2024

ENGLISH

(CORE)

Full Marks – 80

Time – 3 Hours

General Instructions:

(i) *The paper is divided into three sections: A,B & C. All the sections are compulsory.*

(ii) *Separate instructions are given with each section and question wherever necessary. Read these instructions very carefully and follow them.*

(iii) *Do not exceed the prescribed word limit while answering the questions.*

(iv) *Marks for each question are indicated against it.*

SECTION – A : Reading *(15 marks)*

1. Read the following passage carefully and answer the questions that follow :

Many of us believe that 'small' means 'insignificant'. We believe that small actions and choices do not have much impact on our lives. We think that it is only the big things, the big actions and the big decisions that really count. But when you look at the lives of all great people, you will see that they built their characters through small decisions, small choices and small actions that they performed everyday. They transformed their lives through a step by step or day by day approach. They nurtured and nourished their good habits, one step at a time. It was their small day to day decisions that added up to make tremendous difference in the long run. Indeed, in matters of personal growth and character building, there is no such thing as overnight success.

Growth always occurs through a sequential series of stages. There is an organic process to growth. When we look at children growing up, we can see this process at work: the child first learns to crawl, then to stand and walk, and finally to run. The same is true in the natural world. The soil must first be tilled, and then the seed must be sowed. Next, it must be nurtured with enough water and sunlight, and only then will it grow, bear fruit and finally ripen, ready to be eaten.

Gandhi understood this organic process and used this universal law of nature to his benefit. Gandhi grew in small ways, in his day-to-day affairs. He did not wake up one day and find himself to be the 'Mahatma'. In fact, there was nothing much in his early life that showed signs of greatness. But from his mid-twenties, he deliberately and consistently attempted to change himself, reform himself and grow in some way everyday. Day-by-day, hour-by-hour, he risked failure, experimented and learnt from his mistakes. In small and large situations alike, he took up rather than avoided responsibility.

People have always marvelled at the effortless way in which Gandhi could accomplish the most difficult tasks. He displayed a great deal of self-mastery and discipline which was amazing.These things did not come easily to him.Years of practice and disciplined training went into making his success possible. Very few saw his struggles, fears, doubts and anxieties, or his inner efforts to overcome them. They saw the victory but not the struggle.

This is a common factor in the lives of great people. They exercise their freedom and choices in small ways that have a great impact on their lives and their environment. Each of their small decisions and actions add up to have a profound impact in the long run. By understanding this principle, we can move forward with confidence, in the direction of our dreams. Often when our 'ideal goal' looks far from us, we become easily discouraged, disheartened and pessimistic. However, when we choose to grow in small ways, taking small steps one at a time, it becomes easy to achieve the goal.

1.1. Based on your understanding of the passage, answer the following questions briefly : 2x2=4

(a) What is 'organic process of growth'?

(b) Which part of Gandhi's life is not seen by most people?

1.2. Select the appropriate answer from the given options : 2x1=2

(a) Which of the following statement is true in the context of the third paragraph?

(i) Gandhi became great overnight.

(ii) Gandhi showed signs of greatness in childhood itself.

(iii) Everyday, Gandhi made efforts to change himself in some small way.

(iv) Gandhi never made mistakes.

(b) Why do we become easily discouraged, disheartened and pessimistic?

(i) Because our 'ideal goal' looks too far from us.

(ii) Because things do not come easily to us.

(iii) Because we choose to grow in small ways.

(iv) Both (i) and (ii).

1.3. Find words in the passage which are similar in meaning to the following : 2x1=2

(a) intentionally or purposely

(b) of deep significance

2. Read the following passage and answer the questions that follow :

There is nothing more frustrating than when you sit down at your table to study with the sincerest of intentions and instead of being able to finish the task at hand, you find your thoughts wandering. However, there are certain techniques that you can use to enhance your concentration. "Your concentration level depends on a number of factors," says Samuel Ghosh, a social counsellor. "In order to develop your concentration span, it is necessary to examine various facets of your physical and internal environment," he adds.

To begin with, one should attempt to create the physical environment that is conducive to focused thought. Whether it is the radio, TV or your noisy neighbours, identify the factors that make it difficult for you to focus. For instance, if you live in a very noisy neighbourhood, you could try to plan your study hours in a nearby library. He disagrees with the notion that people can concentrate or study in an environment with distractions like loud televisions, blaring music, etc. If you are distracted when you are attempting to focus, your attention and retention powers do not work at optimum levels," cautions Ghosh. "Not more than two senses should be activated at the same time," he adds. What that means is that music that sets your feet tapping is not the ideal accompaniment to your books. Also do not place your study table or desk in front of a window. "While there is no cure for a mind that wants to wander, one should try and provide as little stimulus as possible. Looking out of a window when you are trying to concentrate will invariably send your mind on a tangent," says Ghosh.

The second important thing, he says is to establish goals for oneself instead of setting a general target and then trying to accomplish what you can in a haphazard fashion. It is very important to decide what you have to finish in a given span of time. The human mind recognizes fixed goals and targets and appreciates schedules more than random thoughts. Once your thoughts and goals are in line, a focused system will follow.

Divide your schedules into study and recreation hours. When you study, choose the mix of subjects that you enjoy and dislike. For instance, if you enjoy verbal skill tests more than mathematical poblems, then finish maths first. Not only will you find yourself working harder, you will have a sense of achievement when you wind up.

Try not to sit for more than 40 minutes at a stretch. Take a very short break and sit down again. Short breaks build your concentration and refresh your mind. However, be careful not to overdo the relaxation. It may have undesired effects.

Do not get disheartened. Concentration is merely a matter of disciplining the mind. It comes with patience and practice and does not take very long to become a habit for life.

(a) On the basis of your reading of the passage, make notes on it using recognisable abbreviations, wherever necessary. Supply a suitable title. 4

(b) Write a summary of the above passage in about 80 words. 3

SECTION - B : Writing *(25 marks)*

3. You are Lalrinmawii. You have received an informal invitation from your close friend inviting you to attend their dinner party to celebrate their wedding anniversary. Respond to the invitation informing your friend about your inability to attend the party due to a previous commitment in not more than 50 words. 5

4. You are Lalmuanpuia, Secretary of the Students Union of ZTS Memorial School, Aizawl. The Students Union is organizing a study tour to visit several historical sites of the state. Write a Notice in about 50 words inviting students to register their names for this tour. 5

5. (a) You are Lalrinawmi, Secretary, Earth Movers Sporting Club, Aizawl. You had purchased several sports equipments from Zote Sports Goods, Chanmari, Aizawl. Unfortunately, some items have been found defective. Write a letter to the Sales Manager complaining about the defect and ask for immediate replacement. 10

OR

(b) You are Lalthanpuia, a resident of H/No. 46, Tlangnuam, Aizawl. You have seen an advertisement for the post of an Office Assistant at Buanga Enterprises, Bawngkawn, Aizawl. Write an application to the Manager applying for the post. Include a bio-data. 10

6. (a) You are Sarah Lalmuanpuii of St. John's School, Khatla. Your school has adopted a village as a social responsibility. Students are being taken to teach children of the village on a regular basis. Write a report for your school magazine in about 120 words. 5

OR

(b) You are Liansawma of Rahsi veng, Lawngtlai. Write an article in about 120 words on 'Role of individuals in society to keep our environment clean'. 5

SECTION - C: Literature *(40 marks)*

7. Read the following extract and answer the questions that follow : 4x1=4

I. Aunt Jennifer's tigers prance across a screen,
Bright topaz denizens of a world of green.
They do not fear the men beneath the tree;
They pace in sleek chivalric certainty.

(a) The poet of 'Aunt Jennifer's Tigers' is -
(i) Robert Frost
(ii) John Keats
(iii) Adrienne Rich
(iv) Kamala Das.

(b) 'Denizens of a world of green' means
(i) forest dwellers.
(ii) those who love the green environment.
(iii) those who hate the forest.
(iv) citizens of the world.

(c) How are the tigers different from Aunt Jennifer ?
(i) Aunt Jennifer lives in a city and the tigers in a forest.
(ii) The tigers are courageous and carefree whereas Aunt Jennifer is terrified.
(iii) Aunt Jennifer is old and the tigers are young.
(iv) None of these.

(d) What issue does this poem address ?
(i) Constraints of married life experienced by women.
(ii) Constraints of women.
(iii) Constraints of women as poets.
(iv) Cruelty towards wild animals.

OR

II. Therefore, on every morrow, are we wreathing
A flowery band to bind us to the Earth,
Spite of despondence, of the inhuman dearth
Of noble natures, of the gloomy days,
Of all the unhealthy and o'er-darkened ways
Made for our searching; yes, in spite of all,
Some shape of beauty moves away the pall
From our dark spirits.

(a) Flowery band means
   (i) a resting place
   (ii) shapes of beauty
   (iii) human nature
   (iv) beautiful band of flowers

(b) According to the poet, what keeps our life moving ?
   (i) Beauty
   (ii) Frustration
   (iii) Flowers
   (iv) Mysterious things

(c) The poet says that there is a shortage of -
   (i) Beautiful things
   (ii) Wreaths of flowers
   (iii) Darkened ways
   (iv) Noble nature

(d) The name of the poet is -
   (i) Pablo Neruda
   (ii) Adrienne Rich
   (iii) John Keats
   (iv) Kamala Das

8. Answer the following questions in about 30 words : 3x2=6

(a) According to the poet Pablo Neruda, how can we benefit from self introspection ?

(b) What was the plea of the folk who put up the roadside stand ?

(c) Why has the mother been compared to the 'late winter's moon' ?

9. Answer the following questions in about 30 words : 4x2=8

(a) How is bangle-making a curse for bangle-makers ?

(b) Why do you think the peddler signed himself as Captain Von Stahle ?

(c) What is the reason for the huge success of the novel 'The Name of the Rose' ?

(d) What caused the lack of communication between the Englishman and the people of Gemini Studios ?

10. Choose the correct answer from the given options : 2x1=2

(a) 'I crossed to oblivion and the curtain of life fell'. Oblivion means -
   (i) Realization
   (ii) Changing room
   (iii) Unconsciousness
   (iv) Death

(b) Geoff had been out of school for a period of -
   (i) Three years   (ii) Five years
   (iii) One year   (iv) Two years

11. Answer *any one* of the following questions in about 100-120 words each :

(a) "Freedom from fear is more important than legal justice". Elaborate with reference to the lesson 'Indigo'. 5

OR

(b) Do you think either the students or the teacher were sincere in their task till the day of the last lesson? Substantiate with evidence from the text. 5

12. Answer the following questions in about 30 words : 2x2=4

(a) Why did Zitkala-Sa not want her hair to be cut short ?

(b) Do you think that the lesson 'On the face of it' ended tragically ? Give reasons to support your answer.

13. Choose the correct answer from the given options : 6x1=6

(a) In ' The Enemy', the servant Yumi cleaned the guest room and burned -

(i) Phenol (ii) Ammonia
(iii) Chlorine (iv) Sulphur

(b) When Charley once got lost in the Grand Central Station, he came out at -

(i) New York Central Station (ii) New Haven Station
(iii) Vanderbitt Avenue (iv) Roosevelt Hotel

(c) How much time did Bama take to reach home ?

(i) 2 hours (ii) 1 hour
(iii) 4 hours (iv) 3 hours

(d) What disturbed the silence of Antarctica ?

(i) Humans (ii) Animals
(iii) Avalanches (iv) Birds

(e) The Maharaja announced a _____ from all taxes to the village that reported the presence of a tiger.

(i) One year exemption (ii) Two year exemption
(iii) Three year exemption (iv) Four year exemption

(f) Dr. Sadao went to America at the age of -

(i) 22 (ii) 30
(iii) 32 (iv) 42

14. Answer *any one* of the following questions in about 100-120 words :

(a) How did the Tiger-King meet his end ? What was ironical about his death ? 2+3=5

OR

(b) Charley sought temporary refuge in his imagination of the third level. Discuss. 5

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2024

MIZO

Full Marks – 80

Time – 3 Hours

Hriat turte:

(i) Zawhna zawng zawng hi chhan ngei ngei tur a ni.

(ii) Zawhna tin mark put zât chu a zâwnah tarlan zel a ni.

(iii) Chhan dawnin zawhna nambar ziah zel tur a ni.

ṬHEN KHATNA : HLA

1. A kar awlte hi dah khat rawh : 2x1=2
   (a) Ka muanna ber _____ i ni.
   (b) A heh lah chul _____ iang.

2. A dik ber thlang chhuak rawh : 2x1=2
   (a) Khua romei tlâng kai châng _____ nun hlui a thar leh ta. (sirva/ ṭhuva/ lengngha/ murva)
   (b) Hawilo pâr an _____ e zîng phûlah. (tawn / beh/ khâl/ thliak)

3. 'Phêngphe nunnem' tih hla phuahtu hian eng vangin nge "Hring nun hi ka ṭahpui ṭhin" a tih ? 2

4. Eng vangin nge P.S. Chawngthu-in thlamuanna Pa hnena dil turin min tih ? 2

5. 'Pi pu chhuahtlâng hlui' tih hla aṭanga hman lai kawtchhuah lungdawh an hman ṭangkai dan kan hmuhte kha han sawi teh. 4

6. 'Phungrual an ṭin ang a' tih hla aṭanga Mizo nunphung lo lang leh a phuahtu lusun dan kan hmuhte kha a hla thu behchhanin fiah takin han sawi teh. 6

ṬHEN HNIHNA : THU

7. A dik ber thlang chhuak rawh : 2x1=2
   (a) 'Literature of Power' tih sawitu chu _____ a ni. (De Quincey/ John F. Kennedy/ Voltaire/ Zikpuii Pa)
   (b) C.Ṭhuamluaia'n 'Hun lunglenthlak ber maia kan lo ruat ṭhin' a tih chu _____ lai a ni. (thlasik/ favang awllen/ ṭhal khawro/ fur)

8. A kar awlte hi dah khat rawh : 2x1=2
   (a) Zan tin mai hian _____ thar ka nei reng mai a.
   (b) Hla phuah thiam mimal hming kan hriat hmasak ber chu _____ a ni.

9. R.L. Thanmawia'n zirlai tam takin an tlakchham a sawi kha sawi la, chu mi avanga harsatna awm thei entirna a pek kha sawi bawk rawh. 1+1=2

10. 'Lungphâng lo la' tih ziaktuin, "Minute tina thil thleng" a tih leh "Khawvel awmphung" a tihte kha han sawi teh 1+1=2

11. Kan thinrimna-in hriselna tehfung *pali* a khawih pawi theihte kha sawi la, thinrimna hian kan nuna hnawh phui leh siam ṭhat rual loh chhiatna a thlen theih dan in zirlai buin a sawi kha han sawi vek teh. 2+2=4

12. In zirlai, 'Mizo thu leh hla ṭobul' tih behchhanin hmanlai kan pi leh pute khawsak dan leh nunphung kha han sawi teh. 6

ṬHEN THUMNA : LEMCHAN

13. A dik ber thlang chhuak rawh : 2x1=2
   (a) Lalhniangi nu-in Thangzawra palai, Phunga te a ṭheh chu _____ a ni. (Zufang/ Zupui/ Tuiburlainuai/ Tuibur al)
   (b) An sal mante Pawihho hnena an hralh avanga hausak phah tate chu _____ an ni. (Lianphunga khuate/ Lalruma khuate/ Bengkhuaia khuate/ Kalkhama khuate)

14. Thangzawra'n, "Ka nu, nang zawngin min lainat e" a tihna chhan kha han sawi teh. 2

15. Eng vangin nge Thingsei lal, Lalchhunga khan, "Ka tha a na mang e aw" a tih ? 2

16. "Beiseina aṭangin beidawnna ka chhar chhuak a, nun hi pangpar emaw a nih dawn ka tih hnuah hnam tûr mai a ni tih ka hre chhuak leh si a nih hi."
    He thu Thangzawra'n a sawi chhuah chhan dik tak han sawi teh. 4

ṬHEN LINA : THAWNTHU

17. Chhanna dik ber thlang chhuak rawh : 2x1=2
   (a) Mipuiin an lal, an duh tawh loh avanga an sawi (hrem) chu _____ a ni. (Vanphunga/ Vaihleia/ Siakzapaoa/ Semthonga)
   (b) Chawngi hming pum chu _____ a ni. (Chawngziki/ Lalchawngpuii/ Chhiahchawngi/ Chawngpuii)

18. Kawl rama Buangate ṭhian zaho an tlangnel loh ruk riauna chhan kha eng nge ni ? 2

19. 'Zamadlei ṭhi' hi eng nge a nih sawi la, 'Lal hlau lo ṭhi' thawnthu aṭang hian eng nge pawimawhna a neih sawi bawk rawh. 1+1=2

20. Dama te hun laia Rih dil an hriat dan leh tun lai huna Rih dil chanchin an hriat dan kha fiah takin han sawi teh. 2+2=4

ṬHEN NGANA : GRAMMAR & COMPOSITION

21. A hnuaia thute hi eng adverb nge an nih ziak rawh : 2x1=2
    (a) Thlifim a thaw heuh heuh mai.
    (Adjectival Adverb/Double Adverb/Emphatic Adverb)
    (b) A va hnawk rem rum ve.
    (Adjectival Adverb/Double Adverb/Emphatic Adverb)

22. A hnuaia thute hi Ṭawng Upain engtin nge an sawi ? 2x1=2
    (a) A tak tak ni lo, a behbawm. (Ba sa ngam/ Bawm ak thu/ A phaw vuak/ Duap kai)
    (b) Hah hle, chau hle sawina. (Thlohpui thing tu ang/ Thembu sawh rual/ Ṭhi beh lo thu/ Pawngsen tlaivar)

23. 'Za chham lak' tih awmzia sawi la, a tichiang turin thu han phuah teh. 2

24. Lalrinawma, Republic Veng, Aizawl i ni a. In bialtu SDO (Public Health Engineering Department), Republic Veng hnenah tui in haw ṭhat loh chungchanga sawiselna (complaint) han ziak teh. 4

25. A hnuaia thupui tarlan zinga i duh ber hmangin Essay, thumal 250 velin han ziak teh. 6
    (a) Ram leh hnam humhalh
    (b) Hnam inpumkhatna
    (c) Zirlaite leh thianghlimna

ṬHEN RUKNA : RAPID READER

26. Zawlbuka nasa taka sawisak a tawrh hnuah eng vangin nge Hrangchhuana'n tui a lam duh loh ? 2

27. Chawngmawii leh Hrangchhuana te inkara hmangaihna kawng bum boh dan leh an inhmangaihna thukzia a bu chhung thu tlawhchhanin, fiah takin han ziak chhuak teh. 3+3=6

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2024
HINDI
Full Marks - 80
Time - 3 Hours

General Instructions :

(i) *All questions are compulsory.*
(ii) *Figures in the margin indicate marks.*
(iii) *Write your answers neatly and legibly.*
(iv) *While attemping a question, write the question number as given in the question paper.*

खण्ड – 'क'

1. निम्नलिखित काव्य-पंक्तियों को ध्यान से पढ़िए और पूछे गए प्रश्नों के उत्तर दीजिए

जेठ के दारुण आतप, तप के जगती तल जावै जला,
नभ-मण्डल छाया मरुस्थल-सा दल बांध के अंधड़ आवै चला।
जल-हीन जलाशय, व्याकुल हैं पशु-पक्षी, प्रचण्ड है भानुकला,
किसी कानन कुंज के धाम में प्यारे करैं विसिराम चलो तो भला ॥

(क) प्रस्तुत काव्यांश में किस माह की व्याख्या हो रही है? 1
(ख) कवि ने आकाश की उपमा किस से दी है? 1
(ग) सरोवर का जल क्यों सूख गया है? 1
(घ) कवि ने भयंकर गर्मी से बचने के क्या उपाय बताया है? 1
(ङ) भयंकर गर्मी का असर किस प्रकार हो रहा है? 2

2. निम्नलिखित गद्यांश को ध्यानपूर्वक पढ़िए और पूछे गए प्रश्नों के उत्तर दीजिए

बचपन में ही मैने सुना था, "खेलोगे, कूदोगे, होगे खराब"। कुछ लोग आज भी सोचते हैं कि खेलने कूदने से समय नष्ट होता है, स्वास्थ्य बनाने के लिए व्यायाम कर लेना ही काफी है। पर अपने अनुभव से मैं कह सकता हूँ कि यह विचार ठीक नहीं है। खेलकूद से स्वास्थ्य तो बनता ही है, साथ-साथ मनुष्य कुछ ऐसे गुण भी सीखता है जिनका जीवन में विशेष महत्व है, और जो केवल व्यायाम की अपेक्षा खेलकूद से ही अधिक प्राप्त हो सकते हैं। सहयोग से काम करना, विजय मिलने पर अभिमान न करना, हार जाने पर साहस न छोड़ना, विशेष ध्येय के लिए नियमपूर्वक काम करना आदि गुण खेलों के द्वारा अनायास सिखे जा सकते हैं। लोग सफलता न पाने पर साहस छोड़ बैठते हैं और दुबारा साहस नहीं करते। परंतु अच्छा खिलाड़ी हारने पर भी प्रयास करता रहता है ताकि वह आगे चलकर हारी हुई बाजी जीत सके। इन बातों से प्रतीत होता है कि खेल के मैदान में केवल स्वास्थ्य नहीं बनता, वरन मनुष्य बनता है। खिलाड़ी उन बातों को सीखता है जो नागरिक जीवन की समस्या को सुलझाने में सहायता प्रदान करती हैं।

(क) खेलने से समय नष्ट क्यों नहीं होता? 1
(ख) आप अच्छा खिलाड़ी किसे कहेंगे? 1
(ग) वे कौन-से गुण हैं जो मनुष्य को व्यायाम से अधिक खेलकूद से मिलते हैं? 2
(घ) खेल में सफलता न मिलने पर क्या करना चाहिए? 2

खण्ड – 'ख'

3. निम्नलिखित विषयों में से किसी एक पर निबंध लिखिए : 8

(क) समय का महत्व

(ख) महँगाई: एक समस्या

(ग) वन रहेंगे, हम रहेंगे

(घ) नशा और युवा वर्ग

4. आपके विद्यालय के वार्षिक खेल प्रतियोगिता पर एक रिपोर्ट तैयार कीजिए। 5

5. खान-पान और रहन-सहन की बदलती शैली पर एक आलेख लिखिए। 5

6. आपके शहर में पानी की समस्या पर एक फीचर तैयार कीजिए। 5

खण्ड – 'ग'

7. निम्नलिखित पद्यांश से सम्बंधित प्रश्नों के उत्तर दीजिए

(अ) मैं जला हृदय में अग्नि दहा करता हूँ,
सुख-दुख दोनों में मग्न रहा करता हूँ
जग भव-सागर तरने को नाव बनाए,
मैं भव मौजों पर मस्त बहा करता हूँ!

(क) कवि अपने हृदय में कैसी अग्नि जलाता है 1

(ख) कवि कैसी स्थिति में मग्न रहता है 1

(ग) कवि किसकी यादों में मस्त रहता है 1

(घ) भव सागर को तरने के लिए नाव बनाने से क्या आशय है 2

(ङ) कवि की मनोदशा पर प्रकाश डालिए। 3

अथवा

(आ) फिर हम परदे पर दिखलाएँगे
फूली हुई आखँ की एक बडी तसवीर
बहुत बडी तसवीर
और उसके होठों पर एक कसमसाहट भी
(आशा है आप उसे उसकी अपंगता की पीडा मानेंगे)
एक और कोशिश
दर्शक
धीरज रखिए
देखिए
हमें दोनों एक संग रुलाने हैं

आप और वह दोनों
(कैमरा बस करो नहीं हुआ, रहने दो)
परदे पर वक्त की कीमत है
अब मुसकुराएँगे हम
आप देख रहे थे सामाजिक उद्देश्य से युक्त
कार्यक्रम
(बस थोडी ही कसर रह गई)
धन्यवाद

(क) इस पद्यांश के कवि तथा कविता का नाम लिखिए। 1

(ख) इस पद्यांश मे किस पर व्यंग्य किया गया है? 1

(ग) कार्यक्रमसंचालक एक साथ किन दोनों को रुलाना चाहता है? 1

(घ) संचालक किस बात पर मुसकराता है? 2

(ङ) संचालक परदे पर फूली हुई आखों की तस्वीर क्यों दिखाता है? 3

8. निम्नलिखित पद्यांश से सौन्दर्यबोध संबंधित प्रश्नों के उत्तर दीजिए:

(अ) कविता एक उडान है चिड़िया के बहाने
कविता की उडान भला चिड़िया क्या जाने
बाहर भीतर
इस घर, उस घर
कविता के पंख लगा उड़ने के माने
चिड़िया क्या जाने?

(क) इस पद्यांश में किसका मानवीकरण किया गया है? 1

(ख) बाहर-भीतर, इस घर, उस घर में कौन सा अलंकार है? 1

(ग) काव्यांश की भाषा पर टिप्पणी कीजिए। 1

(घ) काव्यांश के कथ्य के सौंदर्य को स्पष्ट कीजिए। 2

अथवा

(आ) तिरती है समीरसागर पर
अस्थिर सुख पर दुख की छाया-
जग के दग्ध हृदय पर
निर्दय विप्लव की प्लावित माया–
यह तेरी रण– तरी
भरी आकांक्षाओं से,
घन, भेरीगर्जन से सजग सुप्त अंकुर
उर मे पृथ्वी के, आशाओं से
नवजीवन की, ऊचाँ कर सिर,
ताक रहे हैं, ऐ विप्लव के बादल!

(क) प्रस्तुत पद्यांश से मानवीकरण अंलकार का एक उदाहरण दीजिए। 1

(ख) बादल को किसके रुप में प्रस्तुत किया गया है? 1

(ग) कविता की भाषा पर प्रकाश डालिए। 1

(घ) इस पद्यांश में बादल को विप्लवकारी योद्धा के रुप में किस प्रकार चित्रित किया गया है? 2

9. निम्नलिखित प्रश्नों में से किन्हीं दो के उत्तर दीजिए 2+2 =4

(क) पृथ्वी घुमती हुई बच्चों के बेचैन पैरों के पास किस प्रकार जाती है?

(ख) 'छोटा मेरा खेत' कविता में छोटे चौकोन खेत को 'कागज का पन्ना' क्यों कहा गया है?

(ग) 'उषा' कविता का सार अपने शब्दों में लिखिए।

10. निम्नलिखित गद्यांश को पढ़िए और पूछे गए प्रश्नों के उत्तर दीजिए:

(अ) भक्तिन और मेरे बीच में सेवक-स्वामी का संबंध, यह कहना कठिन है; क्योंकि ऐसा कोई स्वामी नहीं हो सकता, जो इच्छा होने पर भी सेवक को अपनी सेवा से हटा न सके और ऐसा कोई सेवक भी नहीं सुना गया, जो स्वामी के चले जाने का आदेश पाकर अवज्ञा से हँस दे। भक्तिन को नौकर कहना उतना ही असंगत है जितना अपने घर में बारी-बारी से आने-जाने वाले अँधेरे-उजाले और आँगन में फूलने वाले गुलाब और आम को सेवक मानना। वे जिस प्रकार एक अस्तित्व रखते हैं, जिसे सार्थकता देने के लिए ही हमें सुख-दुख देते हैं, उसी प्रकार भक्तिन का स्वतंत्र व्यक्तित्व अपने विकास के परिचय के लिए ही मेरे जीवन को घेरे हुए है।

(क) भक्तिन और महादेवी के बीच कैसा संबंध है? 1

(ख) महादेवी भक्तिन को अपनी सेविका मानने को तैयार क्यों नही होती? 1

(ग) भक्तिन महादेवी द्वारा वहाँ से चले जाने का आदेश पाकर कैसा व्यवहार करती है? 1

(घ) भक्तिन महादेवी से सुरक्षा पा रही है या उसे सुरक्षा दे रही है? 1

(ङ) महादेवी अँधेरे-उजाले, गुलाब, आम और भक्तिन में क्या समानता खोजती है? 2

अथवा

(आ) ऐसे दुमदारों से तो लँडूरे भले। फूल है शिरीष। वसंत के आगमन के साथ लहक उठता है, आषाढ़ तक जो निश्चित रुप से मस्त बना रहता है। मन रम गया तो भरे भादों में भी निर्घात फूलता रहता है। जब उमस से प्राण उबलता रहता है और लू से हृदय सूखता रहता है, एकमात्र शिरीष कालजयी अवधूत की भाँति जीवन की अजेयता का मंत्र प्रचार करता रहता है। यद्यपि कवियों की भाँति हर फूल-पते को देखकर मुग्ध होने लायक हृदय विधाता ने नहीं दिया है, पर नितांत ठूँठ भी नहीं हूँ। शिरीष के पुष्प मेरे मानस में थोड़ा हिल्लोल ज़रुर पैदा करते हैं।

(क) पाठ तथा लेखक का नाम लिखिए। 1

(ख) शिरीष को 'कालजयी अवधूत' क्यों कहा गया है? 1

(ग) शिरीष के खिलने-फूलने के मौसम पर प्रकाश डालिए। 1

(घ) लेखक ने अपने स्वभाव के बारे में क्या कहा है? 1

(ङ) लेखक को शिरीष का फूल क्यों पसंद है? 2

11. निम्नलिखित में से किन्हीं चार प्रश्नों के उत्तर दीजिए 4×3=12

(क) 'बाजारुपन' से क्या तात्पर्य है?

(ख) लोगों ने लड़कों की टोली को मेढक मंडली नाम किस आधार पर दिया ?

(ग) लुट्टन पहलवान ने ऐसा क्यों कहा होगा कि मेरा गुरु कोई पहलवान नहीं, यही ढोल है?

(घ) जाति प्रथा को श्रम-विभाजन का ही एक रुप न मानने के पीछे आंबेडकर के क्या तर्क हैं?

(ङ) आदर्श समाज के विषय में लेखक की क्या मान्यता है?

12. निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर दीजिए 2×3=6

(क) यशोधर बाबू को अपनी पत्नी की कौन सी बात पसंद नहीं है?

(ख) 'जुझ' कहानी में चित्रित ग्रामीण जीवन का संक्षिप्त वर्णन अपने शब्दों में लिखिए।

(ग) मुअनजो-दड़ो के आदिम शहर की आज क्या दशा है?

13. (क) यशोधर बाबू अधिकारी के रुप में दफ्तर में कैसा व्यवहार करते हैं? 4

अथवा

(ख) वसंत पाटील कौन था ? उसकी लेखक से दोस्ती क्यों और कैसे बनी? 4

2024
NEPALI
Full Marks - 80
Time - 3 Hours

General Instructions :
(i) All questions are compulsory.
(ii) Figures in the margin indicate marks.
(iii) Write your answers neatly and legibly.
(iv) While attemping a question, write the question number as given in the question paper.

खण्ड – 'क' (पठन : 10 अंक)

1. तल दिएको गद्यांश पढे सोधिएका प्रश्नहरुको उत्तर सरल भाषामा लेख:

सत्यसंग हो सत र संगको योग। सत्संगलाई साधारण अर्थमाभन्नु हो भने– राम्रो संगत। मानिसको चरित्र निर्माणमा सत्संगको प्रभावले नै मानिस महान वा नीच,सफल-असफल, सुखी वा दुखी हुन्छ। सुसंगतिले मानिस उन्नति सफल र सुखी बन्छ अनि त्यसको विपरित बन्छ कुसंगतिले। सत्संगको महिमा महान छ।

जीवनमा प्रत्येक मानिसलाई सुख, शान्ति र सफलताको आकांक्षा हुन्छ अनि यसको प्राप्तिका निम्ति उसलाई सुसत्संगको आवश्यकता पर्छ। जब सम्म मानिस राम्रो संगत गर्न सक्दैन तब सम्म उ सफल र सुखी बन्न सक्तैन।

संगत दुई प्रकारको हुन्छ – सुसंगत र कुसंगत। अनि प्रत्येक थरीको संगत दुई प्रकारले प्राप्त गर्न सकिन्छ- पढेर र परे अथवा पुस्तकहरुको अध्ययन र मननबाट अनि व्यक्ति विशेषसितको संसर्गबाट।

मनुष्य-जीवनमा संगतको ठूलो महत्व छ। सुसंगतको सज्जन र कुसंगतले दुर्जन बन्दछ भन्ने बुझेर मातापिताहरुले आफ्ना बाल-बालिकालाई सानै देखि असल मानिसहरुको संगत गर्ने अभ्यास र प्रोतसाहन दिनु आवश्यक छ। बालक-बालिका मात्र होइन तर युवा वृद्ध सबैले हरबखत सुसंगतमा रहने प्रयास र आदत गर्नु पर्छ।

(क) यस गद्यांशलाई सुहाउदो शिर्षक देउ 1

(ख) सत्संग कसरी बनिएको शब्द हो ? 1

(ग) सत्यसंगको प्रभावले मानिस कस्ता हुन्छन ? 1

(घ) सत्यसंगको साधारण अर्थ के हो 1

(ङ) जीवनमा मानिसलाई के को इच्छा हुन्छ ? 1

(च) संगत कति प्रकारको हुन्छ ? 1

(छ) संगत कसरी प्राप्त गर्न सकिन्छ? 2

(ज) यस विषयमा माता-पिताको के भूमिका हुनुपर्छ? 2

खण्ड –'ख' (व्याकरण औ रचना: 25 अंक)

2. (क) सम्झ कि तिमी आइजोल इलेक्ट्रनिक्स, मिजौरामको प्रबन्धक किरण हौ । अब निम्नलिखित सामानहरु ब्लू डार्ट एक्सप्रेस द्वारा पठाई दिने अनुरोध गर्दै जियो इन्फोटेक लिमिटेड,वर्ली मुम्बइको विक्रय प्रबन्धकलाई एक व्यापारिक पत्र लेख। पत्रमा यी चिजहरुको लागि रु5,00,000 ·00 (रुपिया पाँच लाख) उनिहरुको बैंकखातामा हालिदिएको कुरा पनि जनाउनु। 5

1. हेन्डसेट - 200 वटा
2. डोङगल - 100 वटा
3. हैन्डसेट कभर- 200 वटा

अथवा

(ख) सम्झ तिमी छात्रवासमा बसेर पढ़दैछौ। छात्रावासको बारेमा बताउँदै तिम्रो पितालाई एउटा व्यक्तिगत पत्र लेख। 5

3. कुनै एक विषयमा लगभग 250-300 शब्दको निबन्ध रचना गर: 8

(क) मिजौराममा भानु जयन्ती

(ख) इन्टरनेट– लाभ र हानि

(ग) विज्ञानको चमत्कार

4. तलका कुनै दुई भिन्नार्थक शब्दहरुका बेग्लाबेग्लै अर्थ बुझाउन तिनीहरुको प्रयोगद्वारा वाक्य रचना गर: 1+1=2

(क) खुन, खून

(ख) कलि, कली

(ग) गुन, गुण

5. तलका कुनै दुई शब्दहरुले दुई-दुईवटा पर्यायवाची शब्द लेख: 1+1=2

(क) कमजोर

(ख) गृह

(ग) जीविका

6. तलका कुनै दुई अनेकार्थक शब्दहरुको बेग्लाबेग्लै अर्थ निस्कने गरी तिनीहरुलाई लाएर दुई-दुईवटा वाक्य रचना गर: 1+1=2

(क) साँचो

(ख) वर

(ग) खोटो

7. तलका कुनै दुई शब्द-समुहको सार शब्द लेख 1+1=2

(क) पानीमा बस्ने प्राणी

(ख) गुरुले दिएको मन्त्र

(ग) नराम्रो बानी

8. तलका कुनै दुई वाग्धाराको अर्थ खुलस्त हुने गरी तिनीहरुलाई चलाएर वाक्य रचना गर 1+1=2

(क) आँखामा छारो हाल्नु

(ख) उडेको चरा खसाल्नु

(ग) एकै आँखाले हेर्नु

9. तलका कुनै दुई उखानहरु खाली ठाँउ भरेर पूरा गर: 1+1=2

(क) न __________ न कनाइ

(ख) पशुपतिको यात्रा ________ व्यापार

(ग) एक कान दुई कान ________

खण्ड –'ग' (साहित्य: 45 अंक)

10. तल दिएका प्रश्नहरुको उत्तर सरल भाषामा लेख 4 ×1=4

(क) 'हामी बहादुर' कविता कसले लेखेका हुन?

(ख) कविले भिखारीबारे कस्ता कल्पना गरेका छन

(ग) पिंजराका सुगाले कस्ता दु:खहरु भोगिरहेका छन?

(घ) 'थापिरहन्छौ जति दिन सम्म उति दिनसम्म दिइरहन्छु' । यो पंक्तिमा कसले के दिन्छु भनेको हो?

11. जाबीको चराले किन शिकारीलाई छोडिदिने अनुरोध गर्दछ? 2

12. 'हामी बहादुर' कवितामा कविले बहादुर गोर्खालीको कस्तो अवस्था दर्शाउनु भएको छ ? 2

13. 'निर्झर कवितामा कविले मानिसको जीवन कस्तो हुनुपर्छ भन्नु भएको छ ? 2

14. कुनै एकको सप्रसंग व्याख्या गर: 5

(क) हरिया वनको शीतल छाया वान्धवसंगको मोह र माया।
खेल्न डुल्न फलफुल खाई, सपनामय भो हाय! मलाई ॥

अथवा

(ख) वेर घेर अझ हो कति गर्ने 5
रीस-डाह गरि नै कति मर्ने
प्रेमको अब उघारि पिटारी
देशधर्म ख ुद आफु सयाहारी।

15. संक्षेपमा उत्तर लेख 6×1 = 6

(क) सन् 1828 तिर नेपालराज्यभित्र कति थरीका बोली बोलिन्थे?
(ख) नेवारीभाषालेफष्टाउनेअवसर नपाएको कारण लेख।
(ग) केकारणलेक ृष्णरायको गाँउमानिकैसम्मान थियो?
(घ) कुनैपनि बोलीलेभाषाको दर्जापाउन तिनीहरुमा केके हुनुपर्छ?
(ङ) चामेग ुन्द्री ओछयाएर कता सुत्यो ?
(च) खस भाषा कसरी नेपालकोराजभाषा बन्न प ुग्यो?

16. ‘बादल जतिसुकैकालो होस त्यसको भित्री चाँदीजस्तो सेतो हुन्छ्।‘ यो कथनको भाव स्पष्ट गर। 3

17. मान्छेलो ुन्द्रुकलाई कस्तो सास्ती दिएका छन ? 2

18. झ्याउरेबाचिरहन ुमा क-कस्को भूमिका छ ? 2

19. स्वाध्याय भन्नालेकेब ुझिन्छ ? 2

20. झ्याउरेछन्दबारेलेख। 4

21. ‘अहिलेमा ंग्दैनौभनेपछि एक मात्र होइन द ुई वर मागनु पर्ला। उक्त वाक्य कसले कसलाई औ क ुन प्रसंगमा भनेकोहो? 4

22. कृष्णरायको चरित्र चित्रण गर। 7

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2024
PHYSICS
(Theory)
Full Marks - 70
Time - 3 Hours

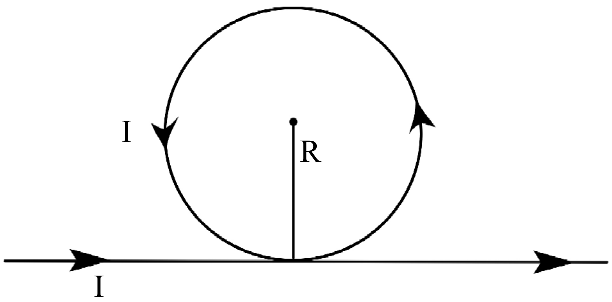
General Instructions :

(i) All questions are compulsory.
(ii) Marks for each question are indicated against it.
(iii) Use log table, if necessary.
(iv) Use of calculator is not allowed.

1. Si and Cu are cooled from 300K to a temperature of 60K. Then resistivity - 1
   (a) for Si increases and for Cu decreases
   (b) for Cu increases and for Si decreases
   (c) decreases for both Si and Cu
   (d) increases for both Si and Cu

2. The unit of permittivity of free-space ($\in_0$) is - 1
   (a) $CN^{-1}m^{-1}$ (b) Nm^2C^{-2} (c) $C^2N^{-1}m^{-2}$ (d) $C^2N^{-2}m^{-2}$

3. An infinitely long straight conductor is bent into the shape as shown in the figure. The magnetic fied at the centre of the circular part is - 1
   (a) $\frac{\mu_o}{4\pi}.\frac{2\pi I}{R}$
   (b) $\frac{\mu_o}{4\pi}.\frac{2I}{R}(\pi+1)$
   (c) $\frac{\mu_o}{4\pi}.\frac{2I}{R}(\pi-1)$
   (d) Zero



4. A wire of radius r has resistance R. If it is stretched to the wire of radius $r/2$, then the resistance becomes - 1
   (a) 2R (b) 4R (c) Zero (d) 16R

5. The focal length of a glass (μ=1.5) lens in air is 20cm. If it is dipped in water ($\mu = 4/3$), its focal length in water will be - 1
   (a) 80 cm (b) 40 cm (c) 60 cm (d) 20 cm

6. Photons of energies 1eV and 2eV are successively incident on a metallic surface of work function 0.5 eV. The ratio of kinetic energy of most energetic photoelectrons in the two cases will be - 1
   (a) 1:2 (b) 1:3 (c) 1:1 (d) 1:4

7. A nucleus of ${}_4Be^9$ absorbs an alpha particle and emits a neutron. The resulting nucleus will be - 1

(a) ${}_6C^{12}$ (b) ${}_4Be^8$ (c) ${}_5C^{12}$ (d) ${}_6C^{13}$

8. The width of diffraction band varies - 1

(a) inversely as the wavelength
(b) directly as the width of the slit
(c) directly as the distance between the slit and the screen
(d) inversely as the size of the source from which the slit is illuminated

9. Huygen's principle of secondary waves is used to - 1

(a) explain principle of superposition of waves
(b) obtain the new position of wavefront geometrically
(c) explain interference phenomenon
(d) explain polarisation

10. The potential barrier in the depletion layer is due to - 1

(a) ions (b) holes (c) electrons (d) forbidden gap

11. A speech signal of 3kHz is used to modulate a carrier wave of frequency 1MHz, using amplitude modulation. The frequencies of the side bands will be - 1

(a) 1.003 MHz and 0.997 MHz (b) 3001 kHz and 2997 kHz
(c) 1003 kHz and 1000 kHz (d) 1 MHz and 0.997 MHz

12. When the conductivity of a semiconductor is only due to breaking of the co-valent bonds, the semi-conductor is called - 1

(a) donor (b) acceptor (c) intrinsic (d) extrinsic

13. Which of the following is not a wired communication media ? 1

(a) Twisted pair (b) Radio wave (c) Co-axial (d) Fibre-optic

14. Which of the following statements about electromagnetic waves is true ? 1

(a) Electromagnetic waves travel slower than the speed of light in vacuum
(b) Electromagnetic waves require a medium to propagate
(c) Electromagnetic waves can only be observed in the radio frequency range
(d) Electromagnetic waves can be polarized.

15. An infinite line charge produces a field of $9\times10^4\,NC^{-1}$ at a distance of 4 cm. Calculate the linear charge density. 2

16. (a) Write *two* factors on which internal resistance of a cell depends. 2

OR

(b) The wire of a potentiometer should be of uniform area of cross-section, why ? 2

17. The magnetic flux through a coil is varying according to the relation $\phi = (8t^3 + 5t^2 + 3t - 7)$ weber. Calculate the induced emf in the coil at t = 2s. 2

18. What will be the nature of the path of a charged particle moving perpendicular to the direction of a uniform magnetic field ? Justify your answer. 1+1=2

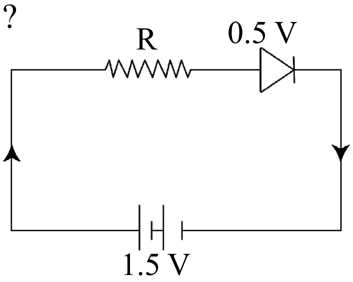
19. Define electromagnetic spectrum. Write *two* uses of infrared rays. 1+1=2

20. M_1 and M_2 represent the masses of $_{10}Ne^{20}$ nucleus and $_{20}Ca^{40}$ nucleus respectively. Explain whether $M_2 = 2M_1$ or $M_2 < 2M_1$ or $M_2 > 2M_1$. 2

21. (a) For a given common-emitter transistor amplifier, the current gains is 72. Calculate the collector and base current if the emitter current is 8.9 mA. 2

OR

(b) The diode used in the circuit shown in the figure has a constant voltage drop of 0.5 V at all currents and a maximum power rating of 100mW. What should be the value of resistance R for obtaining maximum current ? 2



22. In a slidewire bridge, when a resistor of resistance $2\,\Omega$ is in the left gap and uknown resistance in the right gap, the balance point is obtained at 40 cm from zero end of the wire. Find the shift in the balance point when the unknown resistance is shunted with a resistor of resistance $2\,\Omega$. 3

23. Derive an expression for mutual inductance of two long solenoids. 3

24. (a) In Young's doubleslit experiment, the two slits are 0.5 mm apart. The distance of 11^{th} fringe from the first fringe is 1 cm. If the screen is placed 1m away from the slits, calculate the wavelength of the light used. 3

OR

(b) At what distance should an object be placed from a convex lens of focal length 15 cm to obtain an image three times the size of the object ? 3

25. What is photoelectric effect ? Draw the graphs showing the variation of -
(a) photocurrent with intensity of incident light.
(b) stopping potential with frequency of incident light. 1+2=3

26. What is Rutherford's model of atom ? What are its drawbacks ? 2+1=3

27. With a labelled circuit diagram, explain the action of transistor as an oscillator. 1+2=3

28. Define spacewave and skywave propagation. Skywave propagation is not used for TV signal communication. Explain. 2+1=3

29. (a) Find the power consumed in a circuit having a resistance of $30\,\Omega$ in series with an inductance of $40\,\Omega$ in series with an a.c. with peak current of 2A and peak voltage of 220V. 3

OR

(b) An a.c. generator consists of a coil of 3000 turns, each of area 80 cm^2 and rotating at an angular speed of 200 rpm in a uniform field of $4.8x10^{-2}$T. Calculate the peak and rms value of emf induced in the coil. 3

30. What is interference of light ? Explain with figure, what will happen to the interference pattern in Young's experiment, if the source is not exactly on the centre line between the two slits. 1+2=3

31. (a) Derive an expression for capacitance of a parallel plate capacitor. What will happen to the capacitance, if a dielectric slab of dielectric constant K fills the space between the two plates ? 4+1=5

OR

(b) State Gauss's theorem and apply this law to derive the expression for electric field due to a uniformly charged spherical shell at a point -

(i) outside the shell

(ii) inside the shell 1+3+1=5

32. (a) Write Biot-Savart's law. Using this law, obtain an expression for the magnetic field at a point situated on the axis of a current carrying circular coil. 1+4=5

OR

(b) State Ampere's circuital law. Apply this law to find the magnetic field at a point well inside a long straight solenoid carrying current. What is the magnetic field near the end of the solenoid ? 1+3+1=5

33. (a) Explain the refraction through a glass prism and hence deduce the expression for the refractive index of its material. 1+4=5

OR

(b) Draw the ray diagram of an astronomical telescope, when image is formed at least distance of distinct vision. Hence derive the expression for its magnifying power. 1+4=5

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Physical constants :

$\dfrac{1}{4\pi\varepsilon_0}$	=	$9 \times 10^{9}\ Nm^{2}C^{-2}$
ε_0	=	$8.854 \times 10^{-12}\ C^{2}\ N^{-1}m^{-2}$
c	=	$3 \times 10^{8}\ ms^{-1}$
e	=	$1.6 \times 10^{-19}C$
m_e	=	$9.1 \times 10^{-31}\ kg$
m_p	=	$1.67 \times 10^{-27}\ kg$
h	=	$6.6 \times 10^{-34}Js$
G	=	$6.67 \times 10^{-11}\ Nm^{2}\ kg^{-2}$
g	=	$9.8\ ms^{-2}$
$1\mathring{A}$	=	$10^{-10}m$
1 amu	=	931 MeV
μ_0	=	$4\pi \times 10^{-7}TA^{-1}m$

2024

CHEMISTRY

(Theory)

Full Marks - 70

Time - 3 Hours

General Instructions :

(i) All questions are compulsory.

(ii) Marks for each question are indicated against it.

(iii) Use log tables if necessary.

(iv) Use of calculator is not allowed.

1. Choose the correct answer from the given options : 14x1=14

(a) Silicon doped with electron rich impurity is -

(i) p-type semi conductor (ii) n-type semi conductor

(iii) intrinsic semi conductor (iv) insulators

(b) The units of conductivity are -

(i) ohm^{-1} (ii) $ohm^{-1}\,cm^{-1}$

(iii) $ohm^{-2}\,cm^{2}\,equi^{-1}$ (iv) $ohm^{-2}\,cm^{2}$

(c) For the reaction :

$4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$ the rate of formation of NO is 3.6×10^{-3} $molL^{-1}S^{-1}$. The rate of disapperance of ammonia would be -

(i) 5.4×10^{-3} $molL^{-1}S^{-1}$ (ii) 2.4×10^{-3} $molL^{-1}S^{-1}$

(iii) 3.6×10^{-3} $molL^{-1}S^{-1}$ (iv) 4.6×10^{-3} $molL^{-1}S^{-1}$

(d) A larger increase in reaction rate with small rise in temperature is due to -

(i) increase in number of activated molecules

(ii) increase in number of collisions

(iii) lowering of activation energy

(iv) shortening of mean free path

(e) Phosphonic acid (H_3PO_3) is -

(i) monobasic (ii) dibasic

(iii) tribasic (iv) tetrabasic

(f) Rust is a mixture of -

(i) FeO and $Fe(OH)_3$ (ii) FeO and $Fe(OH)_2$

(iii) Fe_2O_3 and $Fe(OH)_3$ (iv) Fe_3O_4 and $Fe(OH)_3$

(g) The IUPAC name of [Pt Cl (NO_2) $(NH_3)_4$] SO_4 is -
  (i) Tetraamminechloridonitrito-N- platinium (IV) sulphate
  (ii) Tetraamminechloridonitrito-N- platinate (III) sulphate
  (iii) Chloridonitrito-N- ammineplatinium (IV) sulphate
  (iv) Tetraammine chloridonitrito-N- platinate (IV) sulphate

(h) Which of the following has magnesium ?
  (i) Vitamin B_{12} (ii) Haemocyanin
  (iii) Haemoglobin (iv) Chlorophyll

(i) Write the IUPAC name of

$$CH_3CH_2-O-\underset{\substack{|\\ CH_3}}{\overset{\substack{CH_3\\ |}}{C}}-CH_3 \text{ is -}$$

  (i) 2,2 – dimethyl – 2 – ethoxy ethane
  (ii) 2,2,2 – trimethyl – 2 – ethoxy propane
  (iii) 2 – ethoxy – 2 – methyl propane
  (iv) 2 – ethoxy – 2,2 – dimethyl ethane

(j) The IUPAC name of $CH_3-\underset{\substack{|\\ CH_3}}{CH}-NH-CH_3$ is -
  (i) N – methyl propan – 2 – amine (ii) N – methyl propanamine
  (iii) N,N – dimethylbutanamine (iv) 2 – methyl – N – methylbutanamine

(k) The primary, secondary and tertiary amines can be distinguished by -
  (i) Fehling's test (ii) Tollen's test
  (iii) Libermann test (iv) Hinsberg's test

(l) Alcohols and phenols can be distinguished by-
  (i) Iodoform test (ii) Tollen's reagent
  (iii) $NaHCO_3$ test (iv) Litmus test

(m) The process of separation of colloids by passing through a semi-permeable membrane is called-
  (i) dialysis (ii) filtration
  (iii) electrophoresis (iv) ultrafiltration

(n) The colloidal system in which the dispersed phase is solid and the dispersion medium is gas is known as -
  (i) foam (ii) gel (iii) aerosol (iv) emulsion

2. What is Reverse Osmosis ? How is it useful ? 2

3. Explain the mechanism of coagulation of colloidal solutions. 2

4. Explain the acidic and basic character of amino acids according to dipolar ion structure. 2

5. What is the difference between a nucleoside and a nucleotide ? 2

6. Explain why haloarenes are less reactive than haloalkanes. 2

7. Carboxylic acids are more acidic than phenols. Give reasons. 2

8. Electrophilic substitution in case of aromatic amines takes place more readily than in benzene Explain. 2

9. Explain Wurtz reaction with example. 2

10. Write Aldol condensation with chemical reactions. 2

11. Write the SN^1 mechanism for the reaction of alcohols with hydrogen halides. 2

12. (a) Write the chemical reaction for the conversion of methanal to ethanol. 2

OR

(b) Write a chemical reaction for the conversion of acetic acid to ethene. 2

13. Define the following terms - 3
(a) Ore concentration
(b) Smelting
(c) Levigation

14. Draw the geometrical isomers of $[Pt\,Cl_2\,(Ox)_2]^{2+}$ and show which of the isomers is optically active. 3

15. What are natural and synthetic polymers. Give an example of each type. 3

16. What are synthetic detergents ? Write *any four* reasons for which they are preferred over soaps. 3

17. A metal having atomic mass 50g mol^{-1} has a body centred cubic crystal structure. The density of metal is 5.96 g cm^{-3}. Find the volume of the unit cell. 3

18. (a) Urea (molar mass = 60 g mol^{-1}) forms an ideal solution in water. Determine the vapour pressure of an aqueous solution containing 10 % by mass of urea at $40^{o}C$.
(Vapour pressure of water at $40^{o}C$ = 55.3 mm of Hg) 3

OR

(b) A solution is made by dissolving 30 g of a non-volatile solute in 90g of water. It has a vapour pressure of 2.8 kPa at 298 K. At 298 K, vapour pressure of pure water is 3.64 kPa. Calculate the molar mass of the solute. 3

19. Calculate the maximum work that can be obtained by operating the following cell

$Mg / Mg^{2+} (aq) || Ag^{+} (aq)/Ag$

Given :

E^{o} $(Mg^{2+}/Mg) = -2.37$ V

E^{o} $(Ag^{+}/Ag) = +0.80$ V

F = 96500 Coulombs 3

20. A first order reaction takes 20 minutes for 25 % decomposition. Calculate the time when 75 % of the reaction will be completed. 3

21. (a) (i) Why is Fluorine the strongest oxidising agent among the halogens ? 2

(ii) SF_6 is known but SCl_6 is not known. Give reasons. 3

OR

(b) (i) Describe the preparation of Nitric acid (HNO_3) by Ostwald process. 2

(ii) Give reasons why nitrogen exists as a gas while phophorus exists as solid. 3

22. (a) (i) Cu (II) is blue in colour and Cu (I) is colourless. Give reasons. 2

(ii) Why is Cadmium not regarded as a transition element ? 3

OR

(b) (i) Why do transition elements form variable oxidation states ? 2

(ii) Which is more basic between Lu $(OH)_3$ and La $(OH)_3$? Explain. 3

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2024
MATHEMATICS
Full Marks - 80
Time - 3 hours

General Instructions :

(i) All questions are compulsory.

(ii) Marks for each question are indicated against it.

(iii) Use of calculator is not permitted; however, you may ask for logarithmic tables if required.

(iv) Please write down the serial number of the questions before attempting it.

1. Choose the correct answer from the following : 16x1=16

(a) If |A|=2 and $A^{-1} = \begin{bmatrix} 2 & -1 \\ -5/2 & 3/2 \end{bmatrix}$ then AdjA is equal to -

(i) $\begin{bmatrix} 4 & 2 \\ -5 & -3 \end{bmatrix}$ (ii) $\begin{bmatrix} 4 & -2 \\ -5 & 3 \end{bmatrix}$

(iii) $\begin{bmatrix} -4 & 2 \\ 5 & -3 \end{bmatrix}$ (iv) $\begin{bmatrix} 4 & -2 \\ 5 & -3 \end{bmatrix}$

(b) If $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, then A^{-1} is equal to -

(i) A (ii) -A (iii) Adj A (iv) -Adj A

(c) The function f: R$\rightarrow$R: $f(x) = 1 + x^2$ is -

(i) one-one onto (ii) many-one into
(iii) one-one but not onto (iv) one-one into

(d) The value of $\tan^{-1}\left(\tan\frac{7\pi}{6}\right)$ is -

(i) $\frac{\pi}{6}$ (ii) $\frac{7\pi}{6}$ (iii) $\frac{5\pi}{6}$ (iv) $\frac{8\pi}{6}$

(e) If $y = \cos^2 x^2$, then $\frac{dy}{dx}$ is -

(i) $2x\sin 2x^2$ (ii) $4x\sin 2(x^2)$

(iii) $-2x\sin 2(x^2)$ (iv) $-4x\sin 2(x^2)$

(f) The value of K for which

$f(x)=\begin{cases} Kx+5, \text{ when } x \le 2 \\ x-1, \text{ when } x>2 \end{cases}$ is continuous at $x=2$ is -

(i) 1 (ii) -1 (iii) 2 (iv) -2

(g) $\int \frac{dx}{4+9x^2}$ is equal to -

(i) $\sin^{-1}\left(\frac{3x}{2}\right)+C$ (ii) $\frac{1}{3}\tan^{-1}\left(\frac{5x}{3}\right)+C$

(iii) $\frac{1}{6}\tan^{-1}\left(\frac{3x}{2}\right)+C$ (iv) $\frac{1}{7}\sin^{-1}\left(\frac{8x}{7}\right)+C$

(h) $\int \frac{e^x(1+x)}{\cos^2(e^x.x)}dx$ is equal to -

(i) $-\cot e^x+C$ (ii) $\tan(e^x.x)+C$

(iii) $\tan(e^x)+C$ (iv) $\cot(e^x)+C$

(i) The solution of the differential equation $xdy+ydx=0$ is -

(i) $x+y=C$ (ii) $xy=C$

(iii) $\log(x+y)=C$ (iv) $\frac{1}{\log(x+y)}=C$

(j) $\int_{-a}^{a} f(x)dx$ is equal to -

(i) $2\int_o^a \{f(x)+f(-x)\}dx$ (ii) $2\int_o^a \{f(x)-f(-x)\}dx$

(iii) $\int_o^a \{f(x)+f(-x)\}dx$ (iv) $\int_o^a -\{f(x)+f(-x)\}dx$

(k) A vector of magnitude 9 units in the direction of the vector $(-2\hat{i}+\hat{j}+2\hat{k})$ is -

(i) $\left(\frac{-2\hat{i}+\hat{j}+2\hat{k}}{3}\right)$ (ii) $\left(\frac{-2\hat{i}+\hat{j}+2\hat{k}}{9}\right)$

(iii) $(-18\hat{i}+9\hat{j}+18\hat{k})$ (iv) $(-6\hat{i}+3\hat{j}+6\hat{k})$

(l) If the lines $\frac{x-1}{-3}=\frac{y-2}{2k}=\frac{z-3}{2}$ and $\frac{x-1}{3k}=\frac{y-1}{1}=\frac{z-6}{-5}$ are perpendicular to each other, then k is equal to -

(i) $\frac{-5}{7}$ (ii) $\frac{5}{7}$ (iii) $\frac{10}{7}$ (iv) $\frac{-10}{7}$

(m) The value of $[\hat{i}\ \hat{j}\ \hat{k}]$ is -

(i) 0 (ii) 1 (iii) 2 (iv) 3

(n) The diagonals of a parallelogram are represented by the vectors $\vec{d}_1 = 2\hat{i} - \hat{j} + \hat{k}$ and $\vec{d}_2 = 3\hat{i} + 4\hat{j} - \hat{k}$, then the area of the parallelogram is -

(i) $\sqrt{155}$ sq. units (ii) $\frac{1}{2}\sqrt{155}$ sq. units

(iii) $2\sqrt{155}$ sq. units (iv) $\frac{1}{4}\sqrt{155}$ sq. units

(o) The mean and variance of a binomial distribution are 3 and $3/2$, then $P(X \geq 1)$ is -

(i) $\frac{64}{63}$ (ii) $\frac{63}{64}$ (iii) $\frac{1}{64}$ (iv) $\frac{1}{63}$

(p) If A and B are events such that P(A) = 0.4, P(B) = 0.8 and $P(B/A)$ =0.6, then $P(A \cap B)$ is equal to -

(i) 0.24 (ii) 0.34 (iii) 0.41 (iv) 1.2

2. Show that the operation $*$ on Z defined by $a * b$ = a+b+1 for all a, b $\in$ Z satisfies
   (a) the commutative law
   (b) the associative law 2

3. Differentiate $(\cot^{-1} x^2)^3$ with respect to x. 2

4. Evaluate : $\int \frac{1+\cos 4x}{\cot x - \tan x}\,dx$ 2

5. Two integers are selected at random from integers 1 to 11. If the sum is even, find the probability that both the numbers selected are odd. 2

6. Show that the relation R defined on N×N defined by $(a,b)\,R\,(c,d) \Longleftrightarrow a+d = b+c$ is an equivalent relation . 4

7. For any scalar P, prove that $\begin{vmatrix} x & x^2 & 1+Px^3 \\ y & y^2 & 1+Py^3 \\ z & z^2 & 1+Pz^3 \end{vmatrix} = (1+Pxyz)(x-y)(y-z)(z-x)$ 4

8. Solve the following system of equations using matrix method 4

$$x + y + z = 6$$
$$x + 2z = 7$$
$$3x + y + z = 12$$

9. (a) Prove that : $\int_{o}^{\frac{\pi}{2}}(2\log\sin x - \log\sin 2x)dx = -\frac{\pi}{2}(\log 2)$ 4

OR

(b) Evaluate : $\int \frac{dx}{x^3 + x^2 + x + 1}$ 4

10. (a) If $y = e^{ax}\cos bx$, show that $\frac{d^2y}{dx^2} - 2a\frac{dy}{dx} + (a^2 + b^2)y = 0$ 4

OR

(b) Find $\frac{dy}{dx}$ when $y = (\log x)^x + x^{\log x}$. 4

11. (a) Find the particular solution of the differential equation. 4

$\frac{dy}{dx} = \frac{y(2y - x)}{x(2y + x)}$ given that y = 1 when x =1

OR

(b) Solve : $(x\log x)\frac{dy}{dx} + y = \frac{2}{x}\log x$. 4

12. Find the cartesian and vector equations of the plane passing through the point (1,0,-2) and perpendicular to each of the planes $2x + y - z - 2 = 0$ and $x - y - z - 3 = 0$ 4

13. A die is tossed twice. 'Getting a number greater than 4' is considered a success. Find the probability distribution of a number of successes. Also, find the mean and variance of the number of successes. 4

14. (a) A square piece of tin of side 18 cm is to be made into a box without the top by cutting a square piece from each corner and folding up the flaps. What should be the side of the square to be cut off so that the volume of the box is maximum ? Also, find the maximum volume of the box. 6

OR

(b) Show that the surface area of a closed cuboid with a square base and given volume is minimum when it is a cube. 6

15. (a) Find the area of the region $\{(x, y): x^2 + y^2 \leq 1 \leq x + y\}$ 6

OR

(b) Find the area of the region bounded by the curves $x^2 = 4y$ and the line $x = 4y - 2$. 6

16. Show that the equation $ax + by + d = 0$ represents a plane parallel to the z-axis. Hence, find the equation of a plane which is parallel to the z-axis an passes through the point A (2,-3,1) and B (-4,7,8) 6

17. A small manufacturer has employed 5 skilled men and 10 semi-skilled men and makes an articles in two qualities, a deluxe model and an ordinary model. The making of a deluxe requires 2 hours work by a skilled man and 2 hours work by a semi-skilled man. The ordinary model requires 1 hour by a skilled man and 3 hours by a semi-skilled man. By union rules, no man can work more than 8 hours per day. The manufacturer gains Rs 15 on the deluxe model and Rs 10 on the ordinary model. How many of each type should be made in order to maximize his total daily profit ? Also, find the maximum daily profit. 6

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2024

BIOLOGY

(Theory)

Full Marks – 70

Time – 3 Hours

General Instructions :

(i) All questions are compulsory.

(ii) Please write down the serial number of the question before attempting it.

(iii) Marks for each question are indicated against it.

SECTION - A

1. Choose the correct answer from the given options: 9x1=9

(a) A special tissue which connects the embryo and uterine wall is -
(i) placenta (ii) uterus
(iii) embryonic sac (iv) amniotic fluid

(b) The part of the pollen grain which give rise to pollen tube at the time of germination is -
(i) exine (ii) intine
(iii) germ pore (iv) generative cell

(c) Inheritance of skin colour in human is an example of -
(i) epistasis (ii) codominance
(iii) polygenic inheritance (iv) chromosomal aberration

(d) A female has only 45 chromosomes with a karyotype XO. What sex chromosome disorder is she suffering from ?
(i) Klinefelter's syndrome (ii) Down's syndrome
(iii) Turner's syndrome (iv) YO abnormality

(e) The genes causing cancer are -
(i) structural genes (ii) expressor genes
(iii) oncogenes (iv) regulatory genes

(f) Choose the incorrectly matched pair -
(i) Mumps - *Paramyxovirus*
(ii) Typhoid - *Salmonella typhi*
(iii) Cholera - *E. Coli*
(iv) Pneumonia - *Diplococcus pneumoniae*

(g) Which bacteria is used as a vector to deliver genes of interest to human beings
(i) *Agrobacterium tumefaciens*
(ii) *Salmonella typhimurium*
(iii) *Agrobacterium Vitis*
(iv) *Mycobacterium*

(h) Species have evolved to keep their internal environment constant inspite of the changes outside, this is called -
   (i) Suspend (ii) Homeostasis
   (iii) Migration (iv) Diapause

(i) Bacteria, earthworm, fungi, millipedes all share a common purpose. What are they called ?
   (i) Heterotrophs (ii) Saprotrophs
   (iii) Autotrophs (iv) All of these

2. Fill in the blanks : 5x1=5
   (a) Chromosome _____has the fewest genes.
   (b) If the sequence of one strand of DNA is $5'$ ATGCATGCATGC-$3'$, the complementary strand in $5'$-$3'$ direction will be _____.
   (c) If a pure tall plant is crossed with a dwarf plant, the offspring will be _____ .
   (d) The noise level that may lead to pain and physical discomfort is _____ dB.
   (e) A stage of suspended development during unfavourable condition is known as _____.

SECTION - B

3. (a) Define embryogenesis ? Name the *two* divisions that take place during embryogenesis. 1+½+½=2

OR

   (b) Write *any two* reasons why polyembryony occur in plants. 2

4. Breast feeding is recommended during the first stage of an infant growth. Give reasons. 2

5. Define Linked genes ? List *two* situations where independent assortment of genes occur ? 1+½+½=2

6. What is a Biowar ? What is a Bioweapon composed of ? 1+1=2

7. Differentiate between Genetic engineering and Chemical engineering ? 1+1=2

8. How does temperature affect plants and animals ? Write *any two* points. 1+1=2

9. What are the *four* ways in which CO_2 is returned back to the atmosphere in carbon cycle ? 2

SECTION - C

10. (a) How does foetal ejection reflex cause parturition ? Name *two* hormones that induce contractions of uterus. 2+1=3

OR

   (b) Coconut and cereals have endospermic seed. How does endosperm develop in these seeds? 3

11. Why do males express sex linked disease more often than females ? Trace the inheritance of colour blindness between a normal male and a carrier female. 1+2=3

12. How does Cancer spread ? 3

13. Write the application of Tissue culture. 3

14. Write the causative organism of Ascariasis, its mode of infection and preventive measures. ½+1 ½ +1=3

15. In an mRNA strand having the sequence of CGGAUCGAUG, if mutation removes all cytosine - 1+1+1=3
   (a) How will the codon be read ?
   (b) What will be the function of AUG present in the middle of mRNA ?
   (c) Write the complementary base pairing of the rule.

16. The success rate of Artificial Insemination (AI) in cattle is fairly low. What other technique can be used to improve the chances of successful production of hybrids ? Describe the technique. ½+2 ½=3

17. Describe the *three* steps involved in the process of decomposition. 3

18. As a result of changing climate aided by warm weather, deadly wildfire broke out in Hawaii on 8th August, 2023 leaving immeasurable destruction. Elaborate its possible effect on weather and climate. 3

SECTION - D

19. (a) Explain Spermatogenesis with a suitable diagram. 5

OR

   (b) Explain the development of Zygote till the formation of the seed with the help of suitable diagram. 5

20. (a) No two individuals are identical in this world. Every individual has a unique fingerprint. By which technique will you distinguish one individual from another genetically ? Elaborate. 5

OR

   (b) Describe DNA replication in detail. What do you think will happen if genes for helicases and topoisomerases become mutated ? How do prokaryotes and eukaryotes differ in terms of origin of replication ? 3+1+1=5

21. (a) Explain the amplification of gene of interest using PCR with the help of a suitable diagram. 3+2=5

OR

(b) Explain the steps involved in gene therapy with suitable diagram. 3+2=5

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2024

COMPUTER SCIENCE

(Theory)

Full Marks - 70

Time : 3 hours

General instructions:

(i) *All questions are compulsory.*

(ii) *Please write down the number of the question before attempting it.*

(iii) *Figures in the margin indicate marks.*

(iv) *Programming Language : Python.*

1. Choose the correct answer : $7\times1=7$

(a) If the following code is executed, what will be the output ?

name = 'ComputerSciencewithPython"

print (name [3:10])

(i) mputerSci (ii) puterSc

(iii) puterSci (iv) mputerSc

(b) Which of the following function headers is correct ?

(i) def f (a = 1, b) : (ii) Def f (a, b = 1) :

(iii) Def f (a = 1, b) : (iv) def f (a, b = 1) :

(c) In recursive function , ___ must always be reachable.

(i) recursive case (ii) explicit case

(iii) base case (iv) repetitive case

(d) Data is converted in a form so as to travel over telephone lines using this device -

(i) modem (ii) hub

(iii) switch (iv) router

(e) Which network topology requires a central controller or hub ?

(i) star (ii) bus (iii) mesh (iv) tree

(f) A relational database consists of a collection of -

(i) tuples (ii) attributes (iii) relations (iv) keys

(g) Stealing someone else's intellectual work and representing it as own is called ____.

(i) intellectual steal (ii) pluckism

(iii) plagiarism (iv) pickism.

2. Fill in the blanks : 7×1=7

(a) The numbered position of a letter in a string is called ___ .(position/integer position index)

(b) In a recursive function ____ case always invokes another function. (base/recursive/explicit)

(c) _____ is/are present in the function header. (Function name only/Parameter list only/Both function name and parameter list)

(d) Internet is an example of _____ topology. (bus/star/tree)

(e) The _____ clause of SELECT query allows us to select only those rows in the result that satisfy a specified condition. (FROM/LIKE/WHERE)

(f) By default, ORDER by clause lists the results in _____ order. (descending/ascending/any)

(g) ____ is an example of e-waste. (Old cloth/An old router/Empty soda can)

3. Answer the following questions : 13×2=26

(a) Predict the output of the following code :

```
X = 10
Y = 0
while X > Y :
    print (X, Y)
    X = X - 2
    Y = Y + 1
```

(b) When does infinite recursion occur ?

(c) Explain Pickling and Unpickling.

(d) (i) What is the difference between a text file and a binary file ?

OR

(ii) What is indexing in context to Python strings ? Why is it also called two-way indexing ?

(e) Given a stack as an array of 5 elements

STACK : A, B, C, __, __,

(i) When will overflow and underflow occur ?

(ii) Can A be deleted before C ? Why ?

(f) (i) Create a Dictionary named 'Calendar' whose keys are months names (e.g Jan, Feb,....) and whose values are the number of days in the corresponding months. Also, write a statement to print the length of the dictionary.

OR

(ii) Predict the output of the following code and explain -

```
x = "a b c d e f"
i = "a"
while i in x :
        print (i, end = " " )
```

(g) A teacher provides " http://www.MBSE.com/default.aspx" to his/her student. Indentify the URL and Domain name.

(h) Differentiate between WAN and MAN.

(i) (i) What is a Firewall ?

OR

(ii) What is VoIP ?

(j) How is PRIMARY KEY constraint different from UNIQUE constraint ?

(k) Differentiate between DDL and DML commands.

(l) Consider a table named 'Employee' having attributes (Empld, EmpName, Salary). Write SQL command to increase the salary by 1000 for all who get salary less than 5000.

(m) (i) What is Online fraud ?

OR

(ii) Describe the term Free software and Open Source software.

4. Answer the following questions : 10×3=30

(a) Create a module 'conversion.py' that stores functions as follows :
(i) feettoinches ( ) (ii) inchestofeet ( )
(1 feet = 12 inches)
Import and call the two functions through 'Main.py' using appropriate values/parameters.

(b) Define Big 'O' notation. State the *two* factors which determine the complexity of an algorithm.

(c) (i) Write a program to create a CSV file to store student data (rollno, name, marks). Obtain data from user and write 5 records into the file.

OR

(ii) Is the loop in the code below infinite ? How do you know (for sure) before you run it ?

```
m = 3
n = 5
while n < 10 :
        m = n -1
        n = 2 * n - m
        print (n, m)
```

(d) (i) Write the equivalent postfix expression for :

Q : (A - B) * (C/D) + E

Show status of the stack in a tabular form.

OR

(ii) Evaluate the following postfix notation of expression :

4, 10, 5, +, *, 15, 3, /, -

Show the status of stack after execution of each operation.

(e) (i) What is a Secure communication ? Differentiate between HTTP and HTTPS.

OR

(ii) What is a Network ? State *two* reasons for which you may like to have network of computers instead of having stand alone computer ?

(f) What measures should one take to avoid and maintain confidentiality of personal information ?

(g) Explain Copyright, Patents and Trademark.

(h) Consider the following STUDENT table and write the SQL queries based on it.

TABLE : STUDENT

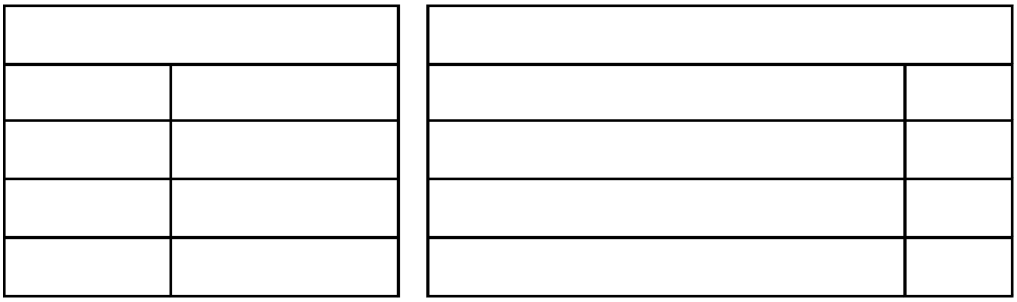
(i) List details of all students having stream Arts or Commerce.

(ii) List the different stream of students.

(iii) List the names of students from Commerce stream whose AvgMark is less than 80.

(i) Explain *any three* aggregate functions in SQL with example

(j) Software development company is planning to set up its new centre at Aizawl for its office and web based activities. It has 4 blocks of buildings named Block A, Block B, Block C and Block D.



(i) Suggest the most suitable place (block) to house the server of the company with suitable reason.

(ii) Suggest the type of network to connect all the blocks with suitable reason.

(iii) The company is planning to link all the blocks through a secure and high speed wired medium. Suggest a way to connect all the blocks.