

SECTION – B

{ Question number 5 to 12 carry 2 mark each }

5.   If R is the set of real numbers and Q is the set of rational numbers then what is R- Q ?

OR

   Let $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{2, 3\}$ and $B = \{3, 4, 5\}$. Show that $(A \cup B)' = A' \cap B'$.

6. Prove that : $\dfrac{Sin5x - 2Sin3x + Sinx}{Cos5x - Cosx} = tanx.$

7. Express $\left(-2 - \dfrac{1}{3}i\right)^3$ in the form a + ib.

8. Using Binomial theorem, indicate which number is larger $(1.1)^{10000}$ or 1000.

OR

Prove that : $\sum_{r=0}^{n} 3^r . {}^nC_r = 4^n.$

9. Find the sum of the first n terms of the series $1 + \dfrac{2}{3} + \dfrac{4}{9} + \ldots\ldots$

10. Find the equation of the line parallel to the line $3x - 4y + 2 = 0$ and passing through the

point (-2, 3).

OR

Find the equation of the line perpendicular to the line $x - 7y + 5 = 0$ and having x-intercept 3.

11. Find the equation of the ellipse whose vertices are $(\pm 13, 0)$ and foci $(\pm 5, 0)$.

12. The centroid of a triangle ABC is at the point (1, 1, 1). If the co-ordinate of A and B are

(3, -5, 7) and (-1, 7, -6) respectively, find the co-ordinates of the point C.

<div style="text-align:center">

SECTION – C

{ Question number 13 to 23 carry 4 mark each }

</div>

13. Define the following : a) the modulus function   b) signum function.

14. Draw the appropriate venn diagram for : a) $(A \cup B)'$ b) $A' \cap B'$.

15. Solve : $Sin2x - Sin4x + Sin6x = 0.$

OR

Solve : $2Cos^2x + 3Sinx = 0.$

16. Using the principle of mathematical induction for all $n \in N$, prove that $3^{2n+2} - 8n - 9$ is

divisible by 8.

17. Reduce $\left(\dfrac{1}{1-4i} - \dfrac{2}{1+i}\right) \cdot \left(\dfrac{3-4i}{5+i}\right)$ to the standard form.

OR

If $(x+iy)^3 = u + iv$, then show that $\dfrac{u}{x} + \dfrac{v}{y} = 4(x^2 - y^2)$.

18. In how many ways can one select a cricket team of eleven from 17 players in which only 5 players can bowl if each cricket team of eleven must include exactly 4 bowlers?

19. Find the sum to n terms of the series : $1 \times 2 \times 3 + 2 \times 3 \times 4 + 3 \times 4 \times 5 + \ldots$

20. Find the equation of the circle passing through (0, 0) and making intercepts a and b on the co-ordinate axes.

21. Find $\lim_{x \to 1} f(x)$ where, $f(x) = \begin{cases} x^2 - 1, & x \le 1 \\ -x^2 - 1, & x > 1 \end{cases}$.

OR

Find $\lim_{x \to 0} f(x)$ where, $f(x) = \begin{cases} x - 2, & x < 0 \\ 0, & x = 0 \\ x + 2, & x > 0 \end{cases}$.

22. Find the mean deviation about the mean of the following data :

x_i	2	5	6	8	10	12
f_i	2	8	10	7	8	5

23. A letter is chosen at random from the word " ASSASSINATION ". Find the probability thet letter is   a) a vowel   b) a consonant.

SECTION – D

{ Question number 24 to 29 carry 6 mark each }

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24. Solve the system of inequalities graphically :

$2x + y \ge 4, \; x + y \le 3$ and $2x - 3y \le 6$.

25. Find the sum to n terms of the series $5 + 11 + 19 + 29 + 41 + \ldots$

OR

Find the sum to n terms of the series whose $a_n = n(n+1)(n+4)$.

26. In the triangle ABC with the vertices A(2, 3), B(4, -1) and C(1, 2), find the equation and length of altitude from the vertex A.

27. Find the derivative of $Cosec x$ using first principle.

OR

Find the derivative of $Cot x$ using first principle.

28. Find the mean, variance and standard deviation using short-cut method :

Height in cm	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115
No. of children	3	4	7	7	15	9	6	6	3

OR

Calculate mean, variance and standard deviation for the following distribution :

Classes	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2

29. A bag contains 9 discs of which 4 are red 3 are blue and 2 are yellow. The discs are similar in shape and size. A disc is drawn at random from the bag. Calculate the probability that it will be

a) red   b) not blue   c) either red or blue.

****

FINAL PROMOTION EXAMINATION - 2019
Computer Science
Class XI

Time 3hrs.+ 15 min reading time   M.M 70

Note

All questions are compulsary.

The questions are to be answered in the same sequence.

Marks will be deducted for poor presentation/logic.

Go through the question paper carefully and get your doubts cleared when enquired.

Leave OR draw a line after each answer.

Q.1:-State whether the following statements are TRUE or FALSE:-   [5]

    a.   A structure can be defined inside main().

    b.   while() is an entry controlled loop.

    c.   The correct syntax of string copy function is ***strcpy*** *(destination,source)*;

    d.   A function can be declared in a structure.

    e.   The ASCII code of upper case alphabets is lesser than lower case alphabets.

Q.2:-Fill in the blanks:-   [5]

    a.   Catenation is a process of .... two strings.

    b.   if char a[ ]="Big " and b []="Bug" then after strcpy(b,a) value of b will be ....

    c.   If char x[ ]="You are the best";then NULL is found at .... position.

    d.   A .... function cannot return a value.

    e.   if float x[ ]={3.14,12.432,0.14} then sizeof(x) = ...

Q.3:-List the header files if required for the following: [5]

Copy the terms in one columns and your responce in second column

    a.   Random()   (b) Strcpy()   (c)   sizeof()   (d)   itoa( )

    e.   tolower()

Q.4:-What name will you give to:-   [5]

    a.   The process of binding of some <u>data types</u> under a common name.

    b.   A loop which keeps and keeps repeating.

    c.   A set of variables which point to the same location in the memory

    d.   The process of interchanging values between two variable.

    e.   A variable begining with & sign.

Q.5:-Write one difference for each of the following   [5]

    (Answer in column format <u>strictly</u> / Write proper headings)

    a.   call by value and call be reference.

    b.   randomize( ) and random( ).

    c.   int main( ) and void main( )

    d.   strcat( ) and strcpy( ).

    e.   inbuilt functions and user defined functions

Q.6:-Answer the following:-

a. Suppose an array float num[ ] hold a certain amount of numbers.Suggest a method which will help in determining the number of elements in the array.Give proper example.

b. Declare a structure named *item* to hold item related information like Name of Item , Quantity, Company, Cost in rupees.Your definition should also declare two variables **Indian** and **Foreign** of the same type. You may choose suitable variable names of each field and their data types wherever required.

c. Write two advantages of using functions in a program ? List the types of functions which can be present in a C++ program.

d. What is a structure ? Write two advantages of using them. Also write two precatutions while using a structure.

e. What is **sizeof()** .Why is it used. What type of value is returned by it ? Differentiate between strlen( ) and sizof( )

Q.7:-Study the following programs and answer the question given below eachprogram.

Non-inclusion of header files may not be treated as error.In case you find something wrong in any program, explain the error briefly.

Do not copy any part of both the programs given below

PROGRAM 7 (a)

[5]

```cpp
void main()
{
clrscr();
int fun(int,int);
int x , y = -25 , z = -75;
x = fun(y,z);
y = fun(z,x);
z = fun(x,y);
cout<<x<<" "<<y<<" "<<z;
getch();
}
int fun(int a,int b)
{
int sum=0;
a=a+b;
b=b-a;
a=b+a;
sum=a+b;
return sum;
}
```

PROGRAM 7 (b) [5]

```
#include "iostream.h"
#include "conio.h"
int n[4][4]={1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16};
main()
{
int i,j,sm=0;
clrscr();
for(i=0;i<=3;i++)
{
    for(j=3;j>=i;j—)
    sm=sm+n[ j ] [ i ];
}
cout<<"Total="<<sm;
getch();
return 0;
}
```

Write the output of both of the programs numbered 7(a) and 7(b).

PROGRAMMING SECTION (*10 marks each*)

Variables highlighted in the questions should be used in your programs.Additional variables may be taken as per choice.

Q.8 Array (**acc**) has to holds 10 transactions made by a customer during a particular year in the form of debit or credit.The debit is represented by **0** (zero) and credit by **1** along with the amount as shown below for two transactions.

$$amt [10] = \{ 12155 , 0 , 651255 , 1 , ... \} ;$$

which mean Rs.12155 were debited and Rs.65125 credited

Develop the program which declares the array and also two functions named

db( ) and **cr ( )** to accumulate separately the amount debited and credited. At the end the total amount debited /credited should be displayed in main().

Store the data directly as per your choice and it should be shown on the answer sheet. (full data of 10 transactions)

Your program should also make a provision in case of any negative value is found in the array, the program should terminate with a message.

SIR Kindly verify the data.

Q.9 Write a program to create a structure [**stu**] with the following fields

Name [**nam**] , Roll Number [**rn**] , Marks [**mks**] of 3 subjects [phy , chem, maths in the range 10 and 99]. Also show the data storage of atleast two students.

Now on choice your program should display

(a)   Names , marks and name of subject of those students who failed in any subject (ie mks<33)

(b)   Details of each student with their total marks.

General Instructions:

All questions are compulsory

Answer to question carrying 1 mark should be approximately 20-30 words each

Answer to question carrying 3 mark should be approximately 80-90 words each

Answer to question carrying 5 mark should be approximately 150-200 words each

Q1. Very short answer type questions.   (1X11=11) Marks

1. Define physical education.
2. When was the First recorded Olympic games held in ancient Greece?
3. What do you mean by flexibility?
4. Define adaptive physical education.
5. What do you mean by Yoga.
6. What do you understand by Adventure sports?
7. Define waist-hip ratio.
8. What do you mean by muscles?
9. What is centripetal force?
10. What is meant by Adolescence?
11. What are the two types of warming up?

Q2. Short answers type questions.   (3X8=24)Marks

1. Explain the components of wellness.
2. Write short notes on – Samadhi Pratyahara and Dhyana
3. Describe briefly how the following body aspects and parts are measured
       a.Height   b.weight   c. Arm length
4. What are functions of the skeletal system.
5. What are the different types of levers.
6. Differentiate growth and development.
7. Enlist the performance related symptoms of overload.
8. Discuss the responsibilities of an athlete.

Q3. Long answer type questions   (5X7=35) Marks

1. What are some of the career options in physical education? Write any five
2. Write in detail about the objectives of the IOA.
3. What are the components of physical fitness? Discuss in detail.
4. Briefly explain the role and qualities of a leader.
5. Write an essay on the three somato types described by W. H Sheldon
6. Discuss in detail the importance of sports psychology
7. What are different performance enhancing drugs? Write in detail.

Time: 3 Hrs.   M.M. 80

GENERAL INSTRUCTIONS:

1.   This paper is divided into three sections - A,B and C. All sections are compulsory.
2.   Read the instructions carefully and do not exceed the word limit.
3.   Follow the sequence of the question paper.

SECTION -A

(READING SKILLS) (20 MARKS)   (12 Marks)

1.   Read the passage given below and answer the questions that follow:

Delhi has grown into a city that shuns children. It is now an urban sprawl, its development model skewed in favour of motorised traffic and commercial capitalization. This has snatched play fields from kids. With vehicles both stationary and on the move occupying every inch of space available, the roads and even lanes and bylanes are out of bounds for the little ones unlike in American and European cities, there are few public spaces where one can hang out. No wonder, our children spend a lot of time indoors, glued to the TV, PC or mobile screens. 'It's time,' urban planning experts say, 'to reconsider Delhi's growth with the welfare of its children in mind.'

Supreme Court Judge Kurian Joseph, expressed his anguish at the shrinking playing space for children in Delhi. The condition of the parks in the city, he said in the letter, was a "serious violation of human rights of children" as it was "their right in their tender times to have a decent environment to play and frolic around."

Kuldeep Singh, an architect and urban planner, who worked with DDA during 1956-57 to bring out Delhi's first master plan, explained how initially children's needs were the town planner's priority. "Space standards were set very rationally, and in every neighborhood, a huge open space was reserved for children which we called 'tot-lots'. "This was the place where we thought children would get a space to play and mingle with each other and we kept it away from roads," recalled Singh. However, due to administrative reasons, the idea of 'tot-lots' had to be dropped and regrettably, was never entertained again.

"Over the years, circumstances have changed and people are reluctant to let their children go out without some kind of security, as a result of which the children are now suffering." says Mr. Singh. Before it's too late, Mr. Singh hopes the few open spaces for kids are restored and protected from vehicles looking for parking lots. Another urban planning expert says the first rectification Delhi's development model needs to carry out is to ensure mobility of children.

"Two thousand pedestrians die on Delhi's roads every year of which several are children. There may not be a dearth of green spaces in Delhi, the city has a unique advantage on that front but kids have no safe means to reach their places independently," says Manjit Rastogi, founder of architecture firm Morphogenesis. "It is catastrophic to learn about child mortality on Delhi's roads but, on the other hand, you have the tragedy of kids being confined to their homes," points out Mr. Rastogi. "From a city of cars, Delhi needs to become a city of

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pedestrians where children can enjoy and identify themselves with their surroundings." he adds.

Developing public spaces with colourful street furniture, swings, art installations, etc., could draw in kids and bring them out of their homes. DDA officials say their focus is on balanced development of the city, which takes into account children's recreational needs. "DDA is working on new policies like Transit Oriented Development which have sufficient provisions for taking care of pedestrians and movement of children and women safely. Their policies will guide the future development of city," said Neemo Dhar, spokesperson, DDA.

I. **Answer the following questions in one or two sentences only.** (1x4=4)

i) Delhi has green spaces, but kids cannot enjoy them. Why?

ii) What do you mean by "balanced development of Delhi"?

iii) What do you understand from 'tot lots'?

iv) According to the passage what is it that deprives the children in Delhi of all the open spaces?

II. **Select the correct option from the ones given below:** (1x6=6)

(a) **The verb form of 'priority' is** ....

    (i) prior   (ii) priosy   (iii) prioritize   (iv) None

(b) **The phrasal verb 'draw in' means**................... .

    (i) put in   (ii) draw a picture

    (iii) draw a match   (iv) to persuade to join or entice

(c) **The passage suggests that** ....

    (i) Delhi kids enjoy sitting in front of TV

    (ii) Delhi has taken care of recreational needs of the kids

    (iii) Several children die on roads in Delhi

    (iv) Motorists are not favoured by the city planners

(d) **Which of the following does not support the statement 'Delhi shuns children'?**

    (i) Delhi's development model is skewed in favour of motorised traffic.

    (ii) Delhi kids have been deprived of play fields.

    (iii) The few public spaces where children can hang out are not safe to reach.

    (iv) DDA is working on Transit Oriented Development.

(e) **Which of the following statement is true ?**

    (i) In past, children's needs were a priority for city planners.

    (ii) Delhi has an acute shortage of green spaces.

    (iii) It is surprising that children spend much of their time in front of TV.

    (iv) American and European cities don't have many public spaces where children can hang out.

(f) .... is the human right of children.

    (i) To have a good environment to play and enjoy.

    (ii) To sit in front of TV screen.

    (iii) To use a mobile phone.

    (iv) To remain indoors.

III. Find the words/phrases in the passage which mean the same as: (1x2=2)

    (i) mix

    (ii) correction or amendment

2. **Read the following passage carefully:**   (8 marks)

1. Good decoration reflects the personality of the people who live in the home. It should, first of all, be distinctive, just as each person is distinctive. A home should have unity not only within each room but throughout the house. Rooms should, to some degree, harmonise with one another. The colour and styling of each room, particularly, should fit into the colour and styling of the rooms which run out of it.

2. Attractive home furnishings get the stage for pleasant living. If they are an expression of yourself, you will have a feeling of satisfaction every time you enter your home, and friends will share your enjoyment.

3. However, furnishings and surroundings expressive of just the right note of restfulness, gay informality, or elegant simplicity are not often assembled by accident. Even enthusiasm alone is not enough. For most home decorators, it takes poring over plans, trying colour schemes, finding ingenious ways to make the best of what you have, and shopping around to search out just the right purchases at prices you can afford to pay. But there is keen pleasure in striving for the perfect result, ad great satisfaction in achieving it.

4. A successful house and successful rooms will depend upon the proper relationship of each element in it to the others and to the whole. Therefore, in selecting each piece it is well to consider the background, the usage, the draperies, the floor covering, the upholstering materials, the woods, shapes, colour scheme, and the "feeling" you prefer for the room.

5. Work and plan to enjoy your house. Limit the expenditures of time, effort and money to the extent of your abilities, so that just running the house doesn't dominate your life. Elegance and delicate things may be a drain you can afford only in a limited way. If you can't afford outside help, select a house and furnishings that require less care. Plan your activities so that tumult and upset are limited to a few rooms - an activity room or a bedroom, or a corner of the dining room.

6. You'll get more pleasure out of a house if you have a hobby connected with it- collecting glass or antiques, gardening or indoor flower growing ceramics, art, cooking, decorating, flower arrangements, etc. And you'll get more satisfaction and a great deal of help from studying household activities.

7. You can select a pleasing combination of colours from a wallpaper, a fabric, an oriental rug, a flower or a scene, or even a picture in a magazine. If you don't already have the furniture or the rugs, it is a good idea to make up a colour scheme in this way. Let one colour predominate. Limit a colour scheme to two or three colours, with white or grey tones. These points will help you: (1) Always choose colours that please you personally - subtle, calm colours if you prefer a restful atmosphere, intense colours if you like

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liveliness and cheer. (2) Don't be afraid of colours. Experimenting on paper will give you confidence. (But remember, larger batches of colour are more intense.) Try out various colour combinations, then live with them - look at them frequently before you actually start buying. (3) Colours should harmonize with furniture, draperies and carpets.

(a) Make notes on the passage in a suitable format using abbreviations wherever necessary. Give a suitable title to the passage. **(5 marks)**

(b) Write a summary of the passage based on your reading in about 80 words. **(3 marks)**

SECTION-B (30 MARKS)
(WRITING SKILLS & GRAMMAR)

3. You want to hire an accommodation for your newly started business in readymade garments in Chennai. Write an **advertisement** for the same to be published in the classified columns of 'The Hindu'.

OR

Draft an attractive **commercial advertisement** for a new opened beauty salon and spa by the name of 'Exotica'. Your advertisement must promote its services in an appealing way.

(4 marks)

4. Abduction and rape of young girls is on the rise in the city capital. Write a letter **to the Editor** of a leading newspaper suggesting steps which need to be immediately taken by the Govt. to make our capital a safer place for women, you are Rohit of F-15, Kamla Nagar, Delhi.

OR

You are Vinay Shah. Write an **application** for the post of Vice-Principal at the Modern Public School, Vatva, Ahmedabad Enclose your CV also. **(6 marks)**

5. "Traffic week" is being celebrated in your city. Within the first two days, the police have booked over three hundred violation cases; Lane breaking, jumping red light and speed violations top the list. Underage drivers are the main culprits. As Subhash Shourie, write a **report** in about 150-200 words for publication in a newspaper.

OR

You were a witness to a scuffle between two students during recess time. Your Principal wants to investigate the matter and has asked you to narrate the incident in your own words. Write the **narrative** in 150 to 200 words. **(10 marks)**

6. In the following passage, one word has been omitted in each of the lines, against which a blank is given. Write the missing word along with the word that comes before and the word that comes after it in the space provided. Remember to underline the word you have supplied. **(6 marks)**

	Before	Missing	After
(a) A bookshop not something	………	………	………
(b) you in every gali or mohalla	………	………	………
(c) these days, Books, which once a staple	………	………	………
diet for youngsters in their			
(d) formative years, fading out of their	………	………	………
list of engagements.			

4

(e) Ask any youngster which the

(f) latest book he read

....
....

7. **Rearrange the following words and phrases into meaningful sentences:** (3 marks)

(1) should remain/ friend's difficulties/and faithful/a friend/in his/sincere

(2) living room/can be/dining table/or in a /flowers/placed/on a

(3) badly defeated/for his/had to/life/and/flee/he was

8. **Read the dialogue given below. Report it by completing the blanks that follow. Do not copy the whole sentence.** (1x4=4)

Vishal   Hello Dharmendra! Do you know that the class trip to Manali has been cancelled?

Dharmendra   No. 1 didn't know that. Why has the trip been cancelled?

Vishal   Our class teacher is somewhat worried about our safety.

Dharmendra   Why is he worried?

Vishal   It has been raining heavily during the past week. Our class teacher feels that a landslide could occur in that area when we are there.

Vishal met Dharmendra and asked him (a)............ cancelled. Dharmendra replied that he didn't know that. He asked Vishal (b)............. Vishal told him that (c).............. Dharmendra asked him why the class teacher was worried. Vishal told him (d)........... during the past week and their class teacher felt that a landslide could occur in that area when they were there.

SECTION-C (30 MARKS)
(LITERATURE TEXT BOOKS)

9. **Read the extract given below and answer the questions that follow:-**

When did my childhood go?

Was it the day I ceased to be eleven,

Was it the time I realised that Hell and Heaven,

Could not be found in Geography,

And therefore could not be,

i) In what context is 'eleven' mentioned in the above lines?

ii) What time is being talked about?

iii) Why don't Hell and Heaven exist, according to the poet?

OR

Silence surrounds us. I would have

Him prodigal, returning to

His father's house, the home he knew,

Rather than see him make and move

His world. I would forgive him too,

5

Shaping from sorrow a new love.

i) What does 'us' in the first line refer to?

ii) What is the father willing to do?

iii) What is the meaning of the sentence, 'Silence surrounds us'?

10. Answer ANY THREE of the following questions: (9 marks)

i) Justify the title of the article 'The Ailing Planet : The Green Movement's Role' by Nani Palkhivala.

ii) Does the poet talk of an exclusively personal experience or is it fairly universal in the poem 'Father to Son"?

iv) Why did the old lady offer Andrew tea?

v) Why did Taplow have to stay back at school on the last day?

11. Answer ANY ONE of the questions in about 120-150 words: (6 marks)

(a) "Its silence silences", write Shirley Toulson. The loss of her mother has silenced her. Do you think that this attitude of the poet is the right attitude to live life ? Why/why not?

OR

(b) Draw a character sketch of Professor Gaitonde based on specific events mentioned in the story 'The Adventure'.

12. Answer ANY ONE of the questions in about 120-150 words: (6 marks)

(a) The chapter displays the theme of friendship between Amitav Ghosh (the narrator) and Shahid Ali. Elaborate.

OR

(b) It is essential to possess intelligence and common sense to rule over others. Comment in the context of the chapter "The Tale of Melon City".

13. Answer ANY ONE of the questions in about 120-150 words) (6 marks)

(a) 'For doctors the duty towards the patients is formost, irrespective of their own personal affairs". Discuss with reference to the excerpt 'Birth'.

OR

(b) 'He's an adventurer, but at heart more a meticulous academic than a daredevil.' Explain the truth of the statement about the author based on your reading of the travelogue 'Silk Road' by Nick Middleton.

FINAL EXAMINATION - 2019
Class = XI Sc. (A & B)
CHEMISTRY

Time: Three Hours   Max.Marks: 70

Note:

1. All questions are compulsory.
2. Question No. 1-5 are very short answer questions and carry 1 mark each.
3. Question No. 6-12 are short answer questions and carry 2 marks each.
4. Question No. 13-24 are also short answer questions and carry 3 marks each.
5. Question No. 25-27 are long answer questions and carry 5 marks each.
6. Use log tables if necessary; use of calculator is not allowed.
7. There is no overall choice. However, an internal choice has been provided ; in these questions you have to attempt only one of the choices.

Questions:

Q1 Find how many atoms are present in 10 μ of Helium.

Q2 Give the structure of 2-bromo-2-methyl-3-hydroxy pentanal and 2,4,6 trinitro phenol .

Q3 Write the atomic number and configuration of the element in the third period and seventeenth group of the periodic table.

Q4 What is the effect of rise in temperature on viscosity or surface tension?

Q5 Which type of a solid is sand i.e. SiO_2 and glass?

OR

What is the coordination number of sodium in NaCl unit cell?

Q6 Explain Pauli's exclusion principle with an example.

Q7 2.1 g of sodium hydroxide is dissolved in enough water to make 500mL of solution, find it's molarity?

Q8 How is nitrogen different from the next member of it's group?

Q9 Specify the two types of smog and how they differ from each other .

Q10 How should smoke be treated in industries to reduce it's harmful effects?

OR

How can green chemistry help in reducing pollution?

Q11 A gas balloon at 23.4 °C is filled with 2L air, find the volume when the temperature is raised to 33.5° C at the same pressure. Which gas law is applicable?

Q12 What is the general gas equation? Explain why pressure and volume corrections had to be made for real gases.

OR

Express Dalton's law for a mixture of two gases.

Q13 a) Yellow light emitted from a sodium lamp has a wavelength of 580nm. Calculate the frequency and wave number of the yellow light.

OR (choice given only for part a)

Find the energy of each of the photons which:

(i) Corresponds to light of frequency 3×10^{15} Hz.

(ii) Have wavelength of 0.50 A°.

b) Give one example each of nucleophiles & electrophiles.

Q14 a) Write the l and m quantum numbers for the last electron in copper(29) and zinc (30).

OR

Give all the values of four quantum numbers for n=3 .

b) Show resonance in benzene or the carbonate ion.

Q15 a) What is the pH of a soft drink if concentration of hydrogen ion in it is 3.8×10^{-3} M.

b) PCl_5, PCl_3 ,& Cl_2 are at equilibrium at 500K and having concentrations 1.59 M, 1.59 M & 1.41 M respectively. Calculate K_c for the dissociation of PCl_5 into PCl_3 & Cl_2.

OR

a) Give two examples each of Lewis acids and bases.

b) At 450 K , $K_p = 2.0 \times 10^{10}$ bar for the reaction : two moles of sulphur dioxide with one mole of oxygen gives two moles of sulphur trioxide gases .Find K_c at this temperature.
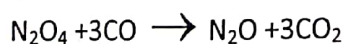
Q16 a) Give the configurations and representation of O_2 & O_2^- by MOT.

b) Why does BF_3 molecule not show dipole though the individual bond is polar.

Q17 a) Explain the shapes of (any two) : NH_3, CH_4 , H_2O using VSEPR rules.
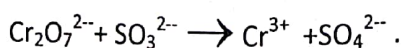
b) What is hybridisation ; show the type, sigma & pi bonds in C_2H_2 or $BeCl_2$.

Q18 a) Given: the enthalpy of formation of the gases CO, CO_2, N_2O , N_2O_4 are –110, –393, 81 & 9.7 KJ/mol respectively. Find the enthalpy of reaction for:

$$N_2O_4 + 3CO \rightarrow N_2O + 3CO_2$$

b) Give & explain Hess's law or definitions of enthalpy of formation and neutralization.

Q19 a) Find the oxidation numbers and balance the equation in acidic aqueous medium:

$$Cr_2O_7^{2-} + SO_3^{2-} \rightarrow Cr^{3+} + SO_4^{2-} .$$

b) Construct / represent the electrochemical cell using Cu & Fe metals dipping in their respective salt solutions.

Q20 a) Pick two metals from groups 13 & 14 and compare their oxidation states.

b) Explain the term screening effect /change in size of the ion on going down a group.

Q21 a) Define the term hydride and explain whether the hydrides of N,O,& F will have lower or higher boiling points than the hydrides of their lower group members .

b) Give one preparation/manufacture for hydrogen gas.

Q22 a) Explain why Li and Be of the second period show anomalous behavior as compared to the rest of their group.

b) Give the preparation of sodium hydroxide by Castner- Kellner cell or the structure of the dimer of $BeCl_2$

Q23 a) Can $SiCl_4$ undergo hydrolysis?

b) How is diborane (B_2H_6) formed?

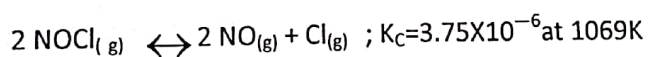c) Is anhydrous $AlCl_3$ ionic or not?

OR

Give three important properties of group 15 elements.

Q24 a) Briefly explain the Carius method or Duma's method.

b) Give an example of polar or free radical mechanism

c) Explain with example Geometric or functional group isomerism.

Q25 Write the following equations (any five):

a) Wurtz reaction for preparing butane.

b) Dehydrohalogenation of 2-bromo butane

c) Zinc with phenol.

d) Friedel- Craft's reaction.

e) Addition of HBr on propene.

f) Formation of metal salt of acetylene/ethyne.

g) Decarboxylation of C_2H_5COONa.

Q26 a) Give one example and two characteristics of physical or chemical equilibrium.

b) For the given system maintained at equilibrium

$$2\ NOCl_{(g)} \longleftrightarrow 2\ NO_{(g)} + Cl_{(g)}\ ;\ K_C=3.75\times10^{-6} \text{at } 1069K$$

Calculate K_p at this temperature (R=0.0831).

OR (ONLY FOR PART b)

At equilibrium the concentration of $N_2 =3.0\times10^{-3}M$, $O_2=4.2\times 10^{-3}M$ &NO $=2.8\times10^{-3}$

In a sealed vessel at 800 K .Find K_c for: $N_{2\ (g)} +O_{29g)} \longleftrightarrow 2\ NO_{(g)}$

Q27 a) Explain Gibb's free energy or Entropy and the formula to calculate them.

b) Given: i) Enthalpy of combustion of methanol = -726kJ/mol; of carbon = -393 KJ/mol; hydrogen = -286 KJ/mol. Calculate the standard enthalpy of formation of methanol.

OR

The equilibrium constant for the given reaction is 10. Calculate the value of Gibb's Free Energy Change at T = 300 K and R = 8.314 J/K mol.

_____

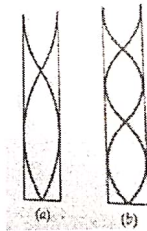## Annual Promotion Examination – 2019

Time : 3Hrs + 15 min reading time

PHYSICS

MM : 70

CLASS – XI (A & B)

Q.No.		
Q.No.	1 to 5	1 Mark each
Q.No.	6 to 12	2 Marks each
Q.No.	13 to 24	3 Marks each
Q.No.	25 to 27	5 Marks each

1. If 'g' is the acceleration due to gravity & λ is wavelength, then which quantity does $\sqrt{\lambda g}$ represent.

2. What is the magnitude & direction of $i + j$?

3. What happens to coefficient of friction when weight of the body is doubled.

4. Water rises to a height 20mm in a capillary tube .If the radius of the capillary is made $1/3^{rd}$ of its previous value, to what height will the water now rise in the tube.

5. When light undergoes refraction What happens to its (i) frequency (ii) wavelength

6. Estimate the average energy of helium atom at (i) room temperature (27°C) (ii) temperature on the surface of the sun (6000K)

7. Figure shows two vibrating modes of an air column. Find the ratio of frequencies of two modes.

8. Starting from the equation $PV = 1/3mnv^2$ state & derive Avogadros Law.

9. Using Bernoulli's principle explain how Paint sprayer Works.

10. A person with heavy weights in his hands pulls his hand towards his chest to increase the angular speed of the turn table. Explain ?

OR

It is difficult to open the door by pushing it or pulling it at the hinge. Why ?

11. How does acceleration due to gravity changes due to depth? Derive relation.

12. A body of mass 'm' moving with speed 'v' collides elastically head-on with another body of mass m initially at rest. Show that the moving body comes to stop as a result of this collision.

13. What is isothermal Process? Derive a relation for the work done in this process.

14. A transverse wave on a string is described by
$y = 3 Sin (36t + .0018x + \pi)$ where x & y are in cm & t is in sec.
Find the (i) Amplitude (ii) Frequency (iii) wavelength (iv) Speed (v) Initial phase (vi) Direction of propogation

15. Eight rain drops of radius 1mm each falling down with a terminal velocity of 5cm/s coalesce to form a bigger drop. Find the terminal velocity of a bigger drop.

16. 5 moles of oxygen are heated at constant volume from $10^\circ C$ to $20^\circ C$. What will be the change in the internal energy of the gas? The gram molecular specific heat of oxygen at constant pressure $C_p = 8$ cal /mole/$^\circ$C and R – 8.36 J/mole/$^\circ$C.

17. Define SHM. Derive the relation for the time period of oscillation of a vertically loaded Spring.

OR

Derive expression for instantaneous Kinetic & Potential Energy of a body performing SHM.

18. Draw energy distribution curve for a black body for 3 different temperatures T_1 ,T_2 & T_3 $(T_1 > T_2 > T_3)$ Write 2 important laws which can be explained from these curves .

19. What is Newtons Formula for speed of sound in air Why this formula needs correction .Explain.

20. A steel rod has a radius of 10mm & length 1m .A 100kN force F stretches it along its length. Calculate (a) Stress (b) Elongation (c) strain on the rod. Given that the Youngs Modulus Y of steel is 2.0×10^{11} N/m^2.

21. Find the Area of a parallelogram formed by vectors A = 3i + 2j , B = -3i + 7j .

22. A solid sphere is rolling on a frictionless plane surface about its axis of symmetry. Find the Rotational Kinetic Energy and the ratio of its rotational energy to total energy .

23. Define orbital velocity & establish an expression for it .
Calculate the value of Orbital velocity for an artificial satellite of earth orbiting at a height of 1000km.
Given: Mass of Earth = 6×10^{24} kg Radius of earth= 6400km.

24. Derive an expression for excess of pressure inside a soap bubble.
The air pressure inside a soap bubble of diameter 3.5mm is 8mm of water above the atmosphere. Calculate the surface tension of soap solution.

25. Draw a ray diagram of Compound Microscope. showing the formation of the final image at least distance of distinct vision And also Establish the Magnification Formula

OR

Derive the lens Makers formula for a double convex lens. State the assumptions used & the convention of signs used.

26. Draw the P- V diagram of Carnot's cycle . Write down the expression for work done in each process. Derive an expression for the efficiency of the cycle.

27. What is Doppler's Effect Derive an expression for the apparent frequency when the source of sound is approaching a stationary Observer.
A train stands on a platform blowing a whistle of frequency 400hz. in still air
(i)   What is the frequency of the whistle heard by a man moving towards the engine at 10ms^{-1} ? (Velocity of sound in in air = 340m/s)
(ii) What is the speed of sound in the above case ?
(iii) What is the wavelength of sound received by the running man?