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SEAT No. :

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S.Y. B.Sc. (Sem. - I)
हिंदी (HINDI)
नया पाठ्यक्रम
(2008 Pattern) (General) (53211)

समय :2 घंटे]

[पूर्णांक :40

पाठ्य -पुस्तकें :-1) *प्रतिनिधि कहानियाँ*
हिंदी विभाग, एस. एन. डी. टी. विश्वविद्यालय, मुंबई
2) *छायावाद : प्रतिनिधि रचनाएँ*
संपादक : नीरा परमार

सूचनाएँ :- *1)* *सभी प्रश्न अनिवार्य हैं ।*
2) *दाहिनी ओर लिखे अंक प्रश्न के पूर्णांक हैं ।*

प्रश्न 1) **अ) निम्नलिखित में से <u>किन्हीं दस</u> वाक्यों को शुद्ध करके फिर से लिखिए ।** **[10]**

i) नदी के भीतर बाढ़ आई ।

ii) मैंने उनसे सौ बार समझाया ।

iii) तुम्हें आनाच पड़ेगा।

iv) उसने एक फूलों की माला बनाई ।

v) मैंने संध्या को पचास रूपए देने हैं ।

vi) मेरी बहन की चार लड़कियाँ हैं ।

vii) सौ की नोट फटी है ।

viii) बंदर पेड़ के ऊपर बैठा है ।

ix) माताजी आ रही है ।

x) मेरेकु घर जाना है ।

xi) तुम कब आ सकेगा ?

xii) रामरावण में युद्ध हुआ ।

P.T.O

आ) निम्नलिखित अंग्रेजी अनुच्छेद का हिंदी में अनुवाद कीजिए। **[4]**

The contribution of chemistry in everyday life is unique and is in the forefront as compared to other branches of science. No walk of our life remains untouched by chemistry. Chemical knowledge has contributed to improve the quality of out daily needs for food (developing fertilizers, pesticides, animal husbandry, food processing etc.), shelter (steel, cement, ceramics etc.) and clothing (synthetic and semi synthetic fibres, dyeing etc.)

प्रश्न 2) अ) निम्नलिखित गद्य अवतरण की ससंदर्भ व्याख्या कीजिए। **[5]**

क) तीन ही तो रूपए है, दे दोगे तो कम्मल कहाँ से आवेगा ?

माघ-पूस की रात हार में कैसे कटेगी ?

अथवा

अम तुम्हारा दुआ क्या करेगा ? तुम्हारा खाल का क्या करेगा ? उसका तो जूता भी नई बनेगा । तुमारा खाल से तो यह टाट अच्छा ।

आ) निम्नलिखित पद्य अवतरण की ससंदर्भ व्याख्या कीजिए । **[5]**

ख) मन में मन, जी जी में,
एक अनुभव बहता रहे
उभय आत्माओं में
कब से मैं रही पुकार-

अथवा

मानव का मानव पर प्रत्यय,
परिचय, मानवता का विकास,
विज्ञान ज्ञान का अन्वेषण,
सब एक एक, सबमें रहे प्रकाश !

प्रश्न 3) अ) निम्नलिखित में से <u>किन्हीं दो</u> प्रश्नों के उत्तर लिखिए । **[8]**

च) जमींदार ने विधवा की झोंपड़ी क्यों लौटा दी ?

छ) लहनासिंह का चरित्र-चित्रण कीजिए ।

ज) हल्कू और जबरा के पारस्परिक संबंध को स्पष्ट कीजिए ।

झ) 'परमात्मा का कुत्ता' कहानी में अंकित कार्यालयों के वातावरण का चित्रण कीजिए ।

आ) निम्नलिखित में से <u>किन्हीं दो</u> प्रश्नों के उत्तर लिखिए । **[8]**

ट) कवि काली माता का आवाहन किस प्रकार करता है ?

ठ) सुख-दुख कविता का भावार्थ स्पष्ट कीजिए ।

ड) कवि पंत मानव को ईश्वर की सर्वश्रेष्ठ रचना क्यों कहते हैं ?

ढ) 'ताज' कविता द्वारा कवि कौन-सा संदेश देना चाहता है ?

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Total No. of Questions : 3]

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S.Y. B.Sc. (Sem. - II)
हिंदी (HINDI)
(नया पाठ्यक्रम) (सामान्य) (General)
(2008 Course) (53212)

समय : 2 घंटे]

[पूर्णांक :40

पाठ्यपुस्तकें :- *1) प्रतिनिधि कहानियाँ*
संपादक - हिंदी विभाग, एस.एन.डी.टी. विश्वविद्यालय, मुंबई
2) छायावाद : प्रतिनिधि रचनाएँ
संपादक : नीरा परमार

सूचनाएँ :- *1) सभी प्रश्न अनिवार्य हैं ।*
2) दाहिनी ओर लिखे अंक प्रश्न के पूर्णांक हैं ।

प्रश्न 1) अ) निम्नलिखित में से किन्हीं दस संक्षिप्तियों के हिंदी पूर्ण पर्याय लिखिए । **[10]**

i) A.F.S
ii) C.B.I
iii) C.T.B.T.
iv) D.C.C.
v) D.Litti.
vi) G.A.T.T.
vii) I.B.A.
viii) I.D.B.I.
ix) I.F.S.
x) I.P.C.
xi) M.P.S.C.
xii) N.A.B.A.R.D.

आ) निम्नलिखित अनुच्छेद का एक-तिहाई सारांश लिखते हुए उसे उचित शीर्षक दीजिए । **[4]**

छात्र को अध्ययन जारी रखना चाहिए । नहीं तो वह छात्र नहीं रहता । अधिक-से-अधिक विषयों पर अधिक-से-अधिक पुस्तकें उसे पढ़ते रहना चाहिए । इन्हें उसे विभिन्न दृष्टिकोणों से अध्ययन का विषय बनाना चाहिए । तब उसे अनुभूति होगी कि हर प्रश्न के अनेक उत्तर हैं और सत्य बहुपक्षी है । फल यह होगा कि वह अपनी दृष्टि में संकीर्ण नहीं रहेगा, उसमें सहिष्णुता, क्षमाशीलता आ जाएगी, तब उसके अपने मौलिक चिंतन का विकास होगा और कोई अन्य उस पर हावी नहीं हो सकेगा । अध्ययन के द्वारा ही मानव के असली व्यक्तित्व का विकास होता है और वह वास्तव में मनुष्य बन पाता है ।

P.T.O.

प्रश्न 2) अ) निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए । **[8]**

i) संवदिया कहानी की बड़ी बहुरिया का चरित्र-चित्रण कीजिए ।

ii) सोमा बुआ ने शादी के बुलावे की तैयारी किस प्रकार की ?

iii) 'जिंदगी और गुलाब' के सुबोध की मानसिक दशा का चित्रण कीजिए ।

iv) 'चीफ की दावत' के शामनाथ का चरित्रांकन कीजिए ।

आ) निम्नलिखित अवतरण की ससंदर्भ व्याख्या कीजिए । **[5]**

च) ''बेचारे इतने हंगामे में बुलाना भूल गये तो मैं भी मान करके बैठ जाती ? फिर घरवालों का कैसा बुलावा ? मैं तो अपनेपन की बात जानती हूँ ।''

अथवा

''इस बात को स्वीकार कर लो कि मैं जिंदगी में फेलियर हूँ, कम्पलीट फेलियर । कुछ नहीं कर सका ! जैसे मेरी जिंदगी में अब फुलस्टॉप लग गया हैं । अब ऐसे ही रहूँगा ।''

प्रश्न 3) अ) निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर लिखिए । **[8]**

i) 'जागो फिर एक बार' कविता में कवि सिंहनी और मेषमाता के बारे में क्या कहता है ?

ii) 'वनबेला' कविता में कवि 'यदि मैं राजपुत्र होता' ऐसा क्यों कहता है ?

iii) कवि जीर्ण पत्तों को झर जाने के लिए क्यों कहता है ?

iv) 'भारतमाता' कविता में कवि भारतवासियों की कौन-सी विशेषताएँ बतलाते हैं ?

आ) निम्नलिखित अवतरण की ससंदर्भ व्याख्या कीजिए । **[5]**

छ) समर में अमर कर प्राण,
गान गाये महासिन्धु-से,
सिन्धु नद-तीरवासी!-
सैन्धव तुरंगों पर
चतुरंग-चमू-संग।

अथवा

कंकाल जाल जग में फैले
फिर नवल रूधिर,-पलपव लाली !
प्राणों की मर्मर से मुखरित
जीव की मांसल हरियाली !

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Total No. of Questions : 3]

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S.Y. B.Sc. (Sem. - I)

मराठी (MARATHI)

पाठ्यपुस्तक : विज्ञानवेध (नवा अभ्यासक्रम)

(New) (2010 Pattern) (53111) (Theory)

वेळ : 2 तास]

[एकूण गुण : 40

सूचना :– 1) सर्व प्रश्न सोडविणे आवश्यक आहेत.

2) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्रश्न 1) खालीलपैकी कोणत्याही एका विषयावर 400 शब्दांत निबंध लिहा. [10]

अ) राष्ट्रीय एकात्मता

ब) विज्ञानयुगातील मानव

क) उष:काल होता होता..... (ललित)

प्रश्न 2) चरकाचार्यांची आर्युवेदाची व्याख्या सांगून,चरकसंहितेचा परिचय करून द्या. [15]

किंवा

'गिनिपिग' या कथेतून मानवतेचे दर्शन कसे घडते, ते सोदाहरण स्पष्ट करा.

प्रश्न 3) टिपा लिहा. (कोणत्याही तीन) [15]

अ) डॉ. मारिया.

ब) 'लीलावती' कार भास्कराचार्य.

क) खगोलशास्त्रातील कोपर्निकसचे योगदान.

ड) डॉ. जयंत नारळीकरांच्या मते विज्ञानाचा प्रसार सर्वसामान्यांमध्ये कसा करावा.

इ) सुशिक्षितांची अंधश्रध्दा.

ई) विज्ञान साहित्याची ठळक वैशिष्ट्ये.

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Total No. of Questions : 3]

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P261

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S.Y. B.Sc. (Sem. - I)

मराठी (MARATHI)

पाठ्यपुस्तक : विज्ञान कथा विश्व (जुना अभ्यासक्रम)

(Old) (53111) (2008 Pattern)

वेळ : 2 तास] [एकूण गुण : 40

सूचना :– 1) सर्व प्रश्न सोडविणे आवश्यक आहेत.

2) उजवीकडील अंक प्रश्नांचे पूर्ण गुण दर्शवितात.

प्रश्न 1) खालीलपैकी कोणत्याही एका विषयावर 400 शब्दांपर्यंत निबंध लिहा. [10]

अ) जैव–तंत्रज्ञानाचे फायदे–तोटे

ब) संताचा वैज्ञानिक दृष्टीकोन

क) लग्नसोहळे ..... (ललित)

प्रश्न 2) 'वामलोचना' या कथेच्या आधारे शरीराबद्दल असलेली चूकीची गृहीते, वा. म. जोशी यांनी कशी स्पष्ट केली ते लिहा. [15]

किंवा

'तरंगणारा संशोधक' कथेतील डॉ. समीर सदावर्ते या व्यक्तिरेखेच्या आधारे मानवी स्वभावाचे दर्शन कसे घडते ते सविस्तर लिहा.

प्रश्न 3) टिपा लिहा. (कोणत्याही तीन) [15]

अ) गुगली कथेतील सैध्दांतिक वास्तव.

ब) यंत्रांनी केलं बंड कथेतील वास्तवता.

क) बार्बिकेनची अनुमाने ----

ड) 'कनेक्शन' कथेतील मानवी जीवनातील विसंगती ----

इ) अंतराळातील मृत्यू या कथेतील डॉ. विकास व डॉ. मंजिरी माटे.

ई) 'आकाश आणि जमीन' कथेतील विज्ञान व समाज.

■■■

Total No. of Questions : 4]

SEAT No. :

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S.Y. B.Sc. (Sem. - I)

संस्कृत (SANSKRIT)

गीर्वाणभारती (Gīrvānbhāratī)

(2008 Pattern) (53311)

Time : 2 Hours] *[Max. Marks :40*

Q1) Write short answers in 2 - 4 lines of the following questions. **[16]**

पुढील प्रश्नांची 2 - 4 ओळीत उत्तरे लिहा.

i) State any two etemologies of the word Upanisad.

उपनिषद् शब्दाच्या कोणत्याही दोन व्युत्पत्या लिहा.

ii) State the purpose of ब्राह्मणग्रंथ

ब्राह्मणग्रंथांचे प्रयोजन सांगा.

iii) How many Pādas of ब्रह्मविद्या ? State their names.

ब्रह्मविद्येचे पाद किती ? त्यांची नावे लिहा.

iv) Write the Three names of the dramas of Kalidasa and from which drama सेयं याति शकुन्तला पतिगृहम् has taken?

कालिदासाच्या तीन नाटकांची नावे लिहा. 'सेयं याति शकुन्तला पतिगृहम्' हा पाठ कोणत्या नाटकातून घेतला आहे ?

v) From which lesson 'छायाग्राहिसत्त्वम्' has taken and who is author of that 'काव्य' ?

'छायाग्राहिसत्त्वम्' हा पाठ कोणत्या काव्यातून घेतला आहे ? त्या काव्याचे लेखक कोण ?

vi) State the subjectwise division of verses in 'शिवमानसपूजा'.

शिवमानसपूजास्तोत्रातील श्लोकांचे विषयानुसार वर्गीकरण करा.

P.T.O

vii) Who is the adviser of **प्रकाशवान् पाद ?**

प्रकाशवान् पादाचा उपदेश कोणी केला ?

viii) State the nature of **'आर्या'** in the lesson **उपदेशप्रबन्धः**.

उपदेशप्रबंधः या पाठातील आर्यांचे स्वरूप सांगा.

Q2) Write short notes on any two of the following in 8 - 10 lines. **[8]**

पुढीलपैकी कोणत्याही दोहोंवर 8 - 10 ओळीत संक्षिप्त टीपा लिहा.

i) Chyavan **च्यवन**

ii) Satyakāma.

सत्यकाम

iii) Shakuntala's Friends.

शकुन्तलेच्या मैत्रिणी

Q3) Write short notes on any two of the following in 8 - 10 lines. **[8]**

पुढीलपैकी कोणत्याही दोहोंवर 8 - 10 ओळीत संक्षिप्त टीपा लिहा.

i) Explain **वहेद् गर्वं बुधो मनसा।**

वहेद् गर्वं बुधो मनसा।

ii) Ramayan.

रामायण

iii) Hanuman.

हनुमान

Q4) Answer any one of the following questions in 16-20 lines. **[8]**

पुढीलपैकी कोणत्याही एका प्रश्नाचे उत्तर 16 - 20 ओळीमध्ये लिहा.

i) Critically appreciate **'सत्यकामजाबालकथा'**.

सत्यकामजाबाल कथेचे रसग्रहण करा.

ii) Explain the any Four mythological stories which are mentioned in the lesson **'उपदेशप्रबन्धः'**.

उपदेशप्रबंधात आलेल्या कोणत्याही चार पौराणिक कथा स्पष्ट करा.

■■■

Total No. of Questions : 3]

SEAT No. :

P364

[Total No. of Pages : 2

[4117] - 232

S.Y. B.Sc. (Sem. - II)

व्यावहारिक मराठी

मराठी (MARATHI)

जुना व नवा अभ्यासक्रम (Old & New Course)

(53112)

वेळ : 2 तास] [एकूण गुण : 40

सूचना :– 1) सर्व प्रश्न अनिवार्य आहेत.

2) उजवीकडील अंक प्रश्नांचे गुण दर्शवितात.

प्रश्न 1) अ) पुढील उताऱ्याचे मराठीत भाषांतर करा. [8]

A man with a small salary is very likely to get into difficulties unless he learns to "budget" for his monthly spending. A fixed amount should be set a side under each heading-rent, food, clothing, insurance, school-fees and so on. The ideal budget would also include a fixed sum, no matter how small to be set a part each month as "saving". Indeed this better be paid into the post office or the Bank, and not kept at home. Until all this has been done, nothing should be spent on luxuries. Only by such a method can a man live within his income and make both the ends meet.

ब) पुढील उताऱ्याचा शीर्षकासह एक तृतीयांश सारांश लिहा. [7]

विद्यार्थ्यांनो, माणसाला अपमानित करणाऱ्या; त्याला अप्रतिष्ठीत करणाऱ्या गोष्टींचा संताप तुम्हाला येऊ द्या. मेलेल्या मनाने जगू नका. जातीवाद्यांचा आणि धर्मद्वेष पसरविणारांचा तुम्हाला राग यायला हवा. अविश्वास अधिक अविश्वास निर्माण करतो. क्रौर्य अधिक मोठ्या क्रौर्याला जन्म देते. अलगतावाद हा घातक असतो. 'एक हृदय, एक चित्त,' मी आदि आणि अंतीही भारतीय आहे. या महावाक्याचा हाच अर्थ लक्षात घ्यायला हवा. आपण एकमन व्हायला हवे. विद्यार्थ्यांनो तुम्ही सर्व एकमन व्हा. सर्वांना आपले म्हणायला शिका.

दुष्टपणा शिकवणारांचे ऐकू नका. आपल्या इतिहासाचा आणि वर्तमानाचा विचार करा. स्वत:ची मते; स्वत:ची भूमिका तयार करा. स्नेहभावाचा, प्रेमाचा, सामंजस्याचा निर्णय घ्या. तुम्ही नवे जग जन्माला घालू शकता. आपली संवेदनशीलता मात्र जिवंत ठेवा. विद्यार्थी समाजाला क्रांतीमान करू शकतो, तो नवा विचारी समाज घडवू शकतो. (शब्द 112)

P.T.O.

प्रश्न 2) पुढील प्रश्नांपैकी कोणतेही दोन प्रश्न सोडवा. **[15]**

अ) 'बदलता मराठी चित्रपट' या विषयावर वर्तमानपत्रासाठी लेख तयार करा.

ब) आकाशवाणीसाठी 'आधुनिक शेतीचे महत्त्व' या विषयावर कृषीतज्ज्ञ आणि शेतकरी यांच्यातील संवाद लिहा.

क) महाविद्यालयाचे दैनंदिन कामकाज या विषयावर दूरदर्शनसाठी माहितीपट तयार करा.

प्रश्न 3) खालील पारिभाषिक शब्दांना मराठी प्रतिशब्द लिहा. **[10]**

1) Pass Book
2) Project
3) Rural
4) Principal
5) Hospital
6) Income Tax
7) Collector
8) Instalment
9) Budget
10) Approval

■■■

Total No. of Questions : 4]

SEAT No. :

P366

[Total No. of Pages : 2

[4117] - 234

S.Y. B.Sc. (Sem. - II)

संस्कृत (SANSKRIT)

गीर्वाणभारती (Girvānabhāratī)

(53312) (2008 Pattern)

Time : 2 Hours] *[Max. Marks :40*

Q1) Write short answers of the following questions (2 - 4 lines) **[16]**

पुढील प्रश्नांची 2 - 4 ओळीत उत्तरे लिहा.

i) What is the definition of शास्त्र ?

'शास्त्र' शब्दाची व्याख्या कोणती ?

ii) How many types of 'चुम्बक' and which are they?

चुम्बकाचे प्रकार किती व कोणते ?

iii) From which book lesson 'अमरसंदेशः' has taken and who is the author of that book?

'अमरसन्देशः' हा पाठ कोणत्या पुस्तकातून घेतला असून त्याचे लेखक कोण ?

iv) Which are the types of trees according to वनस्पतिशास्त्र ?

वनस्पतिशास्त्रानुसार वृक्षांचे भेद कोणते ?

v) What is the meaning of the word आयुर्वेद ? State the names of types of व्याधि.

'आयुर्वेद' शब्दाचा अर्थ कोणता ? व्याधींच्या प्रकारांची नावे लिहा.

vi) What is the meaning of 'हुतं च दत्तं च तथैव तिष्ठति' ?

'हुतं च दत्तं च तथैव तिष्ठति' याचा अर्थ स्पष्ट करा.

vii) How many खनित्रडं and which are they?

खनित्राचे प्रकार किती व कोणते ?

viii) Which is the famous book of भास्कराचार्य ?

भास्कराचार्याचा प्रसिद्ध ग्रंथ कोणता ?

P.T.O.

Q2) Write short notes in any two of the following 8 - 10 lines. **[8]**

पुढीलपैकी कोणत्याही दोहोंवर टीपा लिहा. (8 ते 10 ओळीत)

i) Explain – **प्रायेणाधममध्यमोत्तमगुणा संवासतो जायते।**

स्पष्ट करा – प्रायेणाधममध्यमोत्तमगुणा संवासतो जायते।

ii) Importance of wife which is reflected in **'रघुवंश'**.

रघुवंशात व्यक्त झालेले पत्नीचे महत्त्व.

iii) Importance of **'वैराग्य'**.

वैराग्याचे महत्व.

Q3) Write short notes in any two of the following 8 - 10 lines. **[8]**

पुढीलपैकी कोणत्याही दोहोंवर टीपा लिहा. (8 ते 10 ओळीत)

i) **ज्योतिषशास्त्रम्**

ii) **पदार्थविज्ञानम्**

iii) **नगररचना**

Q4) Answer any one of the following 16-20 lines. **[8]**

पुढीलपैकी कोणत्याही एका प्रश्नाचे उत्तर लिहा. (16 ते 20 ओळीत)

i) Explain fully the **'सद्धर्मपुण्डरीककथा'**.

'सद्धर्मपुण्डरीककथा' स्पष्ट करा.

ii) Explain the meaning of following verse and solve the example.

खाली दिलेल्या श्लोकाचा अर्थ लिहून उदाहरण सोडवा.

अमलकमलराशेस्त्र्यंशपंचांशषष्ठै:

त्रिनयनहरिसूर्या येन तुर्येण चार्या।

गुरुपदमथ षड्भि: पूजितं शेषपदमै:

सकलकमलसंख्यां क्षिप्रमायाहि तस्य।।

■■■

Total No. of Questions : 4]

SEAT No. : ____

P216

[Total No. of Pages : 2

[4117] - 28

F.Y.B.Sc.

FOUNDATION COURSE (Restructuring)

(2008 - Pattern) (46000)

Time :3 Hours] ***[Max. Marks :80***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Explain the following concepts in 50 words each: (any two) **[10]**

a) Population Explosion

b) Scientific Method

c) Superstitions

d) Global Warming

Q2) Write the following short notes in 100 words each(any four) **[20]**

a) Economic Inequality.

b) Food problem.

c) Hypothesis.

d) Cast System.

e) Rule of Law.

f) Special Economic Zone (SEZ).

P.T.O

Q3) Write answer of the following questions in 200 to 250 words each: (any three) **[30]**

a) State the characteristics of Indian culture.

b) Write the causes of Poverty in India.

c) Write the meaning and types of Equality.

d) State the effects of Science and Technology on Health.

e) State the characteristics of Indian Society.

Q4) Write the answer any one of the following in 500 words. **[20]**

a) Define Science and Describe the characteristics of science.

b) State the causes and effects of pollution.

■■■

Total No. of Questions : 4]

SEAT No. :

P216

[Total No. of Pages : 2

[4117] - 28

प्रथम वर्ष विज्ञान (F.Y. B.Sc.)

पायाभुत अभ्यासक्रम (नवीन अभ्यासक्रम)

मराठी रूपांतर

(2008 पॅटर्न) (46000)

वेळ : 3 तास]

[एकूण गुण : 80

सूचना :– 1) सर्व प्रश्न सोडविणे आवश्यक आहेत.

2) उजवीकडील अंक पूर्ण गुण दर्शवितात.

3) संदर्भासाठी मूळ इंग्रजी प्रश्नपत्रिका पहावी.

प्रश्न 1) पुढील संकल्पना 50 शब्दात स्पष्ट करा. (फक्त दोन) [10]

अ) लोकसंख्या विस्फोट

ब) वैज्ञानिक पध्दती

क) अंधश्रध्दा

ड) जागतिक तापमानवाढ

प्रश्न 2) पुढील टिपा प्रत्येकी 100 शब्दात लिहा. (फक्त चार) [20]

अ) आर्थिक विषमता

ब) अन्न समस्या

क) गृहितक

ड) जातीय प्रथा

इ) कायद्याचे अधिराज्य

फ) विशेष आर्थिक क्षेत्र

P.T.O

प्रश्न 3) पुढील प्रश्नांची उत्तरे **200** ते **250** शब्दात लिहा. (फक्त तीन) **[30]**

अ) भारतीय संस्कृतीची वैशिष्ट्ये सांगा.

ब) भारतातील दारिद्र्याची कारणे लिहा.

क) समतेचा अर्थ सांगुन प्रकार लिहा.

ड) विज्ञान आणि तंत्रज्ञानाचे आरोग्य या घटकावरील परिणाम सांगा.

इ) भारतीय समाजाची वैशिष्टये सांगा.

प्रश्न 4) पुढीलपैकी एका प्रश्नाचे उत्तर **500** शब्दात लिहा. **[20]**

अ) विज्ञानाची व्याख्या द्या, आणि विज्ञानाची वैशिष्ट्ये विषद करा.

ब) प्रदुषणाची कारणे व परिणाम सांगा.

■■■

Total No. of Questions : 4] **SEAT No. :**

P234 **[Total No. of Pages : 2**

[4117] - 104
S.Y. B.Sc.
PHYSICS
PH - 212 (a) : Electronics
(Sem. - I) (Paper - II) (2008 Pattern) (51221)

Time : 2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculators and log - tables are allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Symbols have their usual meanings.***

Q1) Attempt all of the following:

a) State Kirchoff's current law. **[1]**

b) Draw only circuit diagram for common base configuration. **[1]**

c) For certain transistor $\alpha_{dc} = 0.96$ and $I_E = 2mA$, Calculate I_C. **[1]**

d) Name the three regions of bipolar junction transistor. **[1]**

e) What should be the input impedance of Ideal operational amplifier? **[1]**

f) Calculate the value of Resistance (R) for Wein bridge oscillator frequency $f_0 = 7.9$ KHz for C = 0.01 μF. **[1]**

g) State Barkhausen criteria for Oscillators. **[1]**

h) For a given power supply input voltage changes from 216 V to 264 V. The corresponding d.c. voltage change is 4.995V to 5.101V. Calculate percentage line regulation. **[1]**

i) State different types of rectifiers. **[1]**

j) State the name of basic gates. **[1]**

Q2) Attempt any two of the following:

a) Explain Transistor as a switch. **[5]**

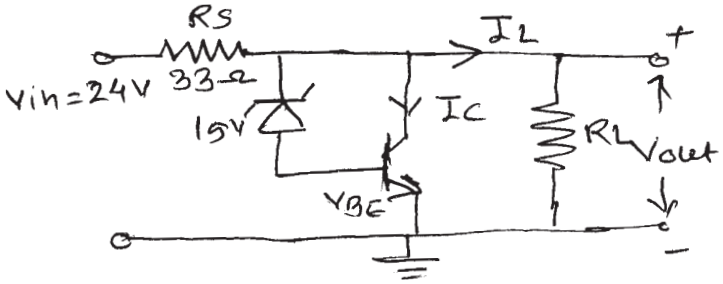
b) Explain with circuit diagram OP-amp as a substractor. **[5]**

c) Draw symbol, truth table and write boolean expression for AND and NOR gate. **[5]**

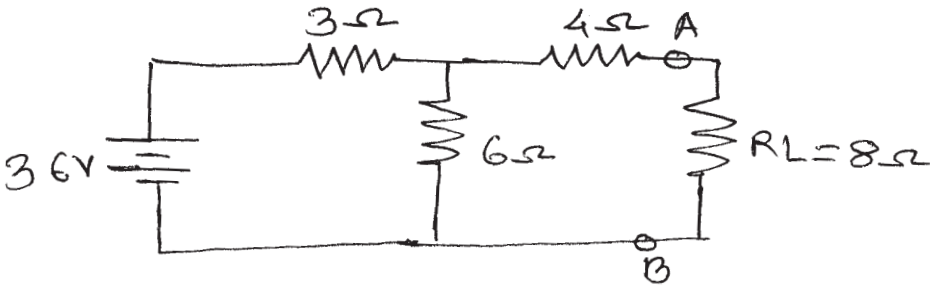
P.T.O.

Q3) Attempt <u>any two</u> of the following:

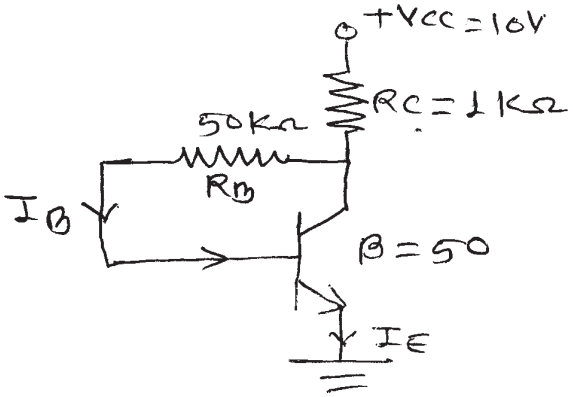
a) If 24 V unregulated supply is applied to transistor voltage regulator having series resistor of 33Ω and zener of 15V. Find regulated output voltage, various currents I_L, I_S and I_C (if V_{BE} = 0.7V R_L = 100Ω). **[5]**



b) Using Thevenin's theorem, determine the current flowing through R_L of the network shown below. **[5]**



c) Figure shows a silicon transistor biased by feedback resistor method. Determine the base current and collector current if V_{BE} = 0.7V. **[5]**



Q4) a) Attempt (i) or (ii) of the following :

i) 1) Explain various losses in transformer. **[4]**

2) Derive the equation for gain of Non inverting operational amp. **[4]**

ii) 1) Explain with example how binary numbers are subtracted. **[4]**

2) Draw the circuit diagram for phase shift oscillator using IC 741 and explain it. **[4]**

b) Attempt <u>any one</u> of the following :

i) For faithfull biasing, which basic conditions must satisfied by a transistor amplifier. **[2]**

ii) State Norton's Theorem. **[2]**

✦✦✦✦

Total No. of Questions : 4] **[Total No. of Pages : 2**

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[4117] - 104
S.Y. B.Sc.
PHYSICS
PH - 212: (b) Instrumentation
(Sem. - I) (Paper - II) (51221) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculators and log tables are allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Symbols have their usual meanings.***

Q1) Attempt all of the following:

a) What is accuracy of measurement? **[1]**

b) State the basic functional elements of typical measuring system. **[1]**

c) What do you mean by cantilever beam? **[1]**

d) Explain working principle of variable capacitance transducer. **[1]**

e) What are column type devices? **[1]**

f) What is a ferromagnetic substance? Give example. **[1]**

g) Define pressure. Give its SI unit. **[1]**

h) What is MRI? **[1]**

i) Define the term humidity. **[1]**

j) A manufacturer calibrates a temperature gauge of $100^{o}C$ range with $\pm 0.5^{o}C$. If it is used for temperature measurement of $50^{o}C$, what will be the minimum and maximum value of temperature shown by gauge? **[1]**

Q2) Attempt any two of the following:

a) Explain dynamic characteristics of an instrument using first-order system. Write note on resistive transducer as first order system. **[5]**

b) Explain with diagram the measurement of pressure using Bourdon tube and LVDT. **[5]**

P.T.O.

c) Explain the principle and use of Ringel mann chart for smoke density measurement. **[5]**

Q3) Attempt <u>any two</u> of the following:

a) A Wattmeter having a range of 1000 watt has an error of ±1% of full scale deflection. If the true power is 100 watt, what would be the range of readings? Suppose the error is specified as percentage of true value, what would be the range of readings? **[5]**

b) A pitot tube is fixed in a water pipe line of diameter 20 cm, a difference of pressure indicated by the gauge is 5 cm, of water column. Calculate the rate of flow of water through the pipe. **[5]**

c) The hysteresis loss for a specimen of iron weighing 12 kg is equivalent to 300 Jm^{-3} $cycle^{-1}$. Find the loss of energy per hour at 50 cycles/S. Given : density of iron 7500 kgm^{-3}. **[5]**

Q4) a) Attempt (i) or (ii) of the following:

i) 1) State the principle and working of ultrasonic flow meter. **[4]**

2) What is Hysteresis? State its applications. **[4]**

ii) 1) Give classification of transducer, state any four characteristics of a transducer. **[4]**

2) What are variable resistance devices? State their advantages and disadvantages. **[4]**

b) Attempt <u>any one</u> of the following:

i) Explain any two types of errors in the measurement. **[2]**

ii) Calculate the R-R distance of a normal man having 75 bpm recorded by ECG machine with chart speed 25 mm/s. **[2]**

Total No. of Questions : 4]

SEAT No. : ____

P241

[Total No. of Pages : 2

[4117] - 111

S.Y. B.Sc. (Sem. - I)

GEOLOGY

GL - 211 : Mineralogy

(Paper - I) (51611) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following questions in 2 or 3 lines : **[10]**

a) What is extinction angle?

b) What are crystalline minerals?

c) What is nesosilicate structure?

d) What are solid inclusions?

e) What is mean by birefringence?

f) What are the different varieties of opal?

g) What is deformation twin?

h) Give the chemical composition of tourmaline.

i) Rarity of gemstone means what?

j) Define the term hemimorphic form.

Q2) Write notes on (Any Two) **[10]**

a) Compare the elements of symmetry of Hexagonal system, type calcite, quartz and tourmaline.

b) Silicate structure and chemical composition of felspar minerals.

c) Phenomenon of anisotropism.

P.T.O

Q3) Explain the following (Any Two) : **[10]**

a) Chemical composition and paragenesis of chlorite minerals.

b) Physical and optical properties of mica mineral group.

c) Classification of twins.

Q4) Give the crystallographic axes, elements of symmetry and forms present with indices of cubic system type pyrite and type tetrahedrite. **[10]**

OR

Describe the structure, mineral composition, physical and optical properties and paragenesis of amphibole group of minerals.

♦♦♦♦

Total No. of Questions : 4]

SEAT No. :

P242

[Total No. of Pages : 2

[4117] - 112

S.Y. B.Sc.

GEOLOGY

GL - 212 : Structural Geology

(51621) (Paper - II) (Sem. - I) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following questions in two or three lines : **[10]**

a) What is a recumbent fold?

b) Define Structural Geology.

c) True thickness of a bed.

d) Mention any two methods of representation of folds.

e) What are Inliers?

f) Draw diagram of chevron fold.

g) Define an unconformity.

h) Define 'hade' of a fault.

i) What are Bedding joints?

j) Define strike of a planar feature.

Q2) Write notes on (Any Two) **[10]**

a) Normal and Reverse faults.

b) Symmetrical and Asymmetrical folds.

c) Tension Joints.

P.T.O

Q3) Explain the following (Any Two) : **[10]**

a) Rotational and Translational movement along fault.

b) Determination of top of bed with help of Ripple marks.

c) Angular unconformity and Non conformity.

Q4) Define a fold. Describe the various parts of fold. Add a note on plunging and non plunging folds. **[10]**

OR

Define a fault. Describe any four criterias used for the recognition of faults in the field.

♦♦♦♦

Total No. of Questions : 4] **SEAT No. :**

P337 **[Total No. of Pages : 3**

[4117] - 203

S.Y. B.Sc.

MATHEMATICS

MT - 222 (B) : Discrete Mathematics

(Paper - II (B)) (511B2) (Sem. - II) (51113) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of non - programmable scientific calculator is allowed.***

Q1) Attempt any five of the following : **[10]**

a) Prove the statement, '$n! \geq 2^{n-1} \quad \forall\ n \geq 1$' using principle of mathematical induction.

b) How many different arrangements of the letters in the word 'BOUGHT' can be formed if the vowels must be kept next to each other.

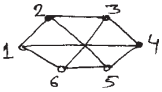
c) How many different eight - card hands with 5 red cards and 3 black cards can be dealt from a deck of 52 cards?

d) Define a linear homogeneous recurrence relation of degree K. Also find the degree of relation

$$C_n = 2C_{n-1} - 5C_{n-3}$$

e) If K_n is complete graph on n - vertices. What is the degree of each vertex? How many edges are in K_n?

f) Give two Hamiltonian circuits in K_s that have no edges in common.

g) Is the graph 

bipartite? Explain it.

Q2) Attempt any two of the following : **[10]**

a) How many arrangements can be made, with the letters of the word 'CALCULATOR'? In how many of these arrangements, vowels occur together?

b) Prove that if given a set of any seven distinct integers, there must exist two integers in this set whose sum or difference is a multiple of 10.

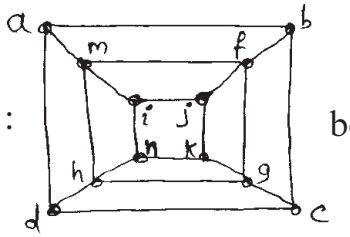
P.T.O

c) Solve the recurrence relation $2a_n = 7a_{n-1} - 3a_{n-2}$ with initial conditions $a_0 = 1$, $a_1 = 1$.

Q3) Attempt any two of the following : **[10]**

a) By method of induction, prove that $5^{2n} - 1$ is divisible by 6, for all $n \in N$.

b) Define the quotient graph G^R of graph G with respect to equivalence relation R on V.

If G : 

be a graph.

and R be the equivalence relation on V defined by the partition {{i, j, k, n}, {a, m}, {f, b, c}, {d}, {g}, {h}}. then draw the quotient graph G^R.

c) Let G be a graph with m edges and n vertices. Prove that G has a Hamiltonian circuit if

$$m \geq \frac{1}{2}(n^2 - 3n + 6).$$

Q4) Attempt any one of the following : **[10]**

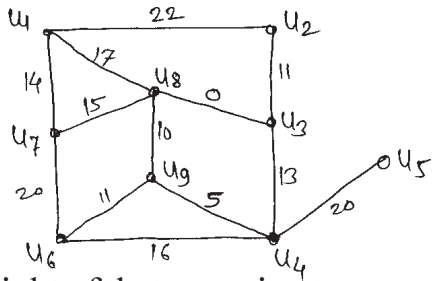
a) i) If in a graph G there is one and only one path between every pair of vertices then prove that G is a tree.

ii) A matrix of relation R from A to B is

$$M_R = \begin{bmatrix} 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 \\ 1 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

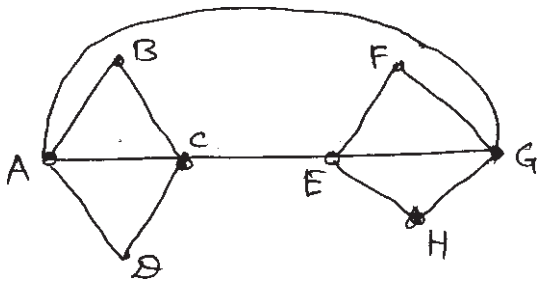
Find a maximal matching for A,B and R.

b) i) Define spanning tree of a graph. Obtain a spanning tree for weighted graph G.

G : 

Also find weight of that spanning tree.

ii) Use Fleury's algorithm to construct an Euler circuit for the following graph.



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Total No. of Questions : 4]

SEAT No. :

P338

[Total No. of Pages : 2

[4117] - 204

S.Y. B.Sc.

PHYSICS

PH - 221 : Oscillations, Waves and Sound

(2008 Pattern) (Paper - I) (Sem. - II) (51212)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and log table is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt all of the following.

a) State the different types of equillibria. **[1]**

b) The differential equation of undamped simple Harmonic motion is

$$2\frac{d^2x}{dt^2} + 200x = 0$$

Find period of oscillations. **[1]**

c) What are damped oscillations? **[1]**

d) Enlist the different types of forces acting on a forced oscillator. **[1]**

e) Give the condition for velocity resonance in case of forced oscillations. **[1]**

f) Define particle velocity & wave velocity. **[1]**

g) What is doppler effect? **[1]**

h) Give two applications of seismology. **[1]**

i) Calculate the change in intensity level in dB if the intensity of sound increases by 1000 times the original intensity. **[1]**

j) Give the dependence of quality factor of oscillator upon coefficient of damping. **[1]**

Q2) Attempt any two of the following :

a) Define half width of resonance curve. Show that half width is given by

$$\Delta w = R/2m .$$ **[5]**

P.T.O

b) What is logarithmic decrement of damped oscillator? Derive the expression

$$\lambda = \frac{RT}{4m}$$ **[5]**

c) Describe Rayleigh disc method to determine intensity level of sound. **[5]**

Q3) Attempt any <u>two</u> of the following : **[5]**

a) A simple harmonic oscillator has velocities V_1 & V_2 at positions x_1 & x_2 respectively from the equilibrium position. Prove that frequency of oscillator is

$$\nu = \frac{1}{2\pi}\sqrt{\frac{V_1^2 - V_2^2}{x_2^2 - x_1^2}}$$ **[5]**

b) The equation of forced oscillations is given by

$$2\left(\frac{d^2x}{dt^2}\right) + 80\left(\frac{dx}{dt}\right) + 1250(x) = f_0 \sin qt.$$

Find the resonant angular frequency, quality factor and half width. **[5]**

c) A tension of 2 kg is applied to horizontal rope of linear density 0.049 kg/m and it is made to vibrate with frequency of 100 Hz. Determine the speed of transverse wave on the rope and the wavelength of wave. **[5]**

Q4) Attempt the following :

a) i) Derive an expression of resultant path followed by a particle subjected to two mutually perpendicular SHM's having frequencies in the ratio 1 : 1. **[4]**

ii) Show that the doppler effect in sound is asymmetric. **[4]**

OR

i) Describe various types of seismic waves. **[4]**

ii) Show that in damped oscillatory motion the displacement is

$$x = ae^{\frac{-Rt}{2m}} \sin(pt + \theta)$$ **[4]**

b) Attempt any <u>one</u> of the following :

i) State Sabines formula and explain dependence of reverberation time upon various factors. **[2]**

ii) A spectral line of wavelength 6000A° in the spectrum of a star is found to be displaced from its normal position towards red end by 1A°. Calculate velocity of star. **[2]**

♦♦♦♦

Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 205

S.Y. B.Sc.

PHYSICS

PH - 222 : Optics

(2008 Pattern) (Sem. - II) (Paper - II) (51222)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and log table is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt all of the following.

a) Define the terms, centre of curvature & radius of curvature. **[1]**

b) State the cause of spherical aberration **[1]**

c) State the types of reflecting type telescope. **[1]**

d) State law of malus. **[1]**

e) Define Fresnel's diffraction. **[1]**

f) Define polarization of light. **[1]**

g) Focal length of each lens of Ramsden's eye - piece is 8 cm. Calculate the focal length of eye - piece. **[1]**

h) A ray of light is incident on the surface of a glass plate of refractive index 1.6003 at the polarizing angle. Calculate the polarizing angle. **[1]**

i) State any two applications of michelson's interferometer. **[1]**

j) Find the resolving power of grating which can just resolve the wavelengths 5890 Å & 5896 Å. **[1]**

Q2) Attempt any <u>two</u> of the following :

a) Derive lens maker's formula for a thin lens. **[5]**

b) Describe cometic aberration & state its reduction methods. **[5]**

c) State & explain Brewster's law. Show that at polarizing angle, reflected ray & refracted ray are perpendicular to each other. **[5]**

P.T.O

Q3) Attempt any <u>two</u> of the following :

a) Two thin convex lenses of same material having focal lengths f_1, f_2, & f_3 are separated by a distance 20 cm. The combination of lenses satisfies the condition for no chromatic aberration & minimum spherical aberration. Find the values of f, f_1 & f_2. **[5]**

b) The lenses in Huygen's eye - piece have focal length of 3 cm & 9 cm. Find the distance between them and sketch the cardinal points. **[5]**

c) A parallel beam of sodium light is incident on a oil film floating on water. When the film is observed at an angle of 30° with the normal, 6^{th} dark fringe is seen. Determine thickness of the film. Refractive index of oil = 1.46. **[5]**

Q4) Attempt the following :

a) i) Show that the distance of the second principal point from the second lens of an optical system is given by

$$\beta = -\frac{xf}{f_1}$$

Where symbols have their usual meanings. **[4]**

ii) Obtain an expression for the fringe width in the interference pattern produced with a wedge shaped fim. **[4]**

OR

i) Explain the construction & working of an astronomical telescope. Derive the expression for its magnifying power in normal adjustment. **[4]**

ii) Distinguish between negative crystal and positive crystal with examples. **[4]**

b) Attempt any <u>one</u> of following :

i) State Rayleigh's criterian of resolution. **[2]**

ii) Unpolarized light falls on two polarizing sheets placed one on top of other. What must be the angle between the characteristic directions of the sheet if intensity of transmitted light is one fourth intensity of the incident beam? **[2]**

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Total No. of Questions : 4]

SEAT No. : ____

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S.Y. B.Sc.

CHEMISTRY - I

CH - 221 : Inorganic Chemistry

(Semester - II) (2008 Pattern) (51312) (Paper - I)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following : **[10]**

a) What is calcination?

b) What is principle in Aluminothermic process?

c) Give the two names of Iron ores.

d) Draw the structure of graphite.

e) Define chemical Toxicology.

f) What are oxy - acids?

g) Calculate the magnetic moment of Mn^{2+} ion using spin only formula (Atomic No. Mn = 25).

h) $CuSo_4$ is blue in colour. Explain.

i) What are hard acids?

j) What are the types of corrosion?

Q2) Attempt <u>any two</u> of the following : **[10]**

a) Write the names, symbols and electronic configuration of IV A group elements. Explain the trends in the following properties.

   i) Atomic size.

   ii) Ionisation potential.

b) Explain Bronsted - Lowry theory of acids and bases with suitable examples. Give its merits and demerits.

c) Answer the following :

   i) Froth floatation process.

   ii) Explain biochemical effects of mercury.

P.T.O

Q3) Attempt <u>any two</u> of the following : **[10]**

a) What are the transition elements? Explain following properties of these elements.

i) Atomic size.

ii) Reactivity.

b) Discuss the electrolysis process to get aluminium from alumina with diagram.

c) What is passivity? What is electrochemical passivity? What are its applications?

Q4) a) Attempt <u>any one</u> of the following : **[6]**

i) What is steel? How it is manufactured by Acid - Bessemer process? What are advantages and disadvantages of Bessemer process.

ii) What are the properties of a useful solvent? Discuss each property in brief.

b) Attempt <u>any one</u> of the following : **[4]**

i) Give different methods for the prevention of corrosion of metals.

ii) Explain the bonding and shape of H_2SO_4 molecule.

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Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

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S.Y. B.Sc.

CHEMISTRY

CH - 222 : Analytical Chemistry

(2008 Pattern) (51322) (Sem. - II) (Paper - II)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of logarithmic tables and calculator is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following : **[10]**

a) What is a flux?

b) Why is NH_4Cl added before adding NH_4OH in inorganic qualitative analysis?

c) Which compounds give the positive iodoform test?

d) Define 'End point' in volumetric analysis.

e) Write the structure of EDTA molecule.

f) Determine the correct number of significant figures in 0.0058 kg and 45600 gm.

g) How carbon is detected from organic compound?

h) What is a group reagent for IV group?

i) What are the limitations of distribution coefficient?

j) Define primary standard substance.

Q2) a) Answer any two of the following : **[6]**

i) Explain the factors affecting on solvent extraction.

ii) Define common ion effect. Explain one application of common ion effect in qualitative analysis.

iii) Describe the method of estimation of available chlorine in bleaching powder.

b) In Liebig method 0.4 gm of an organic compound gave 0.45 gm of carbondioxide and 0.25 gm of water. Calculate percentage of carbon and hydrogen in the compound. **[4]**

P.T.O

Q3) a) Answer any two of the following **[6]**

i) What are mixed indicators? Where are they used? Give preparation of any one mixed indicator.

ii) Explain any two methods for the minimisation of determinate errors.

iii) How is acid detected? Give two characteristic tests for carboxylic group.

b) Solve any one of the following : **[4]**

i) 50 ml of an aqueous solution of an organic compound was shaken with 25 ml of ether. It was found that 0.03 moles of compound remained in aqueous layer and 0.3 moles were extracted by ether. Calculate distribution ratio D and percent extracted E.

ii) From the following sets of data for certain measurements, calculate absolute error and relative error.

Set I		Set II	
True value	Observed value	True value	Observed value
512.4	512.7	0.123	0.122

Q4) a) What is a titration curve? Explain the titration curve of strong acid and weak base. Which indicator will you choose for this titration? Why? **[6]**

OR

Explain the Kjeldahl's method of estimating nitrogen in an organic compound.

b) Answer any one of the following : **[4]**

i) What are the requirements for a successful application of an adsorption indicator?

ii) Discuss the removal of phosphate ion using ferric chloride method.

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Total No. of Questions : 4]

SEAT No. :

P353

[Total No. of Pages : 2

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S.Y. B.Sc.

MICROBIOLOGY

MB - 222 : Applied Microbiology - I

(51922) (Paper - II) (Sem. - II) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) Attempt the following: **[10]**

a) What are droplet nuclei?

b) Define total suspended solids.

c) What is meant by Bio-magnification?

d) Name any two dissolved oxygen sensors used in monitoring fermentation process.

e) Enlist two methods of air sampling.

f) Name two types of continuous sterilizers used for sterilization of fermentation media.

g) Give two examples of air borne infections.

h) Define ground water.

i) The inoculum used for inoculating a large scale fermentor must be ----. (50% v/v, 3-10% v/v, 100% v/v, 0% v/v).

j) State true or false :- The microbial strain used for industrial production of metabolites should be genetically stable.

P.T.O.

Q2) Attempt any two of the following: **[10]**

a) Describe any two indicators of faecal contamination of water.

b) Comment on monitoring and control of air flora in hospital environment.

c) Diagramatically illustrate a typical CSTR.

Q3) Attempt any two of the following: **[10]**

a) What is dual fermentation? Explain the process with one example.

b) Enlist the methods of primary, secondary and tertiary treatment of effluent and explain any one method of secondary treatment.

c) What is meant by inoculum development? Explain its process.

Q4) Attempt any one of the following: **[10]**

a) Describe the bacterial analysis of water for potability with respect to

i) Eijkman test ii) Membrane filter technique.

b) Enlist the sources of following components and give their nutritional aspects in media for industrial fermentation.

i) Carbon source ii) Nitrogen source

iii) Precursors iv) Amino acids & vitamins

v) Minerals

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Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

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S.Y. B.Sc.

PSYCHOLOGY

Health Psychology

(Paper - I) (Sem. - II) (2008 Pattern) (52012)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***Attempt all questions.***
2) ***Draw the diagrams & figures wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in <u>two</u> or <u>four</u> sentences: **[16]**

a) Define Health Psychology.

b) Define stress.

c) What is AIDS?

d) What is learned helplessness.

e) Define conflict.

f) What is coping?

g) What is PTSD?

h) Define nutrition.

Q2) Attempt <u>any two</u> of the following in eight or ten sentences: **[8]**

a) Explain mind and body connection.

b) Describe problem focused constructive coping.

c) Describe health risks associated with smoking.

P.T.O.

Q3) Write short notes on <u>any two</u> of the following: **[8]**

a) Nutrition and health.

b) Defensive coping.

c) Appraisal Focused constructive coping.

Q4) Explain in detail models of illness. **[8]**

OR

Explain in detail the potential effects of stress.

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Total No. of Questions : 4]

SEAT No. :

P355

[Total No. of Pages : 2

[4117] - 221

S.Y. B.Sc.

PSYCHOLOGY

Counseling Psychology

(Paper - II) (2008 Pattern) (Sem. - II) (52022)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Draw the figures & diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in two or four sentences: **[16]**

a) Define counseling.

b) What is initial disclosure?

c) Who proposed person - centered counseling?

d) What is Gestalt counseling?

e) What are the tools to be used in the assessment of child functioning.

f) How to work with parents?

g) What are the normative events?

h) What are the predictable counseling agendas?

Q2) Attempt any two of the following in eight or ten sentences: **[8]**

a) Explain the core conditions of counseling.

b) How children differ from adults?

c) Explain the importance of cognitive counseling.

P.T.O

Q3) Write short note on any two of the following: **[8]**

a) Characteristics of older adults as clients.

b) Stages of counseling process.

c) Person - centred counseling.

Q4) Explain the characteristics of effective counselor. **[8]**

OR

Explain the skills in communication among children.

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Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 224

S.Y. B.Sc.

ELECTRONIC SCIENCE

EL - 221 : Digital System Design

(Paper - I) (Sem. - II) (52212) (Old Course)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt all of the following:

a) What is meant by tristate outputs? **[1]**

b) Define settling time. **[1]**

c) What is totalizer? **[1]**

d) State the advantages of open collector gate. **[1]**

e) "IC 74147 is called priority encoder". Comment. **[2]**

f) "One can design a modulo - 5 counter using 3- bit ripple counter". Comment. **[2]**

g) Convert gray to binary of the following: **[2]**

i) 10101 ii) 10011

h) A certain gate draws the average I_{CC} 2.5 mA. What is its average power dissipation if V_{CC} = 5 volts and it is operated on a 50% duty cycle? **[2]**

Q2) Attempt any two of the following:

a) Design full adder using K - map. **[4]**

b) Explain the operation of 4 - bit bidirectional shift register with the help of neat diagram. **[4]**

c) Explain working of Tri-state inverter with the help of circuit diagram. **[4]**

P.T.O

Q3) Attempt any two of the following:

a) Design 3- bit odd parity generator using k-map. **[4]**

b) Describe the operation of 4-bit ripple binary counter. **[4]**

c) Draw the block diagram of auto parking system and explain its operation. **[4]**

Q4) Attempt all of the following:

a) Obtain the logical expression for segments a and c of the BCD to 7 segment decoder to drive the common anode display. **[6]**

b) With the help of block diagram, explain the working of Dual slope ADC. Give advantages over single slope ADC. **[6]**

OR

Attempt all of the following:

a) What will be the conversion time and average conversion time of a 12-bit successive approximation type ADC with 1 MHz clock? **[4]**

b) A clock of 10 kHz is applied to 7491A. How long will it take to produce an input pulse at the output? **[4]**

c) What is the full scale output voltage of 5-bit binary ladder if logic 0 = 0 volts and logic 1 = 5 volts. **[4]**

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Total No. of Questions : 4]

P356 **[Total No. of Pages : 2**

[4117] - 224

S.Y. B.Sc.

ELECTRONIC SCIENCE

EL - 222 : Electronic Instrumentation

(Paper - I) (Sem. - II) (522A2) (New Course)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All the questions are compulsory.***
2) ***Draw the neat diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of Non programmable calculator is allowed.***

Q1) Attempt all of the following:

a) Define the term Error used in the measuring Instrument. **[1]**

b) State the names of different modes in which CRO can be used. **[1]**

c) State the different types of probes used in CRO. **[1]**

d) Define the term Linearity of the measuring Instrument. **[1]**

e) "In analog function generator basic signal is a triangular wave". Comment. **[2]**

f) "The efficiency of ON-line UPS is less than OFF-Line UPS". Comment. **[2]**

g) Calculate the speed in RPM. Given pulses per second is 400 and number of teeth on Roter is 40. **[2]**

h) Sine wave observed on CRO is having V_{pp} = 20 volt. Calculate RMS voltage. **[2]**

Q2) Attempt any two of the following:

a) Draw the block diagram of measurement system and explain each Block. **[4]**

b) Draw the circuit diagram of Electronic voltmeter and state its advantages over Analog voltmeter? **[4]**

c) Draw the block diagram of function Generator and explain the working. **[4]**

P.T.O

Q3) Attempt any two of the following:

a) Draw the block diagram of DFM along with time base selector switch and explain the importance of Schmitt trigger used in DFM? **[4]**

b) Draw the block diagram of regulated power supply. What should be the value of load regulation and line regulation in percentage for an Ideal Regulated power supply? **[4]**

c) Draw the block diagram of LUX Meter and explain the working. **[4]**

Q4) Attempt any two of the following:

a) Draw the block diagram of Dual Trace CRO and explain each block in detail. **[6]**

b) Draw the block diagram of ON-Line UPS and OFF-Line UPS and explain any one in detail. **[6]**

OR

a) In Case of Inductive pickup tachometer state the formula for calculating the speed in RPS along with details of notations. Calculate the speed in RPM and RPS if the number of pulses per second is 1000 and number of teeth on rotar is 50. **[4]**

b) For a sine wave observed on Oscilloscope the distance bet^{n} two adjucent positive peaks is 4 divisions and distance between positive peak and negative peak is 10 divisions. If the position of Time/Div is at 50 μs/Div and Volts/Div Knob is at 2 volt/Div, then calculate the frequency and V_{PP} of observed sine wave. **[4]**

c) Draw the basic circuit diagram of DC ammeter by using PMMC and calculate the value of R_{SH} for the measurement of 0 to 500 mA current with internal resistance of 100 Ω. Given full scale deflection current is 10 mA. **[4]**

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Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 225

S.Y. B.Sc.

ELECTRONIC SCIENCE

EL - 222 : Communication System

(Paper - II) (2008 Pattern) (Sem. - II) (52222)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw the neat diagram wherever necessary.***
4) ***Use of Non programmable calculator is allowed.***

Q1) Attempt all of the following:

a) What is Dish TV? **[1]**

b) State applications of electronic communication. **[1]**

c) What is purpose of front porch? **[1]**

d) What do you mean by MODEM? **[1]**

e) "Mobile phone is nothing but cellular phone". Comment. **[2]**

f) "The total channel band width of 7 MHz is necessary for successfull transmission of both picture and sound signal in the 625 line system". Comment. **[2]**

g) A carrier wave of 100 kW is amplitude modulated at 100% depth of modulating signal. Calculate power in sidebands. **[2]**

h) Calculate number of links required to connect 50 subscribers. **[2]**

Q2) Attempt <u>any two</u> of the following:

a) What are various frequency demodulators? With circuit diagram explain any one of them. **[4]**

b) Describe the basic principle of colour television. **[4]**

c) What do you mean by Fiber optic cable? Describe the types of it. **[4]**

P.T.O

Q3) Attempt <u>any two</u> of the following:

a) Draw the block diagram of communication system and explain each block. **[4]**

b) What is internet? Explain any two applications of it. **[4]**

c) With appropriate diagram explain composite video signal. **[4]**

Q4) Attempt the following:

a) What is an ionosphere? Explain its different layers. Define skip distance and maximum usable Frequency. **[6]**

b) Explain the operation of DTMF and pulse dialing system. State advantages of DTMF dialing. **[6]**

OR

Attempt the following:

a) A modulating signal 10 sin ($2\pi \times 10^3$ t) is used to modulate a carrier signal 20 sin ($2\pi \times 10^4$ t). Find modulation index, Frequency of sidebands and their amplitude. **[4]**

b) For receiver with RF 900 kHz and IF 455 kHz, Determine local oscillator frequency and image frequency. **[4]**

c) A sinusoidal carrier has amplitude of 10 volts and frequency 30 kHz. It is amplitude modulated by a sinusoidal voltage of amplitude 3 volts and frequency 1 kHz. Determine equation for modulated wave and plot the waves showing maxima and minima of waveform. **[4]**

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Total No. of Questions : 4]

SEAT No. :

P358

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[4117] - 226

S.Y. B.Sc.

DEFENCE AND STRATEGIC STUDIES

DS - 201 : Strategic Issues In International Relations

(Sem. - II) (Paper - I) (2008 Pattern) (52312)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 to 4 sentences each. **[16]**

a) Define strategy.

b) Write the concept of Foreign Policy.

c) What is Diplomacy?

d) Define 'Arms control'.

e) Define 'Disarmament'.

f) Why ASEAN was established?

g) What is meant by International Terrorism?

h) Write the objective of SAARC.

Q2) Answer in 8 to 10 sentences (any two) : **[8]**

a) Why Military Pacts are necessary?

b) Establish relationship between Foreign Policy and Diplomacy.

c) Why Arms control are necessary?

P.T.O

Q3) Write short notes on (any two) : **[8]**

a) Human Rights

b) Global Warming

c) EEC

Q4) Answer in 16 to 20 sentences (any one) : **[8]**

a) Explain the difficulties in executing disarmament and Arms control.

b) Explain and differentiate Old and New Diplomacy.

Total No. of Questions : 4]

SEAT No. :

P359

[Total No. of Pages : 2

[4117] - 227

S.Y. B.Sc.

DEFENCE AND STRATEGIC STUDIES

DS - 202 : India's National Security

(Sem. - II) (Paper - II) (2008 Pattern) (52322)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 or 4 Sentences each. **[16]**

a) Define National values.

b) State the meaning of national security.

c) Define Energy security.

d) Write the meaning of Secessionist force.

e) Define Maritime Security.

f) Write any two objectives of India's Foreign policy.

g) What do you mean by nuclear programme.

h) Define Terrorism.

Q2) Answer in 8 to 10 Sentences each (any two) : **[8]**

a) Make a brief review of India's freedom struggle movement.

b) Write a note on India's maritime security.

c) Discuss importance of food security.

P.T.O.

Q3) Write short notes on (any two) : **[8]**

a) India - Pakistan war of 1965.

b) India - China war of 1962.

c) India's nuclear Programme.

Q4) Answer in 18 to 20 sentences (Any one) : **[8]**

a) Write a note on India's land border and its management.

b) Evaluate India's national security threats in 21st century.

Total No. of Questions : 4]

SEAT No. :

P360

[Total No. of Pages : 2

[4117] - 228

S.Y. B.Sc.

DEFENCE AND STRATEGIC STUDIES

DS - 203 : Military Geography

(Sem. - II) (Paper - III) (2008 Pattern) (52332)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 or 4 Sentences. **[16]**

a) Define Military Geography.

b) What do you understand by logistics?

c) To whom we called “ship of desert”?

d) Define Grand strategy.

e) State the principles of logistics.

f) Write any two uses of “Military Geography”.

g) State the ideal period for High Altitude warfare.

h) Write any two characteristics of warfare.

Q2) Answer in 8 to 10 Sentences (any two) : **[8]**

a) Explain the slope of Military Geography.

b) Write in brief tactical problems in plain warfare.

c) Explain the concept of strategy.

P.T.O

Q3) Write short notes on (any two) : **[8]**

a) Significance of logistics : Historical Example.

b) Process of formation of Grand strategy.

c) An example of Tactics.

Q4) Answer in 16 to 20 sentences (Any one) : **[8]**

a) How you would considers an environment as a factor of National Security? Explain.

b) Explain the characteristics & logistics problems of jungle warfare.

Total No. of Questions : 4]

SEAT No. : ____

P361

[Total No. of Pages : 2

[4117] - 229

S.Y. B.Sc.

ENVIRONMENTAL SCIENCE

ENV - 201 : Biological Diversity

(Sem. - II) (Paper - I) (2008 Pattern) (52412)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Draw neat & labelled diagram wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following in 1-2 lines each. **[10]**

a) Who defined the term 'Biodiversity'?

b) What is meant by keystone species?

c) Enlist any 2 endangered species.

d) Give 2 domesticated microbes.

e) What are the 2 types of protected Areas?

f) Write the full form of CBD.

g) What is meant by 'species Evenness'?

h) Define Wetland.

i) Give any 2 biodiversity hotspot.

j) Define Ecosystem Diversity.

Q2) Write short note on any 2 of the following : **[10]**

a) Origin of genetic variation in species.

b) India as mega diversity nation.

c) GMO's & their effects on ecosystem.

P.T.O

Q3) Answer any 2 of the following : **[10]**

a) Discuss any 2 factors affecting the distribution of biodiversity.

b) What is Ex-Situ conservation? Describe various methods.

c) Discribe the different types of biodiversity.

Q4) Answer any one of the following : **[10]**

a) Discuss in detail the various values associated to biodiversity.

b) Give an account of various national and international efforts and, traditional methods of conservation.

Total No. of Questions : 4]

SEAT No. : ____

P362

[Total No. of Pages : 2

[4117] - 230

S.Y. B.Sc.

ENVIRONMENTAL SCIENCE

ENV - 202 : Soil Science

(Sem. - II) (Paper - II) (2008 Pattern) (52422)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt the following in one or two lines each. **[10]**

a) Give any 2 advantages of humus.

b) Which instrument is used to measure soil moisture?

c) State the difference between platy & columnar type of soil structure.

d) What does soil colour indicate?

e) Define : soil conservation.

f) Give any 2 functions of nitrogen.

g) Which type of soil is found more in Maharashtra?

h) What are the different agents of soil erosion?

i) Enlist the types of weathering.

j) What is meant by cation exchange?

Q2) Answer any two of the following : **[10]**

a) Explain various methods for reclaimation of saline soil.

b) Describe different reactions in soil.

c) Give the methods used to control soil erosion.

P.T.O

Q3) Write notes on any two of the following : **[10]**

a) Effect of fertilizers on soil properties.

b) Biofertilizers with importance.

c) Role of trace elements in plant growth.

Q4) Answer any one of the following : **[10]**

a) What is soil texture? Explain different types of soil accordingly.

b) Describe the role of different soil morgs on plant growth & soil fertility.

Total No. of Questions : 4]

SEAT No. :

P363

[Total No. of Pages : 2

[4117] - 231

S.Y. B.Sc.

OPTIONAL ENGLISH

Enriching Oral and Written Communication in English

(Sem. - II) (2008 Pattern) (53012)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any two of the following : **[10]**

a) Write a transcript of a group discussion on 'Female Foeticide' using some expressions related to-expressing opinions, asking for opinion, expressing agreement, expressing disagreement, suggesting, interrupting, concluding, etc.

b) You have applied for a bank loan to study abroad and have been asked to attend an interview. Write five questions and their possible responses.

c) Imagine that you are the secretary, students' council of your college. Prepare the script of a meeting you are chairing to discuss the activities to be conducted during the 'Youth Week', using appropriate phrases.

Q2) Attempt any two of the following : **[10]**

a) Write a paragraph of about 15 sentences on 'Terrorism'.

b) Punctuate the following.

i) they said to rose you must sing at the music festival.

ii) we saw an exciting documentary film on aquatic animals the children said.

iii) i cannot come to office today the woman said to her friend.

iv) what is the arrival time of the train from mumbai i asked.

v) how talented the young dancer is thought the critic.

c) Summarize the following paragraph to one third of its length. Suggest a suitable title. Prepare a rough draft as well.

P.T.O.

Deforestation is the permanent destruction of natural forests and woodlands. Therate at which deforestation is happening is a matter of great concern. The phenomenon is the result of large-scale cutting down of forests in order to make more land available for agriculture, industries and housing. There is also a great demand for wood as both fuel and building material. Widespread deforestation leads to a huge increase in carbon dioxide, which is produced when trees are burnt or allowed to rot. Secondly, with vegetation disappearing from the surface of the earth, there is soil erosion. This is, therefore, also one of the causes for desertification. Finally, many species are in danger of becoming extinct due to loss of natural habitats. If steps to prevent deforestation are not taken soon, we are likely to lose all our tropical forests in few years from now.

Q3) Attempt any two of the following : **[10]**

a) Write a review of a book that you liked, taking into account its importance, message, social or moral implication, and give your opinion on it.

b) Write a few lines on 'what happened after it started raining' using the words and phrases given below:

Cooling breeze, pouring cats and dogs, pelting down, a gentle drizzle, leaky roof, smell of wet earth, cleansing, drumming on the roof, drench.

c) Write a few lines on 'The day when everything went wrong'.

Q4) Attempt any two of the following : **[10]**

a) You are planning a visit to Kashmir with your friends. Write a transcript of the telephonic conversation you had with your travel agent.

b) Write an e-mail letter to flipkart.com placing an order for some recently released books.

c) Prepare 5 slides of about 20 words each for a power point presentation that you would like to make on 'Conservation of Nature'.

Total No. of Questions : 4]

SEAT No. :

P369

[Total No. of Pages : 2

[4117] - 237

S.Y. B.Sc. (Vocational)

INDUSTRIAL CHEMISTRY

VOC-221 : Unit Process in Organic Industries

(Sem. - II) (Paper - I) (2008 Pattern) (55612)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Give balanced equations with conditions for the following reactions / synthesis. **[16]**

a) Benzene $\longrightarrow$ Dodecyl benzene

b) Chlorobenzene $\longrightarrow$ Aniline

c) Nitrobenzene $\longrightarrow$ m-Dinitrobenzene

d) Acetanilide $\longrightarrow$ N-ethyl aniline

e) Acetic acid $\longrightarrow$ Chloroacetic acid

f) Benzene $\longrightarrow$ Chlorobenzene

g) Cellulose $\longrightarrow$ Cellulose acetate

h) Toluene $\longrightarrow$ Benzoic acid

Q2) Attempt any two of the following : **[8]**

a) Discuss the orientation effects in Nitration of substituted benzene with suitable examples.

b) What is reduction? What are reducing reagents? Name any four reducing reagents.

c) Discuss the mechanism of the sulphonation of benzene.

P.T.O

Q3) Write short notes on any two of the following : **[8]**

a) Different halogenating reagents.

b) Esterification process.

c) Friedel Craft alkylation.

Q4) Describe the manufacture of aniline from nitrobenzene with the help of a flow sheet. **[8]**

OR

Describe the manufacture of phenyl ethyl alcohol with the help of a flow sheet.

Total No. of Questions : 4]

SEAT No. :

P370

[Total No. of Pages : 2

[4117] - 238

S.Y. B.Sc. (Vocational)

BIOTECHNOLOGY

VOC - Biotech - 221 : Plant and Animal Tissue Culture

(Sem. - II) (Paper - I) (2008 Pattern) (55712)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***

Q1) Answer each of the following in 1 - 2 lines : **[10]**

a) Define plant tissue culture.

b) Give the role of auxins in PTC.

c) What is cell suspension culture?

d) Write any two applications of protoplast culture.

e) Name any two culture media used in PTC.

f) What is a cell line?

g) Enlist types of animal tissue cultures.

h) What is monolayer culture?

i) Give any two applications of ATC.

j) Name any two instruments used in ATC.

Q2) Write short notes on <u>any two</u> of the following : **[10]**

a) Surface sterilization.

b) Principle & working of autoclave.

c) Culture vessels.

P.T.O

Q3) Attempt <u>any two</u> of the following : **[10]**

a) Give an account of history of PTC in India.

b) Write note on life span of a cell line.

c) Describe in brief the procedure of density gradient centrifugation.

Q4) Give detailed account of steps involved in Micropropagation. **[10]**

OR

Describe in detail the types & procedure of mammalian organ culture.

Total No. of Questions : 4]

SEAT No. :

P371

[Total No. of Pages : 2

[4117] - 239

S.Y. B.Sc. (Vocational)

PHOTOGRAPHY AND AUDIO-VISUAL PRODUCTION

Colour Photography

(Sem. - II) (Paper - I) (2008 Pattern) (58012)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Draw neat and labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in short : **[16]**

a) Explain the characteristics of black body radiation.

b) What do you mean by the Purkunje shift?

c) What happens if a daylight scene is exposed with white balance setting at the tungsten light?

d) Colour temperature of the rising Sun is 2000 Kelvin. Convert it to mired.

e) Give examples and explain the difference between primary and secondary colours.

f) What are complementary colours? How important are they in photography?

g) What do you mean by the colour conversion filters?

h) Define the colour temperature of a light source.

Q2) Attempt **ANY TWO** of the following : **[8]**

a) What do you mean by the mired shift? What is positive and negative Mired shift? How are these corrected?

b) Discuss the reasons for using filters in a colour enlarger.

c) Discuss the importance of 'histogram' in digital photography.

P.T.O

Q3) Write short notes on **ANY TWO** of the following : **[8]**

a) Use of polarizer filter in colour photography.

b) Colour vision.

c) Use of different light sources in photography.

Q4) Attempt **ANY ONE** of the following : **[8]**

a) Draw a suitable diagram and explain the three point lighting setup used for portrait lighting. Clearly mention the type purpose of various lights you will be using.

b) Draw a suitable sketch and explain the concept of photographic composition. Which elements of composition do you think are important in your sketch? Why are they important?

Total No. of Questions : 4]

SEAT No. : ____

P372

[Total No. of Pages : 2

[4117] - 240

S.Y. B.Sc. (Vocational)

ELECTRONIC EQUIPMENT & MAINTENANCE (EEM)

VOC. EEM - 221 : Audio, Video and Office Equipment - B

(Sem. - II) (Paper - I) (2008 Pattern) (58112)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following :

a) State the advantages of multimedia projectors. **[1]**

b) Name the current video standard used in PC. **[1]**

c) What is the difference between mouse and touchpad? **[1]**

d) Define - multimedia. **[1]**

e) What information is encoded in a barcode? **[2]**

f) Write the principle of operation of inkjet printer. **[2]**

g) Give the principle of operation of Xerox machine. **[2]**

h) State different types of input / output devices of a PC. **[2]**

Q2) Answer <u>any two</u> of the following :

a) Draw a neat labelled diagram of over-head projector. **[4]**

b) Write short note on - “Rolling Display”. **[4]**

c) Give the working principles of LCD and DLP projectors. **[4]**

P.T.O

Q3) Answer any two of the following :

a) Write the features of latest microprocessor used in PCs. **[4]**

b) State the functions of video adapter of a PC. Give different types of Video cards. **[4]**

c) Write short note on "flat screen display". **[4]**

Q4) Answer the following :

a) Explain the working of Laser Printer with the help of neat diagram. **[6]**

b) Draw a neat labelled diagram of a Motherboard. State the functions of Flash ROM. **[6]**

OR

Answer the following :

a) Explain the keyboard scanning principle with the help of neat block diagram of a PC Keyboard. **[6]**

b) Prepare a neat constructional diagram of a CRT. State the functions of accelerating electrodes. **[6]**

Total No. of Questions : 4]

SEAT No. : ____

P373

[Total No. of Pages : 2

[4117] - 242

S.Y. B.Sc. (Vocational)

SEED TECHNOLOGY

Vegetable Seed Production

(Sem. - II) (Paper - I) (2008 Pattern) (58912)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and labeled diagrams wherever necessary.***

Q1) Attempt the following : **[10]**

a) What is apomixes?

b) Define pollination?

c) Write any two objectives of hybridization.

d) Enlist methods of population improvement.

e) Write different methods of classification for vegetable crops.

f) Give the isolation distance for foundation seed production in Tomato?

g) What is roughing?

h) Which type of nursery bed is required for growing seedlings in Brinjal?

i) What is GMS?

j) Give any two objectives of vegetable seed production.

P.T.O

Q2) Attempt any two of the following : **[2 × 5 = 10]**

a) What is megasporogenesis? Describe megaspore formation process with neat labeled diagram.

b) Define self incompatibility? Explain any one type of self incompatibility.

c) Discuss procedure for hybridization in vegetable crops.

Q3) Write notes on (any two) : **[2 × 5 = 10]**

a) Pedigree selection.

b) Achievements of population improvement.

c) Modes of pollination.

Q4) Give seed production procedure with reference to land requirement, isolation, nursery management, cultural practices, roguing, plant protection, harvesting, seed extraction, drying and storage in Tomato. **[10]**

OR

Give seed production procedure with reference to land requirement, isolation, nursery management, cultural practices, roguing, plant protection, harvesting, seed extraction, drying and storage in Bitter guard.

Total No. of Questions : 4]

SEAT No. :

P374

[Total No. of Pages : 2

[4117] - 243

S.Y. B.Sc. (Vocational)

INDUSTRIAL MICROBIOLOGY

VOC - IND - MIC - 221 : Microbial Fermentations and Downstream Processing

(Sem. - II) (Paper - I) (Theory) (2008 Pattern) (58212)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***
5) ***Use of scientific calculators is allowed.***

Q1) Answer the following : **[10]**

a) Name the fermentation product produced using solid substrate fermentation.

b) Fill in the blank:

_____ enzyme can be used to lyse plant cell.

c) State whether the statement is True or False ultrasonication can be used for lysing microbial cells in large scale operations.

d) Define : 'Partition Coefficient'.

e) Fill in the blank :

At acidic pH, penicillin gets converted to _____.

f) Name the symbiotic N_2 fixing bacteria used as bioinoculant.

g) Give any two uses of acetic acid.

h) Define : 'Centrifugation'.

i) Name any two flocculating agents used for cell flocculation from broth.

j) Give an application of amylase.

P.T.O

Q2) Answer <u>any two</u> of the following : **[10]**

a) Enlist the types of batch filters used in removal of microbial cells from finished fermentation broth & describe any one in detail.

b) Draw the flow chart to present industrial production of Penicillin G.

c) List the solvents used for precipitation of proteins from fermentation broth. Describe the method of enzyme precipitation using solvent.

Q3) Answer <u>any two</u> of the following : **[10]**

a) Give the biochemical mechanism involved in Glutamic acid production.

b) With the help of diagram, explain the principle of counter-current extraction.

c) Give the principle underlying Adsorption chromatography technique and its use for purification of fermentation product from fermented broth.

Q4) Answer <u>any one</u> of the following : **[10]**

a) With the help of flow chart, describe the production of Vitamin B_{12} by fermentation process.

b) Describe different types of drying processes as final stage of manufacturing of fermentation product.

Total No. of Questions : 4]

SEAT No. :

P375

[Total No. of Pages : 2

[4117] - 244

S.Y. B.Sc. (Vocational)

INDUSTRIAL CHEMISTRY

VOC - 222 : Industrial Pollution

(Sem. - II) (Paper - II) (2008 Pattern) (55622)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following : **[16]**

a) Why is ozone is a better water sterilizer than chlorine?

b) Name the chemical constituents in permanent hard water.

c) Convert 20 French into Clark.

d) Name the chemical constituents of London Smog.

e) Define night soil.

f) Which are green house gases?

g) Define soil profile.

h) Define batch discharge.

Q2) Attempt any two of the following : **[8]**

a) Write a note on pesticide pollution.

b) Compare BOD and COD tests.

c) Explain 'Flash evaporation method' used to desalinate water.

P.T.O.

Q3) Attemt any two of the following : **[8]**

a) Explain the process of lagooning used for sludge disposal.

b) Write a note on the treatment of wastes from the explosives industry.

c) Write a note on nitrogen the cycle.

Q4) Explain the lmhoff septic tank construction and functioning. **[8]**

OR

Explain the types of chlorinations used to disinfect water.

Total No. of Questions : 4]

SEAT No. :

P376

[Total No. of Pages : 2

[4117] - 245

S.Y. B.Sc. (Vocational)

BIOTECHNOLOGY

VOC - Biotech : 222 - Immunology

(Sem. - II) (Paper - II) (2008 Pattern) (55722)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***

Q1) Answer each of the following in 1 - 2 lines : **[10]**

a) Define : Antigen.

b) Give function of IgA in immunity.

c) Explain the role of lymphocytes in immunity.

d) How HAT selection is used in monoclonal antibody production?

e) What are vaccines?

f) Name the immunologicals involved in type II hypersensitivity reaction?

g) What is adaptive immunity?

h) Name any one factor involved in viral infection inhibition.

i) What is agglutination?

j) Which molecules are involved in B lymphocyte activation?

Q2) Write short notes on any two of the following (8 - 10 lines) : **[10]**

a) Types of vaccines.

b) MHC II complex.

c) Tc cells.

P.T.O.

Q3) Attempt any two of the following (8 - 10 lines) : **[10]**

a) What is ELISA? Explain different applications of ELISA.

b) Define cell mediated immunity. Explain any one type of cell involved in cell mediated immunity.

c) Comment on secondary immune response.

Q4) What are antigens? Explain different properties of antigens in detail. **[10]**

OR

Explain in great detail the process and applications of RIA.

Total No. of Questions : 4]

SEAT No. :

P377

[Total No. of Pages : 2

[4117] - 246

S.Y. B.Sc. (Vocational)

PHOTOGRAPHY AND AUDIO-VISUAL PRODUCTION

Principles & Applications of Analog and Digital Communications

(Sem. - II) (Paper - II) (2008 Pattern) (58022)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and labeled diagrams wherever necessary.***

Q1) Solve following questions :

a) State whether the following statements are TRUE or FALSE. **[2]**

i) Timing error is reduced due to synchronization.

ii) Serial transmission is faster transmission.

b) Comment on the following statements. **[4]**

i) SSB generation is preferred over DSB.

ii) FSK is normally used in MODEM.

c) Attempt the following. **[6]**

i) For a binary PCM system, the number of bits per transmitted word is 8 and the sampling frequency fs=8Khz. Calculate the

1) bit rate and

2) baud rate.

ii) Six message signals each of BW 5 KHz are Time Division Multiplexed and transmitted. Calculate.

1) Signaling rate

2) Minimum channel BW of the PAM/TDM Channel.

P.T.O

Q2) Explain ANY TWO of the following : **[8]**

a) Explain TDM system with the help of diagram.

b) What is the need of Modulation? Describe its advantages?

c) Calculate the maximum bit rate for a channel having Band Width 300 Hz and S/N ration is 40db.

Q3) Explain ANY TWO of the following : **[8]**

a) Explain the Shanon's theorem on the Channel Capacity. What is the importance of Channel Bandwidth?

b) Compare the FM and AM Systems.

c) What is PAM? Explain the Generation of PAM with diagram.

Q4) Solve ANY TWO of the following Numericals : **[12]**

a) A. Calculate the Carrier Swing, frequency deviation and modulation index of FM signal which reaches a maximum frequency of 99.05 MHz and minimum frequency of 99.03 MHz. The frequency of modulating signal is 6 KHz.

b) The rms antenna current from an AM transmitter measures by 15% over its unmodulated value when sinusoidal modulation is applied, Determines the m.

c) A FM wave is represented by the following equation, $V = 10 \sin [5 \times 10^8 t + 41250t]$

Find :

i) Carrier and modulating frequencies.

ii) Modulation index and maximum deviation.

iii) The power dissipated by this FM wave in 5 ohm resistor.

OR

Attempt ANY TWO of the following **[12]**

a) Explain natural PAM sampling and flat topped sampling.

b) Explain Bell 103 and Bell 212 modems.

c) Explain the working of super heterodyne AM receiver with a neat block diagram.

✪✡✪✡

Total No. of Questions : 4]

SEAT No. : ____

P380

[Total No. of Pages : 2

[4117] - 250

S.Y. B.Sc. (Vocational)

INDUSTRIAL MICROBIOLOGY

VOC - IND - MIC - 222 - Quality Assurance in Industrial Products

(Theory) (Paper - II) (Sem. - II) (2008 Pattern) (58222)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks.***
4) ***Draw neat labelled diagrams wherever necessary.***
5) ***Use of scientific calculator is allowed.***

Q1) Answer the following **[10]**

a) Define "Carcinogen".

b) State whether the following statement is TRUE/FALSE BIS stands for Bureau of International Standards.

c) Name the organism used in 'Modified Ame's test.

d) State the relationship between Zone diameter and concentration of product in gel diffusion assay method.

e) State any two tests to assess quality of canneal fruit juice.

f) What is MIC of antibiotics?

g) What is the difference between 'sterile' and 'Commercially sterile'?

h) Write any two types of chromatographic assays.

i) State the limitation of 'Ame's test'.

j) What is AGMARK?

Q2) Answer any two of the following. **[10]**

a) Explain importance of pharcopoeia in fermentation industry.

b) Describe LAL test used for pyrogen testing.

c) Enlist the quality assurance tests carried out for dairy & food products. Describe any one test in detail.

P.T.O

Q3) Answer any two of the following : **[10]**

a) Give the factors affecting diffusion assay.

b) Describe the method for testing sterility of an antibiotic vial.

c) Explain the role of FDA in controlling quality of products.

Q4) Answer any one of the following **[10]**

a) Explain in detail the procedure determining the potency of Vit B_{12} using turbidimetric assay method.

b) Enlist the quality assurance test carried out for packaged drinking water & explain any one method in detail.

♦♦♦♦

Total No. of Questions : 4]

SEAT No. :

P211

[Total No. of Pages : 2

[4117] - 23
F.Y. B.Sc.
DEFENCE AND STRATEGIC STUDIES
DS - 1 : War and Warfare
(42310) (2008 Pattern) (Paper - I)

Time :3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 20 words (any 10): **[20]**

a) Define 'Chemical Warfare'.

b) What is H-Hour?

c) Define 'Rumours'.

d) Define 'Insurgency'.

e) Define 'Terrorism'.

f) Define 'Naxalism'.

g) What is 'Amphibious Force'?

h) What is meant by 'Second Strike Capability'?

i) Define 'WAR'.

j) Introduce 'Indo-Pak War' 1971.

k) Write about India's first and second nuclear Test.

l) Introduce Information Warfare.

m) What is 'AirPower'?

P.T.O

Q2) Answer in 50 words (any 2): **[10]**

a) What is International Terrorism?

b) Write about the nature of Modern War.

c) What is limited war?

d) Write about the purpose of war.

Q3) Answer in 150 words (any 2): **[20]**

a) Explain about 'Theory of War'.

b) What are the subject of propagation in Psy War?

c) Explain the constraints in controlling LIC.

d) Explain about the types of Psychological Warfare.

Q4) Answer in 300 words (any 2): **[30]**

a) Discuss about the theory of Nuclear Deterrence.

b) Discuss the principles of Guerill Warfare.

c) Explain about the causes of war in detail.

d) Write an essay on Chemical & Biological Warfare.

Total No. of Questions : 4]

SEAT No. : ____

P232

[Total No. of Pages : 2

[4117]-102
S.Y. B.Sc. (Semester - I)
MATHEMATICS - II
MT-212 (A) and MT-212 (B)
MT-212 (A) : Differential Equations
(Paper - II (A)) (2008 Pattern) (51121)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***Candidates are advised to see the relevant question paper and solve the same.***
2) ***All questions are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***D stands for the differential operator.***

Q1) Attempt any five of the following : **[10]**

a) State the order and degree of the equation

$$\sqrt{\frac{d^2y}{dx^2}-\left(\frac{dy}{dx}\right)^3}=\frac{4}{\left(\frac{d^3y}{dx^3}\right)}$$

b) Solve the differential equation.

$$\frac{d^3y}{dx^3}-6\frac{d^2y}{dx^2}+9\frac{dy}{dx}=0$$

c) Find the integrating factor for the differential equation
$(x^2 + y^2 + 2x)dx + 2ydy = 0$

d) Test whether the differential equation is exact or not
$(y^2 - 2xy + 6x)dx - (x^2 - 2xy + 2)dy = 0$

e) Define Bernoulli's equation.

f) Find the particular solution of the differential equation.

$$\frac{d^3y}{dx^3}+9\frac{dy}{dx}=\cos 3x$$

g) Verify that $y_1 = \sin x$ is a solution of differential equation

$$\frac{d^2y}{dx^2}-2\tan x\,\frac{dy}{dx}+3y=0$$

P.T.O.

Q2) Attempt <u>any two</u> of the following : **[10]**

a) Explain the method of solving the homogeneous differential equation $\frac{dy}{dx} = \frac{f(x,y)}{g(x,y)}$, where $f(x, y)$ and $g(x, y)$ are homogeneous functions of same degree.

b) Solve $y(xy + 2x^2y^2)dx + x(xy - x^2y^2)dy = 0$.

c) Find the orthogonal trajectories of the family of curves $x^3 = cy^2$, where c is constant.

Q3) Attempt <u>any two</u> of the following : **[10]**

a) Let f(D) be a polynomial in $D = \frac{d}{dx}$ with constant coefficients and V be a function of x then prove that $\frac{1}{f(D)}(e^{ax}.V) = e^{ax}\frac{1}{f(D+a)}V$.

b) Solve $\frac{dy}{dx} = x^3 - 2xy$

c) Solve $(D^2 + 4D - 12)y = (x - 1)e^{2x}$

Q4) Attempt <u>any one</u> of the following : **[10]**

a) i) Explain the method of solving non-homogeneous linear differential equation by variation of parameter. **[7]**

ii) Find P.I $(D^2 + 3D + 2)y = 1 + 3x + x^2$ **[3]**

b) i) Use the method of reduction of order to solve **[5]**
$(D^2 + D - 6)y = 1 + e^{3x}$.

ii) Solve $(D^2 - 2D + 1)y = xe^x + 7x - 2$. **[5]**

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Total No. of Questions : 4] **[Total No. of Pages : 2**

P232

[4117]-102
S.Y. B.Sc. (Semester - I)
MATHEMATICS - II
MT-212 (B) : Numerical Analysis
(Paper - II (B)) (2008 Pattern) (51121)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of non programmable calculator is allowed.***

Q1) Attempt any five of the following : **[10]**

a) An approximate value of π is given by 3.14278152 and its true value is 3.14159265. Find the absolute and relative errors.

b) Round-off the following numbers to four significant figures.
47.57105, 0.50019, 0.0033418, 2.2745.

c) Show that the equation $x^6 - 2x^2 + 3x - 4 = 0$ has one positive real root and one negative real root.

d) If $f(x) = x^3$, then show that $f(a, b, c) = a + b + c$.

e) Find the nature of the roots of the equation $5x^4 + 8x^2 + 3x - 2 = 0$.

f) Represent the function $x^4 + x + 2$ into factorial notation.

g) Using Euler's method obtain y(0.1), given that

$$\frac{dy}{dx} = -y,\ y(0) = 1,\ h = 0.1.$$

Q2) Attempt any two of the following : **[10]**

a) Find a real root of the equation $f(x) = x^3 - 2x - 5 = 0$ by Regula Falsi method. (Perform two iterations).

b) Find the number and position of the real roots of the equation
$2x^3 - 15x^2 - 8x + 166 = 0$.

P.T.O.

c) Solve the following system of equations by Gauss-Seidal iteration method.

$27x + 6y - z = 85,$

$6x + 15y + 2z = 72,$

$x + y + 54z = 110.$

Perform two iterations.

Q3) Attempt <u>any two</u> of the following : **[10]**

a) Derive Lagrange's interpolation formula.

b) The population of a town during the last six censuses is given. Estimate the population for the year 1935.

Year	1901	1911	1921	1931	1941	1951
Population (in thousands)	12	15	20	27	39	52

c) Fit an exponential function $y = ae^{bx}$ to the following data :

x	0	2	4	7
y	3	4	11	25

Q4) Attempt <u>any one</u> of the following : **[10]**

a) i) Evaluate $\int_0^6 e^x dx$ by Simpson's $\frac{3}{8}$ rule with 6 strips.

ii) Use Euler's modified method to find $y(0.2)$, given that

$$\frac{dy}{dx} = 3x^2 + y,\ y(0) = 4,\ h = 0.2.$$

b) i) Derive a general quadrature formula for equidistant ordinates.

ii) Use the Runge-Kutta forth order method to find the value of y when $x = 1$, given that $y(0) = 1$, $\frac{dy}{dx} = \frac{y - x}{y + x}$.

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Total No. of Questions : 4]

SEAT No. :

P233

[Total No. of Pages : 2

[4117]-103
S.Y. B.Sc.
PHYSICS
PH-211: Mathematical Methods in Physics
(Paper - I) (51211) (Semester - I) (2008 Pattern)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and log table is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Attempt all of the following:

a) Express complex number $z = 1 + i$ in polarform. **[1]**

b) Check whether the given differential equation is exact or not. **[1]**
$df = (y^2 - y + 2xy)dx + (x^2 - x + 2xy)dy$

c) What is the condition for the given vector field to be solenoidal? **[1]**

d) Explain the term homogenity used in differential equation. **[1]**

e) If $f(x, y) = \frac{x}{y}$, then find $\frac{\partial f}{\partial x}$. **[1]**

f) Obtain the square root of $z = 1 - 3i$. **[1]**

g) When the point $x = x_0$ is said to be singular point of the given differential equation? **[1]**

h) Define curl of a given vector field. **[1]**

i) State the order of the given differential equation **[1]**
$(1 - x^2)y'' - 2xy' + l\,(l + 1) = 0$

j) Obtain a vector perpendicular to the surface $\phi(x, y, z) = xyz$. **[1]**

Q2) Attempt any two of the following :

a) Find the approximate value of the following using total differential. **[5]**

$$\sqrt{(4.98)^2 + (3.03)^2}$$

P.T.O.

b) Determine the work done in moving a particle in a force field given by $\bar{f}(x,y) = 7xy\hat{i} + 2z\hat{j} + x\hat{k}$ along the curve, $x = 2t^2$ $y = t$ and $z = t^2 - 3t$ from $t = 0$ to $t = 1$. **[5]**

c) Find the slope of tangent to the curve $x^3 + 3xy^2 - y^3 = 0$ at $x = 1$ and $y = 2$. **[5]**

Q3) Attempt any <u>two</u> of the following :

a) State De-Moivre's theorem. Find different cubic roots of unity. **[5]**

b) Define divergence of a vector field. Obtain divergence of a given vector field $\overline{V} = (x+y)\hat{i} + (y-z)\hat{j} + (x+2z)\hat{k}$. **[5]**

c) Check whether the following three vectors are co-planar or not? **[5]**

$\overline{A} = 3\hat{i} - \hat{j} + 2\hat{k}$ $\overline{B} = 2\hat{i} + \hat{j} - \hat{k}$ $\overline{C} = \hat{i} - 2\hat{j} + 2\hat{k}$.

Q4) Attempt the following:

a) i) Determine the directional derivative of $\phi = 4xz - 3y^2z + 2y^2x$ at $(1, -1, 2)$ in the direction $\hat{i} - \hat{j} + \hat{k}$. **[4]**

ii) Find $\frac{\partial z}{\partial s}$ and $\frac{\partial z}{\partial t}$, if $z(x, y) = xy$, $x = s - t$ and $y = \sin(s+t)$. **[4]**

OR

i) Evaluate $\frac{(1+i)^2}{(1-i)}$ **[4]**

ii) Find the constants a, b, c so that the given vector field **[4]**
$\bar{v} = (x + 2y + az)\hat{i} + (bx - 3y - z)\hat{j} + (4x + cy + 2z)\hat{k}$
is irrotational.

b) Attempt any <u>one</u> of the following :

i) If $f(x, y) = x^3y - e^{xy}$, find f_x and f_{xx} **[2]**

ii) Using $\sin\theta = \frac{e^{i\theta} - e^{-i\theta}}{2i}$ *and* $\cos\theta = \frac{e^{i\theta} + e^{-i\theta}}{2}$ prove that **[2]**
$\sin^2\theta + \cos^2\theta = 1$.

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Total No. of Questions : 4]

SEAT No. : ____

P235

[Total No. of Pages : 3

[4117] - 105

S.Y. B.Sc.

CHEMISTRY

CH - 211 : Physical Chemistry

(51311) (Sem. - I) (2008 Pattern) (Paper - I)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of logarithmic table and calculator is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***

Q1) Answer the following: **[10]**

a) Define third law of thermodynamics.

b) What is the partition coefficient?

c) Write the relation between K_p and K_c.

d) Define Ebullioscopic constant.

e) What is meant by ideal and non-ideal solution?

f) What is the criterion of equilibrium interms of Gibb's free energy?

g) Define molality.

h) What is solution?

i) Helmholtz free energy is called as the maximum work why?

j) State Henry's law.

Q2) a) Attempt <u>any two</u> of the following : **[6]**

Derive the following relations

i) $\left(\frac{\partial A}{\partial T}\right)_V = -S$ and $\left(\frac{\partial A}{\partial V}\right)_T = -P$

P.T.O

ii) Show that on mixing two ideal gases, the entropy of the system always increases.

iii) What is Van't Hoff's factor? Derive the relation between Van't Hoff's factor and the degree of dissociation of an electrolyte.

b) Solve <u>any one</u> of the following : **[4]**

i) 0.32 gm of a substance was dissolved in 150 gm water. If the molecular weight of the substance is 32, calculate the freezing point of the solution. (Given $K_f = 1.86$).

ii) The vapour pressure of benzene is 1.53×10^4 Nm^{-2} at 303K and 5.2×10^4 Nm^{-2} at 333K. Calculate the heat of vaporization of benzene. (Given R = 8.314 J $Mole^{-1}$ K^{-1}).

Q3) a) Attempt <u>any two</u> of the following : **[6]**

i) Explain the term upper consulate temperature and lower consulate temperature with suitable example.

ii) Show that it is better to extract with small volumes of solvent several times than once with a large volume.

iii) What do you mean by abnormal molecular weight? Why abnormal molecular weight is observed?

b) Solve <u>any one</u> of the following : **[4]**

i) Calculate the free energy change when 14 gms of nitrogen is compressed isothermally and reversibly from 20 pascal to 120 pascal at 30^oC.

[Given : At. wt. of nitrogen = 14, R = 8.314 J $Mole^{-1}$ K^{-1}]

ii) The organic liquid and water, which are immiscible with each other were boiled at a vapour pressure of 710 mm of Hg. The ratio of weight of organic liquid to water collected in the distillate was three. Calculate the molecular weight of organic liquid.

[Given : Vapour pressure of water at boiling temperature = 510 mm of Hg].

Q4) a) Describe with the help of neat diagram, Landsberger's method for determining the molecular weight of a given solute. **[6]**

OR

Derive Gibbs - Helmholtz equation and give its applications.

b) Attempt <u>any one</u> of the following : **[4]**

i) Explain construction, working and applications of fractionating column.

ii) Discuss any one method of determining the vapour pressure of liquid.

Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 3

[4117] - 106

S.Y. B.Sc.

CHEMISTRY

CH - 212 : Organic Chemistry

(51321) (Paper - II) (Sem. - I) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw structures and diagrams if necessary.***

Q1) Answer the following: **[10]**

a) Cyclopropane is less stable than cyclopentane. Explain.

b) Why benzaldehyde does not give aldol condensation?

c) What is Hell-Volhard Zelinsky reaction?

d) Amines are basic in nature, explain.

e) Give the synthesis of Furan.

f) Define step down reaction with example.

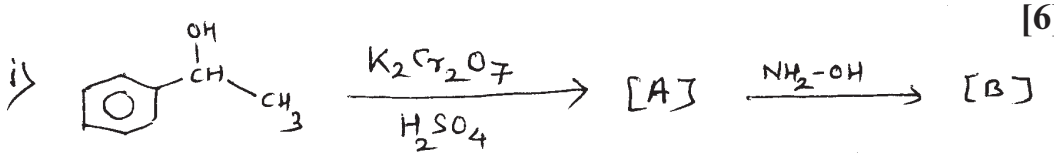
g) Give the importance of biochemistry in agriculture.

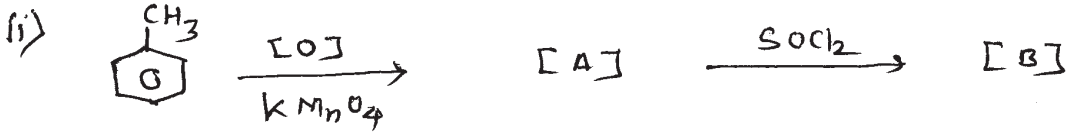
h) Draw the structure of cellulose.

i) Give the any two functions of lipids.

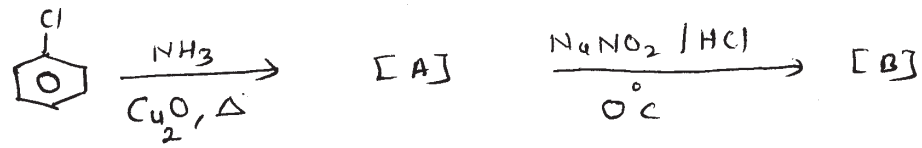
j) Define Hormones with one example.

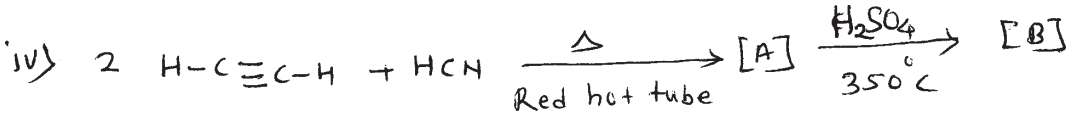
Q2) a) Assign the structure to (A) and (B) in the following reaction (any three) : **[6]**

i) 

ii) 

P.T.O

iii) 

iv) 

b) How will you bring about the following conversions (any two) : **[4]**

i) Benzoic acid to Benzaldehyde.

ii) Acetonitrile to Acetic acid.

iii) Ethyl alcohol to n-propylamine.

iv) Propanaldehyde to n-propyl alcohol.

Q3) Attempt any two of the following : **[10]**

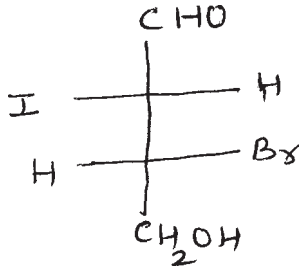
a) Draw the Newman projection for both conformers of methyl cyclohexane. Explain e-methyl cyclohexane is more stable than a-methyl cyclohexane.

b) Explain with suitable examples Killiani - Fischer synthesis of carbohydrates.

c) What are α - amino acids? Explain the reaction of α - amino acid with Dansyl chloride and with nitrous acid.

Q4) a) Attempt any two of the following : **[6]**

i) Define the term optical activity. Assign 'R' and 'S' configuration to each of the chiral centre in the following compounds.



ii) Explain Cannizzaro and cross Cannizzaro's reaction with suitable example.

iii) What are nucleotides? How are they formed? Give one example of nucleotide in DNA.

b) Answer the following : **[4]**

i) What is mean by homocylic compounds? Write down the bromination reaction of napthalene.

ii) Discuss the effect of temperature on the enzyme catalysed reaction.

OR

i) Write a notes on transesterification.

ii) What are sphingo-lipids? Write down the structure of Cerebroside.

Total No. of Questions : 4]

SEAT No. : ____

P237

[Total No. of Pages : 2

[4117] - 107

S.Y. B.Sc.

BOTANY

BO - 211 : Fundamentals of Plant Systematics and Plant Ecology (Paper - I) (51411) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) Answer the following : **[10]**

a) What is revision in Taxonomic Literature?
b) Enlist any two morphological features used in Taxonomy.
c) What is consolidation phase in Taxonomy?
d) Give botanical names of any two plants of Anonaceae.
e) What is effective publication?
f) Define Autecology.
g) Give two examples of succulent xerophytes.
h) Define Food chain.
i) What is Hydrosere?
j) Define Mortality.

Q2) Answer any two of the following : **[10]**

a) Describe cytology as data source for Taxonomy.
b) Give the general rules for coining of specific epithet.
c) Give the limitations of Bentham and Hookers system of classification.

Q3) Write short notes on any two of the following : **[10]**

a) Nudation
b) Importance of Ecology.
c) External adaptive features of hydrophytes.

P.T.O

Q4) Give distinguishing characters, Floral formula and Floral diagram of Family Liliaceae and Meliaceae. **[10]**

OR

What is ecosystem? Describe in detail the cropland ecosystem.

Total No. of Questions : 4]

SEAT No. :

P238

[Total No. of Pages : 2

[4117] - 108

S.Y. B.Sc.

BOTANY

BO - 212 : Fundamentals of Plant Physiology

(Paper - II) (51421) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) Attempt the following : **[10]**

a) What is plant physiology?
b) Define Base.
c) What is Osmosis?
d) Define plant growth.
e) What are long day plants?
f) What is hypertonic solution?
g) Define plasmolysis.
h) Write any two factors affecting water absorption.
i) Define salt absorption.
j) Write any two uses of antitranspirants.

Q2) Answer any two of the following : **[10]**

a) Explain Donnan equilibrium theory of salt absorption.
b) Give practical applications of Cytokinins.
c) Write role and deficiency symptoms of potassium.

Q3) Write notes on any two of the following : **[10]**

a) Cohesion theory of ascent of sap.
b) Factors affecting plant growth.
c) Role of water in plants life.

P.T.O

Q4) What is photoperiodism? Explain the classification of plants according to Photo period. **[10]**

OR

Define transpiration. Explain mechanism of opening and closing of stomata with the help of K^+ pump hypothesis.

Total No. of Questions : 4]

SEAT No. :

P248

[Total No. of Pages : 2

[4117] - 118

S.Y. B.Sc.

MICROBIOLOGY

MB - 212 : Microbial Genetics

(Paper - II) (51921) (2008 Pattern) (Sem. - I) (Theory)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) Answer the following: **[10]**

a) Draw the structure of guanine.

b) Define translation.

c) Write two examples of alkylating agents.

d) What is semiconservative mode of DNA replication?

e) _____ amino acid is encoded by only one codon.

f) Differentiate between nucleoside and nucleotide.

g) State the role of DNA gyrases.

h) B form of DNA has left handed helical sense. True / False.

i) What is linking number?

j) _____ is an example of base analogue.

i) uv

ii) acridine otange

iii) 5 - bromouracil

iv) HNO_2

P.T.O

Q2) Attempt <u>any two</u> of the following: **[10]**

a) Explain mutation by base pair substitution.

b) Diagramatically represent Avery and Macleod experiment.

c) Describe in brief dispersive mode of DNA replication.

Q3) Attempt <u>any two</u> of the following : **[10]**

a) Describe Replica plate technique.

b) Write a note on properties of genetic code.

c) What are Intercalators? Describe their action on DNA.

Q4) Attempt <u>any one</u> of the following : **[10]**

a) Explain the action of u.v on DNA and add a note on Photoreactivation.

OR

b) Diagramatically illustrate and explain in detail the B and Z form of DNA.

Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 119

S.Y. B.Sc.

PSYCHOLOGY

EP - 211 : Psychology of Adjustment

(Paper - I) (52011) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Draw the figures and diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in two or four sentences : **[16]**

a) Give the full form of DSM-V.

b) Define job stress.

c) What is marrital adjustment?

d) Define adjustment.

e) What is Divorce?

f) Define happiness.

g) Who is the founder of behaviorist approach?

h) What is obsessive - compulsive disorder?

Q2) Attempt any two of the following in eight or ten sentences : **[8]**

a) Explain Holland & Super model of career choice.

b) Explain the predictors of marrital success.

c) State psychoanalytical approach in brief.

Q3) Write short notes on any two of the following : **[8]**

a) Psychological tests for career decisions.

b) Roots of happiness.

c) Sexual harrasment.

P.T.O

Q4) Describe in detail the criteria of Abnormal behaviour. **[8]**

OR

Explain the scientific approach to behaviour, with reference to adjustment.

Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 120

S.Y. B.Sc.

PSYCHOLOGY

EP - 212 : Experimental Psychology

(Paper - II) (52021) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures and diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer in two or four sentences : **[16]**

a) Define insight learning.

b) What is reinforcement?

c) What is motion perception?

d) What is rhodopsin?

e) Define colour blindness.

f) State abstraction.

g) What is trial and error?

h) Define perception.

Q2) Attempt any two of the following in eight or ten sentences : **[8]**

a) Explain classical conditioning.

b) Describe general determinants of perception.

c) Explain retinal colour zones.

Q3) Write short notes on any two of the following : **[8]**

a) Visual acuity.

b) Generalization in conditioning.

c) Instrumental conditioning.

P.T.O

Q4) Discuss in detail, Monocular & binocular cues. **[8]**

OR

Describe the nature & determinants of thinking.

Total No. of Questions : 4]

SEAT No. : ____

P251

[Total No. of Pages : 3

[4117] - 121

S.Y. B.Sc.

STATISTICS

STT - 211 : Statistical Techniques - I

(Paper - I) (52111) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and statistical tables is allowed.***
4) ***Symbols and notation have their usual meaning.***

Q1) Attempt each of the following: **[1 Each]**

a) Choose the correct alternative in each of the following :

i) If X follows geometric distribution taking values 0, 1, 2, ... then its .....

A) mean > variance B) mean < variance

C) mean = variance D) mean = 2 variance

ii) If X follows N(5, 4) then P (X > 5) is .....

A) less than 0.5 B) greater than 0.5

C) equal to 0.5 D) equal to 0.75

iii) The regression planes coinside if .....

A) $|R|=0$ B) $|R|=1$

C) $|R|>0$ D) $|R|<0$

b) State whether each of the following statement is True or False : **[1 Each]**

i) Exponential distribution is not symmetric.

ii) Geometric distribution possesses lack of memory property.

iii) Multiple correlation coefficient lies between –1 and 1.

P.T.O

c) State the probability density function of normal distribution. **[1]**

d) State the formula for partial regression coefficient $b_{12.3}$. **[1]**

e) Define continuous random variable. **[1]**

f) State the additive property of negative binomial distribution. **[1]**

Q2) Attempt <u>any two</u> of the following :

a) Define exponential distribution. State its mean and variance. State the important properties of exponential distribution. If $X_1, X_2, ..., X_n$ are independent and identically distributed exponential random variables, state the probability distribution of $Y = X_1 + X_2 + ... + X_n$. **[5]**

b) Suppose that the life of T.V. set is exponential random variable with mean 1600 hours. What is the probability that the T.V. set will

i) Work up to 2400 hours?

ii) Work more than mean life? **[5]**

c) If $X \rightarrow N(2, 9)$ and $Y \rightarrow N(3, 16)$ are independent random variables, find $P(X > 2Y)$. **[5]**

Q3) Attempt <u>any two</u> of the following :

a) Define multiple correlation coefficient ($R_{1.23}$) and partial correlation coefficient ($r_{12.3}$). State the relation between $R_{1.23}$ and $r_{12.3}$. Interprete the cases $R_{1.23}$ equal to

i) 1

ii) 0. **[5]**

b) If $\overline{X}_1 = \overline{X}_2 = \overline{X}_3 = 0$, $\sigma_1 = \sigma_2 = \sigma_3 = 1$ and $r_{12} = r_{13} = r_{23} = r$, find the regression plane of X_1 on X_2 and X_3. Also find $R_{1.23}$ and $r_{12.3}$. **[5]**

c) If (X_1, X_2, X_3) follows multinomial distribution with parameters (10, 0.4, 0.4, 0.2); then find

i) $P(X_1 = 4, X_2 = 2, X_3 = 4)$

ii) $E(X_1)$

iii) $Var(X_1)$

iv) Corr (X_1, X_2) **[5]**

Q4) Attempt <u>any one</u> of the following:

a) i) If $X \rightarrow N(5, 1)$ find a, b, c such that

$P(-a < X - 5 < a) = 0.9$

$P(X - 5 < b) = 0.9$

$P(X - 5 > c) = 0.9$ **[6]**

ii) In a trivariate data, $r_{12} = 0.7$, $r_{13} = -0.8$, $r_{23} = 0.9$. Are these values consistent? **[4]**

b) i) If $(X, Y, Z) \rightarrow MN\left(8, \frac{1}{3}, \frac{1}{3}, \frac{1}{3}\right)$, state the marginal probability distribution of X. State the conditional distribution of X given Y = 5. Also state $E(X|Y = 5)$, $Var(X|Y = 5)$. **[6]**

ii) A fair coin is tossed till getting 5 heads. Find the probability that we need to toss the coin 10 times to get 5^{th} head at 10^{th} toss. **[4]**

Total No. of Questions : 4]

SEAT No. : ____

P252

[Total No. of Pages : 3

[4117] - 122

S.Y. B.Sc.

STATISTICAL TECHNIQUES

STT - 212 : Statistical Techniques - II

(Paper - II) (52121) (Sem. - I) (2008 Pattern)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:-

1) ***Attempt all questions.***
2) ***Figures to the right indicate full marks.***
3) ***Use of statistical tables is allowed.***
4) ***Use of scientific calculator is allowed.***

Q1) Attempt **each** of the following:

a) Choose the correct alternative in each of the following cases : **[1 Each]**

i) The number of samples of size 2 that can be drawn by SRSWOR from a population containing 5 observations is

A) 2^5 B) 10

C) 2 D) 5

ii) For a single sampling plan with N = 100, n = 20, c = 1. If ATI = 40 then the probability of rejecting the lot is

A) 0.25 B) 0.75

C) 0.1 D) 1

iii) In double sampling plan, $\{N, n_1, n_2, c_1, c_2\}$ with d_1, d_2 denote respectively the number of defectives in the first and second samples drawn, the decision of accepting the lot is taken on the basis of first sample when

A) $d_1 > c_2$ B) $d_1 > c_1$ and $d_2 < c_2$

C) $d_1 + d_2 > c_2$ D) $d_1 < c_1$

P.T.O

b) In each of the following cases, state whether the given statement is true or false : **[1 Each]**

i) The sample proportion is an unbiased estimator of population proportion under SRSWR.

ii) The nature of operating characteristic curve for a single sampling plan is non-decreasing.

iii) AOQ gives average outgoing quality of lot sent to the market.

c) State the formula of ATI for double sampling plan. **[1]**

d) State one real life situation where stratified random sampling is applicable. **[1]**

e) For a single sampling plan {N = 1000, n = 100, c = 1} find the probability of accepting the lot of quality 0.05. **[1]**

f) In a stratified random sampling with 2 strata the values of Ni and Si are as follows : **[1]**

Stratum Number	N i	Si
1	5000	4
2	3000	9

If total sample size is 1200, compute the sample sizes under optimum allocation.

Q2) Attempt **any two** of the following : **[5 Each]**

a) A sample of 200 families is to be drawn from a population consisting of 2500 families belonging to two towns A and B. The total number of families in each town, the information about $\bar{y}_{ni}$ and s_i of annual income (in Rs.) of the families in both the towns are as given below :

Stratum	Total number of families (Ni)	$\bar{y}_{ni}$	s_i	Stratum sample size (ni)
Town A	1500	100000	10	60
Town B	1000	150000	25	40
Town C	800	120000	15	30

Obtain the estimate of population mean and the estimate of its variance of under optimum allocation.

b) Explain the construction of OC curve in case of double sampling plan. Mention the uses of OC curve.

c) A random sample of 120 apples is selected from a consignment containing 2500 apples and 70 are found to be bad. Estimate the total number of bad apples in the consignment. Also estimate the standard error of the estimate.

Q3) Attempt **any two** of the following : **[5 Each]**

a) Define simple random sampling with replacement (SRSWR) and simple random sampling without replacement (SRSWOR) from a finite population. State the unbiased estimators of the population mean and its variance based on the above two methods.

b) Calculate AOQ for a double sampling plan :

$\{N = 1000, n_1 = 60, n_2 = 30, c_1 = 1, c_2 = 2\}$

Given that the lot quality is 0.02.

c) What is stratified random sampling? Give any one real life situation where stratified random sampling is an appropriate method of sampling. State the expression of an estimator of population mean and its standard error under stratified random sampling.

Q4) Attempt **any one** of the following:

a) i) From a lot consisting of 1000 items, a sample of size 80 is taken. If it contains 2 or less defectives, the lot is accepted, otherwise it is rejected. Compute the average total amount that is inspected (A.T.I.) under the above sampling plan. Assume that the submitted lot is of quality p = 0.05. **[5]**

ii) Show that in simple random sampling without replacement the probability that a specified unit of the population being selected at any given draw is equal to the probability that it is being selected at any given draw. **[5]**

b) i) Explain the terms AOQ, ATI for a single sampling plan. How to determine AOQL graphically? **[5]**

ii) Draw all possible samples of size 2 by the method of SRSWR from the population consisting of four observations

$\{a = 2, b = 3, c = 5, d = 6\}$. Further calculate the sample mean $\bar{x}$ for all the samples drawn and verify that the sample mean is unbiased estimator of population mean i.e. $E(\bar{x}) = \bar{X}$. **[5]**

Total No. of Questions : 4]

SEAT No. :

P255

[Total No. of Pages : 2

[4117]-125
S.Y. B.Sc.
DEFENCE AND STRATEGIC STUDIES
DS-101: International Relations and Foreign Policy
(Paper - I) (2008 Pattern) (52311) (Sem. - I)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 to 4 sentences each. **[16]**

a) Define 'International Relations'.

b) Define 'Foreign Policy'

c) Define 'National Power'.

d) What is 'National Interest'?

e) Introduce Foreign Ambassador.

f) Differentiate between unipolarity and bi-polarity.

g) What is meant by 'International System'?

h) What is 'Internationalism'?

Q2) Answer in 8 to 10 sentences (any two) : **[8]**

a) Write the meaning and nature of national interest.

b) Write the role of national power in foreign policy.

c) Introduce Foreign Policy.

Q3) Write short notes on (any two) : **[8]**

a) Idealist theory.

b) Realist theory.

c) Role of Military Power in National Power.

P.T.O.

Q4) Answer in 16 to 20 sentences (any one) : **[8]**

a) What are the types of National Interest? Explain.

b) Explain the determinants of Foreign Policy.

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Total No. of Questions : 4]

SEAT No. :

P256

[Total No. of Pages : 2

[4117]-126
S.Y. B.Sc. (Semester - I)
DEFENCE AND STRATEGIC STUDIES
DS-102: Elements of National Security
(Paper - II) (2008 Pattern) (52321)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 to 4 sentences each. **[16]**

a) Define Diplomacy.

b) Define 'Terrorism'.

c) What do you mean by 'Non-state actor'?

d) Explain the meaning of 'Research and development'.

e) Define Economic power.

f) Define 'Strategic Threats'.

g) Define National Security.

h) Explain the meaning of Sustainable development.

Q2) Answer in 8 to 10 sentences (any two) : **[8]**

a) Explain defence planning in India.

b) Discuss New perspectives on security.

c) Write a note on objectives of modern approach to National Defence.

Q3) Write short notes on (any two) : **[8]**

a) Role of Diplomacy in international Relations.

b) Nuclear Elements.

c) Concept of Nation.

P.T.O.

Q4) Answer in 16 to 20 sentences (any one) : **[8]**

a) Examine Threats to India's National Security.

b) Write a note on determinants of defence policy.

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Total No. of Questions : 4]

SEAT No. :

P257

[Total No. of Pages : 2

[4117]-127
S.Y. B.Sc. (Semester - I)
DEFENCE AND STRATEGIC STUDIES
DS-103: Geopolitics
(Paper - III) (2008 Pattern) (52331)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Answer in 2 to 4 sentences each. **[16]**

a) What do you mean by 'Geopolitics'?

b) Who was A.T. Mahan?

c) Define the term 'Border'.

d) Define the term 'Boundary'.

e) What is meant by 'line of Actual Control'?

f) Introduce 'Kuwait'.

g) Define the term 'Territorial water'.

h) What is meant by 'EEZ'?

Q2) Answer in 8 to 10 sentences (any two) : **[8]**

a) Write the application and utility of strategic minerals.

b) Write the strategic importance of Siachen Glacier.

c) Write the meaning and concept of land locked state.

Q3) Write short notes on (any two) : **[8]**

a) Economic Resources.

b) Basic Elements for creation of state.

c) Jammu and Kashmir.

P.T.O.

Q4) Answer in 16 to 20 sentences (any one) : **[8]**

a) Explain the functions of boundaries.

b) What geopolitical factors contributes to the determinants of sea power?

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Total No. of Questions : 4]

SEAT No. :

P258

[Total No. of Pages : 2

[4117]-128
S.Y. B.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV 201: Ecology & Ecosystem
(2008 Pattern) (Paper - I) (52411)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat and labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following in 1-2 lines each. **[10]**

a) Enlist any 2 energy flow models.

b) Name any two microorganisms involved in Denitrification process.

c) What is Biome?

d) What does 'absolute maximum' & 'realised minimum' carrying capacities refer to?

e) Who introduced the term ecosystem & when?

f) What is a Community?

g) State the difference between Intra and Interspecies relationship.

h) Define Demography.

i) What is meant by population fluctuation? Give any one factor responsible for it.

j) Define the term : Nucleation.

Q2) Write a short note on (Any two) : **[10]**

a) Hydrosere with diagram.

b) Phosphorus cycle with diagram.

c) Zonation in Marine Ecosystem with labelled diagram.

P.T.O.

Q3) Answer any two from the following : **[10]**

a) What is meant by limiting factor? Describe any 5 biotic & abiotic limiting factors each.

b) Describe the types of ecological succession with labelled diagram.

c) Explain Environmental heterogeneity with suitable examples. State it's significance.

Q4) Attempt any one of the following : **[10]**

a) Explain the structural and functional attributes of ecosystem in detail with examples of each.

b) Discuss any five population dynamics characteristic features.

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Total No. of Questions : 4]

SEAT No. :

P259

[Total No. of Pages : 2

[4117]-129
S.Y. B.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV 202: Hydrology
(Paper - II) (2008 Pattern) (52421)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat and labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following in 1-2 lines each. **[10]**

a) Define Magmatic water.

b) What is the average % salinity of saline & fresh water?

c) Define catchment area.

d) What is meant by artificial recharging?

e) Define Porosity & permeability.

f) Enlist any 2 quality criteria of water for drinking purpose.

g) What is meant by gray & black water?

h) Enumerate any 2 physical, chemical & biological properties each of water.

i) Define eutrophication.

j) Write any 2 health effects of Arsenic on man.

Q2) Write a short note on (Any two) : **[10]**

a) Ground water balance & methods of estimation.

b) Saline water intrusion in aquifers & its prevention.

c) Significance, scope & branches of hydrology.

P.T.O.

Q3) Answer any two from the following : **[10]**

a) What are aquifers? Describe the different types of aquifers with illustration.

b) Describe any one rainwater harvesting technique with diagram.

c) Describe any one ground water related problem with a suitable case study.

Q4) Attempt any one of the following : **[10]**

a) Give a detailed comparision between the chemical composition of river water & that of sea water. Specify the reasons for these differences.

b) Describe the effects of surface & ground water pollution on man & environment.

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Total No. of Questions : 4]

SEAT No. :

P260

[Total No. of Pages : 3

[4117] - 130
S.Y.B.Sc.
OPTIONAL ENGLISH
Enriching Oral and Written Communication in English
(53011) (Sem. - I) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any two of the following: **[10]**

a) Imagine that you have been asked to attend an interview for the post of an Assistant Manager in a reputed firm. List six ways in which you will prepare for the nonverbal part of your interaction at the interview.

b) What are the factors that disrupt upward communication? How can organizations promote upward communication?

c) Imagine that you have just been appointed as a lecturer in Chemistry. You have no experience of teaching and want to learn how to do your job well. Explain how horizontal communication can help you handle the situation.

Q2) Attempt any five of the following: **[10]**

a) Write two different meanings of the following words and use them in sentences (any one).

i) Case.

ii) Fine.

b) Use the following word in sentences, bringing out its literal and figurative meanings: boiling.

c) Fill in the blanks in the sentences below with the words in brackets starting with the prefixes re - , in - , un - , pre -

i) We helped the people ———— the town after the earthquake (build).

ii) The pain has become ————. (tolerable).

P.T.O.

d) Fill in the blanks choosing the correct alternative.

i) The builder decided to ———————— his contract with the company. (re - sign / renew).

ii) ———————— (press / click) on an icon to open a file on a computer.

e) Choose the correct synonym of the words from the list given below.

i) futile ii) mandatory.

(important, useless, compulsory, failure).

f) Differentiate between the two words and bring out their meanings in sentences. graceful, gracious.

Q3) Attempt any five of the following: **[10]**

a) Write four words belonging to the following lexical webs:

i) Examination.

ii) Cinema.

b) Choose the correct spelling from the following:

i) Millenium, Millennium, Millenuim.

ii) Occasion, Occassion, Ocasion.

c) Give meanings of the following phrases.

i) To look upto.

ii) To look into.

d) Make four words each using the letters in the following words.

i) International.

ii) Participation.

e) Write words starting with letter 'p' which are opposite or almost opposite in meaning to the following words.

i) Flawless.

ii) Gasp.

f) Rearrange the jumbled letters to form meaningful words.

i) Tnolsvnei.

ii) Meataur.

Q4) Attempt <u>any two</u> of the following: **[10]**

a) Write the phonetic transcription for the following words.

i) Gym. ii) Quench.

iii) Weave. iv) Smile. v) Scarf.

b) Place intonation marks in front of the appropriate syllables.

i) The child is hungry.

ii) Give her the money.

iii) Was the film good.

iv) The situation is not completely bad.

v) Will you water the plants.

c) Give appropriate responses for the following situations.

i) Making suggestions (formal).

ii) Asking for help (neutral).

iii) Greetings (informal).

iv) Closing a conversation (formal).

v) Introducing oneself (formal).

Total No. of Questions : 4]

SEAT No. :

P264

[Total No. of Pages : 2

[4117] - 134

S.Y. B.Sc. (Semester - I)

ARABIC

Functional Arabic

(2008 Pattern) (53711)

Time : 2 hrs. اللغة العربية Max. Marks: 40

1. Translate the passage into Eng/Urdu/Marathi any two of the following: 10

(الف) اَلشَّجَرُ كَبِيرٌ - اَلجَمَلُ طَوِيلٌ - اَلاِسلَامُ دِينٌ اَلقُرآنُ كِتَابٌ - لَا ذَالِكَ فَارِسِيٌّ - هَل ذَالِكَ عَرَبِيٌّ ؟ اَنَا وَلَدٌ - اَنتَ وَلَدٌ عَرَبِيٌّ - ؟ ذَالِكَ قَرِيٌّ - ذَالِكَ عَرَبِيٌّ - مَن ذَالِكَ ؟ هَذَا كَلبٌ - هَذَا ؟

(ب) هَذَا رَجُلٌ مُسلِمٌ - لَهُ خُلُقٌ طَيِّبٌ - فِي يَدِهِ كِتَابٌ - فِي يَدِهِ كِتَابٌ - وَفِي ذَالِكَ الكِتَابِ عَرَبِيٌّ - وَفِي ذَالِكَ الرَّجُلِ مِنهَاجٌ عَبدِيٌّ - ذَالِكَ الرَّجُلُ مَشغُولٌ بِالقِرَاءَةِ - هَذَا لِسَانٌ عَرَبِيٌّ - اَلعَرَبِيُّ لِسَانٌ قَدِيمٌ -

(ج) اَلوَلَدُ المُجتَهِدُ مَحبُوبٌ - لَهُ فَونٌ كَبِيرٌ وَهُوَ مَسرُورٌ فِي كُلِّ وَقتٍ - اَلوَقتُ عِندَهُ سَنَةٌ شَهِيرٌ - ذَالِكَ وَلَدٌ كَسلَانٌ - اَلوَلَدُ الكَسلَانُ مَذمُومٌ - هُوَ مَحزُونٌ - اَلوَقتُ عِندَهُ لَيسَ لِشَيءٍ -

P.T.O.

2. Define and illustrate any two of the following (10)

(١) الاعراب - (٢) حروف شمسي وقمري

(٣) اسم - فعل - حرف (Parts of Speech)

Q3) Translate into Arabic any five of the following : **[10]**

a) That car is beautiful.
b) There is a table in the room.
c) This school is good.
d) That bus is going to the School.
e) The boy is bright.
f) In the fridge there is an apple.
g) The student is going to the school.

Q4) Write in "Arabic terminology" any ten (10) of the following : **[10]**

a) Motion.
b) Gas.
c) Soft.
d) Hard.
e) Compound.
f) Result.
g) Filter.
h) Conical Flask.
i) Dropper.
j) Test tube.
k) Slide.
l) Bottle.
m) Beaker.
n) Hot
o) Cold.

✷✷✷

Total No. of Questions : 4]

SEAT No. :

P265

[Total No. of Pages : 2

[4117] - 135
S.Y. B.Sc. (Semester - I)
URDU GENERAL
(Paper - II) (2008 Pattern) (53811)

Time : 2 Hours] *[Max. Marks : 40*

نوٹ :- تمام سوالات لازمی ہیں
نشانات مساوی ہیں۔

I Q علامہ اقبال کو شاعرِ مشرق کیوں کہا جاتا ہے۔ (10)

یا

علامہ اقبال کی حیات و شخصیت پر جامع نوٹ لکھئے۔

II Q بانگِ درا کی خصوصیات بیان کیجئے۔ (10)

یا

کلامِ اقبال میں تشبیہات و استعارات پر روشنی ڈالئے۔

III Q کسی ایک نظم کا مرکزی خیال بیان کرتے ہوئے تشریح کیجئے (10)

۱- جگنو

۲- نیا شوالہ

۳- ترانۂ ہندی

P.T.O.

Q 17 دیئے گئے اشعار میں سے کوئی پانچ اشعار کی تشریح بحوالہ متن کیجئے۔
(10)

۱- اے ہمالہ! داستاں اس وقت کی کوئی سنا
مسکنِ آبائے انساں جب بنا دامن ترا

۲- گود میں کھیلتی ہیں اسکی ہزاروں ندیاں
گلشن ہے جن کے دم سے رشکِ جناں ہمارا

۳- یا شب کی سلطنت میں دن کا سفیر آیا
غربت میں آکے چمکا گمنام تھا وطن میں

۴- پتھر کی مورتوں میں سمجھا ہے تو خدا ہے
خاکِ وطن کا مجھ کو ہر ذرہ دیوتا ہے

۵- شورش سے بھاگتا ہوں دل ڈھونڈتا ہے میرا
ایسا سکوت جس پر تقریر بھی فدا ہو

۶- آزاد فکر سے ہوں عزلت میں دن گزاروں
دنیا کے غم کا دل سے کانٹا نکل گیا ہو۔

۷- گل کی کلی چٹک کر پیغام دے کسی کا
ساغر ذرا سا گویا مجھ کو جہاں نما ہو

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Total No. of Questions : 4]

SEAT No. :

P266

[Total No. of Pages : 1

[4117] - 136

S.Y.B.Sc. (Vocational)

INDUSTRIAL CHEMISTRY - I

VOC - 211 : Utilities and Unit Operations & Process Instrumentation

(Paper - I) (2008 Pattern) (55611) (Sem. - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following questions: **[16]**

a) What is drying?

b) Convert 15 psi into torr.

c) What is SI unit of density? Convert 127.2 gcm^{-3} into SI units.

d) What is secondary nucleation?

e) Why is Rankine scale called an absolute scale?

f) List the basic requirements for separation of components by distillation.

g) Convert 140 K into ^{o}C and ^{o}F.

h) Give four industrial uses of steam.

Q2) Attempt any two of the following: **[8]**

a) Explain the working of piezoelectric pressure tranducer.

b) Give the differences between evaporation and distillation.

c) Write a note on spray driers.

Q3) Attempt any two of the following: **[8]**

a) Describe the construction of an inclined manometer.

b) Explain the use of thermocouples in temperature measurements.

c) Distinguish between filter media and filter aids.

Q4) Explain the construction and working of a Mcleod gauge. **[8]**

OR

Discuss the principle and uses of fractional distillation.

Total No. of Questions : 4]

SEAT No. :

P267

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S.Y. B.Sc. (Vocational)

BIOTECHNOLOGY - I

VOC - Biotech - 211: Cell and Molecular Biology

(Paper - I) (2008 Pattern) (Sem. - I) (55711)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

Q1) Answer each of the following in 1-2 lines: **[10]**

a) Define: Polycistronic mRNA.

b) What is antiport?

c) Enlist any two functions of golgi complex.

d) Give the role of mRNA in a cell.

e) What are SSB proteins?

f) Give the name of radio isotope - routinely used for labelling of DNA molecule.

g) Define: cell differentiation.

h) Enlist the components of extracellular matrix of cell.

i) Give the chemical composition of ribosome.

j) What is the role of lysosome in cell?

Q2) Write short notes on any two of the following: **[10]**

a) Nucleosome structure.

b) Tight junctions.

c) Cell fractionation.

P.T.O.

Q3) Attempt any two of the following: **[10]**

a) Give an account of post translational modification of proteins.

b) Describe the process of nucleotide excision repair of DNA.

c) Explain the structure of mitochondria with diagram.

Q4) Define: Translation: Compare and contrast the process of translation in pro and eukaryotes. **[10]**

OR

Give an detail account of: "Cell Signaling by 'G' protein coupled receptors".

Total No. of Questions : 4]

SEAT No. :

P268

[Total No. of Pages : 2

[4117] - 138

S.Y. B.Sc. (Vocational)

PHOTOGRAPHY AND AUDIO - VISUAL PRODUCTION

Still Photography, Processing & Printing

(58011) (Paper - I) (2008 Pattern) (Sem. - I)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat and labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following in short: **[16]**

a) Explain how the depth of field is affected by various factors.

b) Explain the difference between the primary colours and the secondary colours with suitable examples.

c) How is the matrix metering mode useful for a photographer?

d) Mention two examples of artificial light and natural light each.

e) Explain the effect of white balance on a photographic image.

f) A telephoto lens is generally a slow lens. Comment.

g) A close up lens has a diopter number of 2. Find out its focal length.

h) How are faster shutter speeds useful in photography?

Q2) Attempt ANY TWO of the following: **[8]**

a) Draw a diagram and explain the concept of depth of focus. How can the depth of focus be controlled?

b) Discuss the use of skylight filter in photography.

c) Draw a flash curve and explain the information it provides.

P.T.O

Q3) Attempt ANY TWO of the following: **[8]**

a) Give suitable examples and compare the hard and the soft light sources.

b) Discuss the effect of over and under exposure on a photographic image.

c) What is skylight? Which filter is used to avoid its effect?

Q4) Attempt ANY ONE of the following: **[8]**

a) What is the angle of view of a camera lens? Classify the camera lenses on the basis of their angle of view. Discuss how a 'normal' lens is useful in photography.

b) Draw a diagram and show the construction of an electronic flash. Explain the function of each component.

Total No. of Questions : 4]

SEAT No. :

P269

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)
ELECTRONIC EQUIPMENT MAINTENANCE - I
VOC - EEM - 211 : Audio, Video & Office Equipments - A
(Paper - I) (Sem. - I) (2008 Pattern) (58111)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator/log table is allowed.***

Q1) Answer the following:

a) State applications of TV. **[2]**

b) What is need of interlace scanning. **[2]**

c) What is advantage of MP3 over regular audio files? **[2]**

d) Why is rotating head mechanism needed in VCR? **[2]**

e) What is audio sampling rate used for audio? **[1]**

f) State the need of AC bias in a tape recorder. **[1]**

g) State any two characteristics of a radio receiver. **[1]**

h) Give spectrum of FM wave. **[1]**

Q2) Answer any Two:

a) Explain the principle of disc recording and disc reproduction. **[4]**

b) Explain the working of AM receiver with the help of neat diagram. **[4]**

c) Draw the block diagram of PA system and explain its working. **[4]**

Q3) Answer any Two:

a) Describe the receiver principles in mobile phone. Comment on frequency usage. **[4]**

b) Explain the construction of colour picture tube. **[4]**

c) Explain the working of MP3 player. **[4]**

P.T.O

Q4) Attempt the following:

a) Explain the working of DVD player with the help of neat block diagram. **[6]**

b) Explain scanning & synchronization section of TV receiver. **[6]**

OR

a) Describe CATV in brief. **[6]**

b) Explain recording section of VCR in brief. **[6]**

Total No. of Questions : 4]

SEAT No. :

P270

[Total No. of Pages : 1

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S.Y. B.Sc. (Vocational)

COMPUTER HARDWARE & NETWORK ADMINISTRATION

Microprocessor & Interfacing Techniques

(Paper - I) (Sem. - I) (2008 Pattern) (58711)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following: **[4 x 1 = 4]**

i) Why PCI BUS architecture is most widely used in PC's?
ii) What is Full form of RTD?
iii) List Computer Based Design and Development tools.
iv) What are Alphanumeric Displays?

b) Attempt the following: **[4 x 2 = 8]**

i) What is size of Address BUS and Data BUS of 8086?
ii) Explain two features of USB.
iii) What is Transducer?
iv) What is function of DMA?

Q2) Attempt any two of the following: **[2 x 4 = 8]**

a) What is a Microprocessor? List Intel and Non-Intel Processors.
b) Explain Parallel Comparator ADC.
c) Write a note on DRAM.

Q3) Attempt any two of the following: **[2 x 4 = 8]**

a) Explain the operation of simple 4-bit DAC.
b) Draw block diagram of 8086 Microprocessor.
c) Draw schematic diagram to interface Matrix keyboard to Microprocessor.

Q4) Attempt any two of the following: **[2 x 6 = 12]**

a) List the different types of Key Switches. Explain any two in brief.
b) Draw block diagram of DMA controller and explain in brief.
c) What is Interrupt? Differentiate between Hardware and Software Interrupt.

Total No. of Questions : 4]

SEAT No. :

P271

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)

SEED TECHNOLOGY - I

Hybrid Seed Production

(Paper - I) (Sem. - I) (58911) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***

Q1) Attempt the following: **[10 x 1 = 10]**

a) Define apomixis.

b) What is cytoplasmic male sterility?

c) What do you mean by pollen viability?

d) Define gametocides.

e) Define roguing.

f) Enlist the types of pollination.

g) Give the isolation distance adopted for foundation seed production of maize.

h) What is inbreeding depression?

i) Define variety.

j) What is isolation?

Q2) Attempt any <u>two</u> of the following: **[2 x 5 = 10]**

a) Describe the genetic basis of heterosis.

b) Explain in detail hand emasculation.

c) Give an account of homomorphic self incompatibility.

P.T.O

Q3) Write short notes on (Any <u>two</u>) **[2 x 5 = 10]**

a) Compact area approaches.

b) Pollen storage.

c) Genetic male sterility.

Q4) Explain the detail procedure for hybrid seed production of cotton with respect to land requirement, isolation, planting, cultural practices, plant protection, roguing, harvesting and drying. **[10]**

OR

Describe in detail stepwise procedure for hybrid seed production of bajara.

Total No. of Questions : 4]

SEAT No. :

P272

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)

INDUSTRIAL MICROBIOLOGY - I

VOC-IND-MIC-211 : Bioreactors - Design and Operations

(Paper - I) (Sem. - I) (58211) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Draw neat labeled diagrams wherever necessary.***
5) ***Use of scientific calculators is allowed.***

Q1) Answer each sub-question in one or two lines; Fill in the blanks; State whether the statement is true or false. **[10]**

a) State whether the following statement is TRUE or FALSE

"The head-space in a fermenter is a minimum of 30% of its total working volume.

b) State whether the following statement is TRUE or FALSE

"Foam is usually formed when high carbohydrate containing media are used during fermentation.

c) State whether the following statement is TRUE or FALSE

Baffles are used to retard the flow of broth within the fermenter, if the agitation rpm is very high.

d) State whether the following statement is TRUE or FALSE

Exit gas from a fermenter consists usually of both residual air not utilized during aeration of the medium and the gases produced during microbial metabolism.

e) Justify the following statement

"Heating/cooling jackets are only suitable for small fermenters".

f) State two disadvantages of continuous sterilization over batch sterilization.

g) State any one reason the medium used with Hollow Fibre Reactors is should have low concentration of suspended solids.

P.T.O.

h) Explain what is "non-mechanical agitation".

i) What is meant by "X_{90} value" for fibrous filters.

j) Name any one product obtained using 'dual fermentation'.

Q2) Answer any two of the following: **[10]**

a) Draw a neat labeled diagram of an air-lift fermenter.

b) Draw a diagram of the probe used for monitoring pH during a fermentation process. Explain the principle of pH measurement using such a probe.

c) Draw a diagram of Rushton turbine and explain its fluid mixing pattern.

Q3) Answer any two of the following: **[10]**

a) Explain any one method of cell immobilization and its application(s) in the fermentation industry. Explain the advantage of using immobilized cells for a fermentation process.

b) Explain the need for cooling towers in a fermentation industry.

c) Draw the profile for extracellular product formation during a batch process. Explain how this profile differs from that in a continuous process.

Q4) Answer any one of the following: **[10]**

a) Describe in detail manufacturing of fermenter.

b) Explain measurement and control of any three process variables (parameters).

Total No. of Questions : 4]

SEAT No. :

P273

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S.Y. B.Sc. (Vocational)

INDUSTRIAL CHEMISTRY - II

VOC-212 : Inorganic Process Industries

(Paper - II) (Sem. - I) (55621) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams wherever necessary.***

Q1) Answer the following questions: **[16]**

a) What is flint glass?

b) Give the uses of aluminium alloys.

c) What is low setting cement?

d) Define pigments. Give example.

e) What is Cullet?

f) Write characteristics of glass?

g) Explain different uses of ceramics.

h) What are glass wool of fibre glass?

Q2) Attempt any two of the following: **[8]**

a) What is portland cement? Give its classification.

b) Why is glass called supercooled fluid?

c) Write a note on burning operation in portland cement manufacture.

P.T.O

Q3) Attempt any two of the following: **[8]**

a) Describe any two properties of refractory materials.

b) Discuss setting and hardening of cement.

c) Write a note on stray current corrosion.

Q4) Explain with a diagram the manufacture of cement by dry process. **[8]**

OR

Discuss the furnace used for glass melting.

Total No. of Questions : 4]

SEAT No. :

P274

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)

BIOTECHNOLOGY - II

VOC. Biotech - 212 : Recombinant DNA Technology and Bioinformatics

(Paper - II) (2008 Pattern) (Sem. - I) (55721)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right indicate full marks.*

Q1) Answer each of the following in 1 – 2 lines: **[10]**

a) What is r DNA?

b) What are restriction enzymes?

c) Give two examples of vectors used in rDNA technology.

d) What is Southern hybridization?

e) What is PCR?

f) Give function of DNA ligase.

g) What are shuttle vectors?

h) What is Proteomics?

i) Name the source of Tag polymerase enzyme.

j) What is transformation?

Q2) Write short notes on any two of the following: **[10]**

a) Genomics.

b) Site directed mutagenesis.

c) Northern hybridization.

P.T.O.

Q3) Attempt any two of the following: **[10]**

a) What are vectors? Explain desirable properties of plasmids to be used as cloning vectors.

b) Explain in brief any one method of DNA sequencing.

c) Describe electroporation technique of introducing rDNA into host cells.

Q4) Explain steps involved in the construction of rDNA and add a note applications of this technology. **[10]**

OR

What is rDNA technology? Describe the role of various enzymes used in this technology.

Total No. of Questions : 4]

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P275

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)

PHOTOGRAPHY AND AUDIO - VISUAL PRODUCTION

Principles of Acoustics and Sound for Media

(58021) (Paper - II) (Sem. - I) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat and labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following in brief: **[10]**

a) Draw a neat labelled diagram of a ribbon microphone.

b) Show that doubling the pressure gives an increase of 6dB SPL.

c) Define :

i) Reverberation time.

ii) Stereophony.

d) Give *any four* requirements of an auditorium.

e) Calculate the SPL for sound waves having effective pressure of $3N/m^2$ and the reference pressure $10^{-2}\ N/m^2$.

f) Give the Sabine and Eyrings formula.

g) Give *any two* characteristics each of loudspeakers and microphones.

h) Explain the term : Anechoic chamber.

i) Give the relation between a Bel and a Decibel.

j) Give the principle of working of a magnetic tape-recording system.

Q2) Answer <u>any two</u> of the following: **[10]**

a) With the help of a neat block diagram explain the construction and working of a condenser microphone.

b) Explain why reverberation time is taken as the time taken for I.L. to decrease by 60 dB. Calculate the reverberation time of an auditorium of 1000 cubic meters, having total absorption to 230 sabins.

c) Explain, with the help of a neat block diagram, the working of a PA system.

P.T.O

Q3) Answer any two the following: **[10]**

a) Explain with the help of a neat block diagram the construction and working of a direct radiator loudspeaker.

b) Draw a neat labelled block diagram to explain the construction and working of a disc recording system.

c) Draw a cross-over network and explain its objective with the help of the characteristic curves.

Q4) Answer any two the following: **[10]**

a) Explain:

i) Hi - Fi system.

ii) Synthetic reverberation.

b) Draw a neat labelled block diagram to explain the construction and working of a magnetic - tape sound reproduction system.

c) Explain with the help of a neat block diagram only the working of electret and crystal microphones.

Total No. of Questions : 4]

SEAT No. :

P276

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S.Y. B.Sc. (Vocational)

ELECTRONIC EQUIPMENT MAINTENANCE (EEM) - II

VOC - EEM - 212 : Maintenance Concepts and Repair II - A

(Paper - II) (Sem. - I) (2008 Pattern) (58121)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams are advised wherever necessary.***
4) ***Use of log tables and/or calculators is allowed.***

Q1) Answer all of the following:

a) What information can be extracted from a transistor databook? **[1]**

b) State one point of distinction between a test and a measuring instrument. **[1]**

c) What is preventive maintenance? Why is it advisable to follow preventive maintenance policy? **[1]**

d) What precaution is required to be taken while connecting input ground terminal of a CRO? **[1]**

e) Define Maintainability and state its significance. **[2]**

f) How does a system, designed with fail safe design, method, behave under fault condition? **[2]**

g) What happens, if an electric current flows through human body? How does laying rubber mat on the floor help in avoiding this hazard? What will happen if the mat is wet? **[2]**

h) List different types of hazards in an electronics laboratory/workshop. **[2]**

Q2) Answer <u>any two</u> of the following: **[4]**

a) List the stages of installation of any equipment and explain significance of each. State the importance of Installation Manual in the installation process.

P.T.O.

b) Define the terms: Quality and Quality Standard. Write in brief to state most important points regarding ISO 9000, ISO 9001 and ISO 9002. **[4]**

c) What precautions are required to be taken for avoiding/handling fire hazard situations? List different types of fire extinguishers along with their specific application area in a tabular form. **[4]**

Q3) Answer <u>any two</u> of the following:

a) Write a short note on importance of maintenance policy. **[4]**

b) Write a note on service manual and explain its importance as maintenance aid. **[4]**

c) List the typical faults experienced with a lead acid battery and the remedies corresponding to each fault. **[4]**

Q4) a) Write a detailed note on maintenance log book. **[6]**

b) What is Artificial Earth? List the different earthing methods and explain plate earthing method. **[6]**

OR

a) What tools are required for carrying out routine preventive maintenance of a PC? List typical problems encountered and precautions to be taken. **[6]**

b) Define the following terms and comment on the interrelationship between them: **[6]**

i) Failure.

ii) Failure Rate.

iii) Mean Time to Fail.

iv) Mean Time Between Failures.

v) Mean Time to Repair.

vi) Reliability.

Total No. of Questions : 4]

SEAT No. :

P277

[Total No. of Pages : 2

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S.Y. B.Sc. (Vocational)

COMPUTER HARDWARE & NETWORK ADMINISTRATION

Computer System Management - I

(Paper - II) (Sem. - I) (2008 Pattern) (58721)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following: **[4 x 1 = 4]**

i) Give one source that causes Magnetism problem in a PC.

ii) How many Serial Ports are there in a PC?

iii) What does RAM Stand for?

iv) Give one example of Logical Access Control.

b) Attempt the following: **[4 x 2 = 8]**

i) Give two utilities used to avoid Operating System failures.

ii) List any two STARTUP Problems.

iii) Give any Two environmental Contributors to PC failures.

iv) What is an AGP Card?

Q2) Attempt any Two of the following: **[2 x 4 = 8]**

a) What Safety Precautions Should one take during PC Trouble Shooting?

b) Explain the need of various Access Controls.

c) What are the Problems related to Keyboard and Mouse?

P.T.O

Q3) Attempt any Two of the following: **[2 x 4 = 8]**

a) Explain the importance of Disaster Recovery Plan.

b) What are the different Electrical factors that cause PC failures?

c) Discuss Problems related to :

1) Parallel Port.

2) USB Port.

Q4) Attempt any Two of the following: **[2 x 6 = 12]**

a) What are repair generated failures?

b) Explain the need of Backup Policies.

c) How will you do Preventive Maintenance of :

1) HDD.

2) System Software.

Total No. of Questions : 4]

SEAT No. :

P278

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S.Y. B.Sc. (Vocational)
SEED TECHNOLOGY - II
Seed Testing
(Paper - II) (Sem. - I) (58921) (2008 Pattern)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***

Q1) Attempt the following: **[10 x 1 = 10]**

a) Give any two importance of seed testing.

b) Write any one role of Central Seed Testing Laboratory.

c) Which equipment is used for testing the moisture content of seed?

d) Give any two principles of seed sampling.

e) Define Hard Seed in relation to seed germination.

f) Enlist types of seed samples.

g) Define gourd sample.

h) Enlist the methods used for testing seed moisture.

i) Give different methods employed in testing seed germination.

j) What is ODV?

Q2) Attempt any two of the following: **[2 x 5 = 10]**

a) Comment on International Seed Testing Association.

b) Explain staffing in relation to Seed Testing Laboratory.

c) Describe kinds of seed sampling.

P.T.O

Q3) Write notes on (Any two): **[2 x 5 = 10]**

a) Physical purity analysis.

b) Air oven method.

c) Procedure of seed vigour testing.

Q4) Define germination. Explain in detail the paper and sand methods used for germination testing. **[10]**

OR

Give precautions for registration of samples and comment on mixing and dividing samples.

Total No. of Questions : 4]

SEAT No. :

P279

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S.Y. B.Sc. (Vocational)

INDUSTRIAL MICROBIOLOGY - II (Theory Paper - II)

VOC - IND - MIC - 212 : Screening and Process Optimization

(2008 Pattern) (Sem. - I) (58221)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Draw neat labelled diagrams wherever necessary.***
5) ***Use of Scientific calculators is allowed.***

Q1) Answer each sub - question in one or two lines; Fill in the blanks; State whether the statement is true or false: **[10]**

a) Give the relationship between Del factor, temperature and time.

b) State one advantage of using in-line sensors.

c) Give the role of vegetable oil nutrient media used in fermentations.

d) Define 'precursor'.

e) Define feedback inhibition.

f) List any two raw materials used as carbon source in fermentation media.

g) List two important parameters of fermentation that require to be scaled up.

h) State whether the following statement is TRUE or FALSE

'Working cultures of fermentation production strains are normally in lyophilized state'.

i) Define 'inoculum'.

j) Fill in the blank and rewrite the following statement.

Biotin when added into a medium at low levels, for overproduction of glutamic acid modifies ———————————— of *Corynebacterium*.

P.T.O

Q2) Answer *any two* of the following: **[10]**

a) Describe the process of inoculum build - up.

b) Write a note on lyophilization as a method of culture preservation.

c) Define Screening. Describe the technique and importance of primary screening.

Q3) Answer *any two* of the following: **[10]**

a) Enlist the different methods measurement of diversity and explain any one.

b) What are the 3 levels of fermentation? Give the importance of any one level.

c) Describe the role of Thermistors in process control and give its working.

Q4) Answer *any one* of the following: **[10]**

a) What are revertant mutants? Describe an approach to use revertants for secondary metabolite production.

b) Discuss in detail the different methods of medium sterilization.

Total No. of Questions : 4] **SEAT No. :**

P335 **[Total No. of Pages : 2**

[4117]-201
S.Y. B.Sc. (Semester - II)
MATHEMATICS
MT-221 : Linear Algebra
(Paper - I) (2008 Pattern) (51112)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any five of the following : **[10]**

a) If $\bar{u} = (-1,1,2)$, $\bar{v} = (2,-1,2)$ are vectors in an Euclidean inner product space R^3, then find $< 2\bar{u} - 3\bar{v}, 3\bar{u} + \bar{v} >$.

b) Let W = $\{(x, y, z) \in R^3 / x = 0 \text{ or } y = 0\}$. Is W is subspace of R^3? Why?

c) Let R^4 be an Euclidean inner product space and if $\bar{u} = (-1,2,4,-1)$ and $\bar{v} = (4,1,-1,2) \in R^4$ then find $\text{Proj}_{\bar{v}}\bar{u}$.

d) Find eigen value of matrix $A = \begin{bmatrix} 10 & -9 \\ 4 & -2 \end{bmatrix}$ corresponding to eigen vector $X = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$.

e) Let T: $R^2 \to R^3$ be a linear transformation defined by $T(x, y_1) = (x, x + y, y)$. Find Kernel of T.

f) Determine whether the set {(1, –3, 7), (2, 0, –6), (3, –1, –1), (2, 4, 5)} is linearly independent.

g) Find the co-ordinate vector of $\bar{u} = (1,-1) \in R^2$ with respect to basis S = {(1, 1), (1, 3) } for R^2.

P.T.O.

Q2) Attempt <u>any two</u> of the following : **[10]**

a) Prove that the set S = $\{u_1, u_2, ..., u_n\}$ of vectors in the vectors space V is linearly dependent if and only if one of the vector in S is linear combination of remaining vectors.

b) Show that the set S = {(1, 0, 0), (2, 2, 0), (3, 3, 3)} forms a basis for R^3.

c) Determine basis and dimension for solution space of

$$x_1 + 2x_2 + 2x_3 - x_4 + 3x_5 = 0$$
$$3x_1 + 6x_2 + 8x_3 + x_4 + 5x_5 = 0$$
$$x_1 + 2x_2 + 3x_3 + x_4 + 5x_5 = 0$$

Q3) Attempt <u>any two</u> of the following : **[10]**

a) State and prove Cauchy Schwarz Inequality.

b) Let T: $R^3 \rightarrow R^3$ be a linear transformation defined by T $(x, y, z) = (x-2y, y + z, x + 2z)$. Find basis and dimensions of KerT.

c) For the matrix $A = \begin{bmatrix} 3 & 2 \\ -1 & 1 \end{bmatrix}$ Verify Cayley Hamilton's Theorem.

Q4) Attempt <u>any one</u> of the following : **[10]**

a) Explain Gram-Schmidt process for transforming a basis of an inner product space V to the orthogonal basis for V. Hence transform the basis S of R^2 to orthonormal basis set where S = {(1, –3), (2, 2)}.

b) Find eigen values of the matrix given below. Also find eigen vectors corresponding to the each eigen value.

$$A = \begin{bmatrix} -1 & 4 & -2 \\ -3 & 4 & 0 \\ -3 & 1 & 3 \end{bmatrix}$$

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Total No. of Questions : 4]

SEAT No. :

P336

[Total No. of Pages : 2

[4117]-202
S.Y. B.Sc. (Semester - II)
MATHEMATICS - II
MT-222 (A) : Vector Calculus
(Paper - II) (2008 Pattern) (51113) (511A2)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any five of the following : **[10]**

a) If $\bar{f}(t)=\begin{cases}\dfrac{t^3-8}{t^2-4}\bar{i}+t^2\bar{j} & ;\ t\neq 2\\ 3\bar{i}+4\bar{j} & ;\ t=2\end{cases}$

then show that $\bar{f}(t)$ is continuous at $t = 2$

b) Find the unit vector normal to the surface $x^3 + y^3 + 3xyz = 3$ at the point $(1, 2, -1)$.

c) If $\bar{r}=\dfrac{a}{2}(x+y)\bar{i}+\dfrac{b}{2}(x-y)\bar{j}+xy\bar{k}$ then

Find $\left[\dfrac{\partial\bar{r}}{\partial x}\quad\dfrac{\partial\bar{r}}{\partial y}\quad\dfrac{\partial^2\bar{r}}{\partial x\partial y}\right]$

d) If $\bar{r}=\cos wt\,\bar{i}+\sin wt\,\bar{j}$; *then* $\bar{r}\times\dot{\bar{r}}$ is a constant vector.

e) If $\hat{r}$ is a unit vector then prove that $\hat{r}\times d\hat{r}=\dfrac{\bar{r}\times d\bar{r}}{r^2}$

f) If $\bar{f}$ and $\bar{g}$ are irrotational then show that $\bar{f}\times\bar{g}$ is a solenoidal vector.

g) Evaluate $\iint_s \bar{r}.\hat{n}ds$; where s is closed surface.

P.T.O.

Q2) Attempt any two of the following : **[10]**

a) Prove that the necessary and sufficient condition for $\bar{f}(t)$ to have constant magnitude is $\bar{f}.\frac{d\bar{f}}{dt}=0.$

b) Find the equations of tangent plane and normal line to the surface $2xy^2z + xy + z = 7$ at the point (1, 1, 2) on it.

c) For the function $\phi(x,y)=\frac{x^3}{3}-xy^2$

Show that $|grad\,|\,grad\phi\,\|^2 = 4\,|\,grad\phi\,|$

Q3) Attempt any two of the following : **[10]**

a) If $\bar{u}$ is a vector function which possesses continuous second order partial derivatives then prove that div (curl $\bar{u}$) = 0.

b) Find the directional derivative of $\phi=3x-5y+2z$ at the point (2, 2, 1) in the direction of outward normal to the sphere $x^2 + y^2 + z^2 = 9$

c) If $\bar{f}=(2xz^3+6y)\bar{i}+(6x-2yz)\,\bar{j}+(3x^2z^2-y^2)\bar{k},$

prove that $\bar{f}$ is irrotational and find the scalar potential associated with $\bar{f}$.

Q4) Attempt any one of the following : **[10]**

a) State and prove Green's theorem in the plane.

b) i) Evaluate $\iiint_v \bar{\nabla}.\bar{\mathrm{F}}dv;$ where $\bar{\mathrm{F}}=(x^2-yz)\bar{i}+(y^2-zx)\,\bar{j}+(z^2-xy)\bar{k}$

and V is the region bounded by the rectangular parallelopiped $0\le x\le a; 0\le y\le b; 0\le z\le c.$

ii) Use Stoke's theorem to prove that

$\int_c(\sin z dx-\cos x dy+\sin y dz)=2;$ where c is the boundary of the rectangle $0\le x\le\pi;\ 0\le y\le 1;\ z=3.$

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Total No. of Questions : 4]

SEAT No. : ____

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[Total No. of Pages : 2

[4117] - 208

S.Y. B.Sc.

BOTANY

BO - 221 : Structural Botany

(Anatomy, Embryology and Palynology)

(Paper - I) (51412) (Sem. - II) (2008 Pattern) (Theory)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and labelled diagrams wherever necessary.***

Q1) Attempt the following : **[10]**

a) What is embryology?

b) Enlist the principles involved in distribution of mechanical tissues.

c) What is proximal pole of pollen grain?

d) Write any two functions of parenchyma?

e) What is bitegmic ovule?

f) Enlist elements of phloem.

g) What is porogamy?

h) Define megasporogenesis.

i) What is nuclear endosperm?

j) Define anatomy.

Q2) Attempt <u>any two</u> of the following: **[10]**

a) What is epidermis? Describe uniseriate and multiple epidermis with suitable examples.

b) Describe elements of xylem.

c) Give the types and functions of tapetum.

P.T.O.

Q3) Write short notes on <u>any two</u> of the following : **[10]**

a) Applications of palynology.

b) Causes of anomalous secondary growth.

c) Development of male gametophyte.

Q4) What is normal secondary growth? Describe process of normal secondary growth in stem. **[10]**

OR

Describe monosporic embryosac development with suitable example.

Total No. of Questions : 4]

SEAT No. : ____

P350

[Total No. of Pages : 2

[4117] - 216

S.Y. B.Sc.

GEOGRAPHY

Gg - 221 : Distribution, Development and Planning of Resources

(Paper - I) (51812) (Sem. - II) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams and sketches wherever necessary.***
4) ***Use of map stencil is allowed.***

Q1) Answer the following questions in two to three sentences each : **[10]**

a) Name any two iron ore producing states in India.

b) Name any four coal producing countries of the world.

c) State the types of coal.

d) Name any two nuclear power stations in India.

e) Give any two examples of densely populated regions of the world.

f) What is optimum population?

g) What are various uses of land resources?

h) State various economic uses of water resources.

i) What is the role of energy resources in economic development?

j) What do you mean by resource planning?

Q2) Write notes on the following (Any Two) : **[10]**

a) Types of iron ore.

b) Production of coal in India.

c) Importance of resource planning.

P.T.O

Q3) Answer the following questions (Any Two) : **[10]**

a) Give an account of world production of bauxite.

b) Explain the significance of solar energy in modern times.

c) Give an account of resource planning in India.

Q4) Give an account of population distribution in India. **[10]**

OR

Explain the role of mineral resources in economic development.

Total No. of Questions : 4]

SEAT No. : ____

P351

[Total No. of Pages : 2

[4117] - 217

S.Y. B.Sc.

GEOGRAPHY

Gg - 222 : Surface Water And Ground Water Hydrology

(Paper - II) (51822) (Sem. - II) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagrams and sketches wherever necessary.***
4) ***Use of map stencil is allowed.***

Q1) Answer the following questions in two to three sentences each : **[10]**

a) Define transpiration.

b) What is hydrology?

c) What do you mean by run off?

d) What is meant by stream flow?

e) Define flood.

f) What is saltwater intrusion?

g) Write any two effects of urbanisation on run off.

h) Write uses of rational method of peak flow for urban areas.

i) What is meant by urban hydrology?

j) What do you mean by groundwater basin development?

Q2) Write short notes on the following (Any Two) : **[10]**

a) Causes of flood.

b) Evaporation.

c) Approaches to urban hydrology.

P.T.O

Q3) Answer the following questions (Any Two) : **[10]**

a) Explain the physical processes of snowmelt.

b) Describe the general characteristics of groundwater hydrology.

c) Describe the Storm Water Management Model.

Q4) Give detailed explanation of subsurface distribution of water. **[10]**

OR

Define evapotranspiration. Explain the concept of potential evapotranspiration.

Total No. of Questions : 4] **SEAT No. :**

P352 **[Total No. of Pages : 2**

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S.Y. B.Sc.

MICROBIOLOGY

MB - 221 : Bacterial Systematics and Analytical Microbiology.

(51912) (Paper - I) (Sem. - II) (2008 Pattern)

Time :2 Hours] ***[Max. Marks :40***

Instructions to the candidates:-

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labelled diagrams wherever necessary.***
4) ***Use of calculators, log tables & statistical table is allowed.***
5) ***Use graph paper if necessary.***

Q1) Attempt the following : **[10]**

a) Define chemotaxonomy.

b) Write the formula for determination of G + C content in bacteria.

c) $\frac{d}{dx}(\log x) = ...$

d) Find the value of $\log_2 16$.

e) State true or false; species is considered as the basic unit of classification.

f) Bergey's manuval of systematic bacteriology is made up of ..... volumes.

i) 2 ii) 4

iii) 6 iv) 8

g) Calculate arithmatic mean of the following data 40, 50, 55, 78, 58, 60, 73, 35, 43, 48.

h) Sample must always be a true representative of the whole population. T/F.

i) The square of std. deviation is variance. T/F.

j) Frequency of discrete variable can be represented by

a) Line diagram b) Bar diagram

c) None of them (a & b) d) Both of them (a & b).

P.T.O

Q2) Attempt <u>any two</u> of the following : **[10]**

a) Describe standard procedure used in Numerical taxonomy.

b) Draw graph of following linear equation $x + 2y < 3$, $x > 0$, $y > 0$.

c) Find the range of following frequency distribution.

Class	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	03	05	10	20	12	06	03	01

Q3) Attempt the following (any two) : **[10]**

a) Evaluate; $\int (2x+1)^2 dx$.

b) Draw a Pie diagram for the following data, relating to standard plate count of bacteria of different soil samples in Maharashtra in the year 2009 - 2010.

Soil Type	Sandy	Clay	Loam	Humus	Saline	
SPC CFU/gm x 10^6	40	130	192	250	53	

c) What is DNA hybridization? Describe it's role in bacterial classification.

Q4) Attempt the following (Any two) : **[10]**

a) Describe 16 SrRNA as a tool for classification of bacteria.

b) Comment on Chemotaxonomy based on cytochrome composition.

c) Calculate the standard deviation for the following data.

22, 22, 20, 24, 16, 17, 18, 19, 21, 21.

Total No. of Questions : 4]

SEAT No. :

P367

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[4117]-235

S.Y. B.Sc. (Sem. - II)

ARABIC (Functional)

(2008 Pattern) (53712)

Time :2 Hours] *[Max. Marks :40*

Q.I. Translate into English or Urdu or Marathi any Two of the following Passages: (10)

(الف) اَلْأَدَبُ وَاجِبٌ - هَلْ ذٰلِكَ قُرْآنٌ - ذٰلِكَ الرَّجُلُ مَشْغُوْلٌ بِالْقِرَاءَةِ - هٰذَا رَجُلٌ مُسْلِمٌ - لَهُ خُلُقٌ طَيِّبٌ - اَلْعَرَبِيَّةُ لِسَانٌ قَدِيْمٌ - اَللَّعِبُ ضَرُوْرِيٌّ - اَلْوَلَدُ الْمُجْتَهِدُ مَحْبُوْبٌ لَهُ فَوْزٌ كَبِيْرٌ - مَاهٰذَا؟

(ب) فَهُوَ مَسْرُوْرٌ فِيْ كُلِّ وَقْتٍ - اَلْوَقْتُ عِنْدَهُ شَيْءٌ ثَمِيْنٌ - ذٰلِكَ وَلَدٌ كَسْلَانُ - اَلْوَلَدُ الْكَسْلَانُ مَذْمُوْمٌ - هُوَ مَحْزُوْنٌ - وَفِيْ ذٰلِكَ الْكِتَابِ مِنْهَاجٌ جَدِيْدٌ - اَلْكُرْسِيُّ عَلَى الْأَرْضِ - اَلسَّمَكُ فِي الْمَاءِ - ذٰلِكَ جَمِيْلٌ - مَاذَا لِكَ؟ اَلْعِلْمُ مُفِيْدٌ -

P.T.O.

(ج) هٰذَا الرَّسْمُ جَمِيلٌ جِدًّا - فِي الرَّسْمِ
قَفَصٌ - فِي الْقَفَصِ طَائِرٌ - هُوَ جَمِيلٌ جِدًّا -
ذٰلِكَ الْقِطُّ كَبِيرٌ وَهُوَ أَبْيَضُ - ذٰلِكَ الطَّائِرُ
غُرَابٌ وَهُوَ أَسْوَدُ - أَنَا جَالِسٌ عَلَى
الْكُرْسِيِّ - وَهُوَ وَاقِفٌ عَلَى الْأَرْضِ -

Q.2 Translate and Explain any Five couplets of the following: (10)

(١) كِتَابِي! أَنْتَ الصَّدِيقُ الْوَفِيُّ
وَأَنْتَ الْمُعَلِّمُ وَالْمُرْشِدُ

(٢) بِنُورِكَ أَسْعَى لِنَيْلِ الْكَمَالِ
وَفِي دَرَجَاتِ الْعُلَا أَصْعَدُ

(٣) فَأَنْتَ رَفِيقِي فِي وَحْدَتِي
إِذَا مَا طَلَبْتُكَ لَا تَبْعُدُ

(٤) إِنَّنِي فِي حُسْنِ شَكْلِي
لَسْتُ مَحْبُوبًا كَحُبِّكَ

(٥) اُنْظُرِي مِنِّي جَمَالاً
زَادَتْهُ لَوْنٌ عَجِيبُ

(٦) اِنَّ حُسْنَ الشَّكْلِ هٰذَا
خُدْعَةٌ تَسْتُرُ شَرّاً

(٧) كُلُّ خَدَّاعٍ ذَمِيمٌ
عِنْدَ أَهْلِ الأَرْضِ طُرّاً

Q.3. Answer in Arabic any five of the following:- (10)

(١) مَتَى اِمْتِحَانُكَ ؟ (٢) أَيْنَ هُوَ ؟
(٣) مَا لَوْنُ الْبَنَفْسَجِ ؟ (٤) مَنْ نَبِيُّكَ ؟
(٥) هَلْ أُخْتُكَ كَبِيرَةٌ ؟ (٦) كَيْفَ الزَّهْرُ ؟
(٧) أَيْنَ الْكُرْسِيُّ ؟ (٨) مَا هٰذَا ؟

Q.4. Write the Letter in Arabic to your father (10)

اُكْتُبِ الرِّسَالَةَ فِي الْعَرَبِيَّةِ إِلَى أَبِيكَ

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Total No. of Questions : 4]

SEAT No. :

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[Total No. of Pages : 1

[4117]-236

S.Y. B.Sc. (Semester - II)

URDU GENERAL

(2008 Pattern) (Paper - II) (53812)

Time
2 Hours

Marks
40

نوٹ:تمام سوالات لازمی ہیں۔

Q I ہر ہم جماعت کے افسانوں کے کیا خصوصیات ہیں؟ (10)

Q II افسانے کے اجزائے ترکیبی کا تفصیل سے جائزہ لیجیے (10)

Q III ذیل میں سے کسی دو کردار کا جائزہ لیجیے۔ (10)

۱- نبی دھر ۲- آنندی ۳- نصیر ۴- شاکرہ

Q IV مندرجہ ذیل اصطلاحات کا اردو میں ترجمہ کیجیے۔ (10)
(کوئی دس)

Boiling point ۱	Molecular weight ۹
Atomic weight 2	Biomass ۱۰
Freezing point 3	Conduction ۱۱
Seasonal wind 4	Radiation ۱۲
Micro organism 5	Haemophilia ۱۳
Decomposition 6	
Pesticide 7	
Convention 8	

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Total No. of Questions : 4]

SEAT No. :

P378

[Total No. of Pages : 2

[4117]-247

S.Y. B.Sc. (Vocational)

ELECTRONIC EQUIPMENT & MAINTENANCE (EEM)

VOC-EEM-222: Maintenance and Repair of Audio, Video, Office and Communication Equipment

(Paper - II) (2008 Pattern) (Semester - II) (58122)

Time :2 Hours] *[Max. Marks :40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of log tables and calculators is allowed.***

Q1) a) Attempt all of the following **[1mark each]**

i) What is the voltage of battery in a mobile phone?

ii) What is 'confetti' in colour TV?

iii) What is the cause of non-linear distortion in FM receiver output?

iv) What is the cause of the fault in case of a cassette tape recorder: No output on playback, no recording, no erase.

b) Comment: **[2 marks each]**

i) If there is loss of vacuum then picture tube should be replaced.

ii) Special equipment is required for alignment of TV receivers.

c) Explain the following **[2 marks each]**

i) Lint free cloth should be used for cleaning video heads.

ii) Precaution required to be taken while working with colour picture tube.

Q2) Answer any two : **[4 marks each]**

a) Describe trouble shooting procedure for an audio cassette recorder-player.

b) Describe the common faults and their remedies in a PA system.

c) State the need for 'AGC'. Explain the faults in diode detector and AGC circuits.

P.T.O.

Q3) Answer any two : **[4 marks each]**

a) Explain the faults in picture and sound sections of a TV receiver and the likely causes behind these faults.

b) What is a 'Pattern Generator'? Why is it needed? State the different types of patterns.

c) Explain typical faults in a dot matrix printer.

Q4) Answer any two : **[6 marks each]**

a) Explain various faults in a mobile phone.

b) What are the common faults in a DVD player? How can these be corrected?

c) Write short notes on :

i) Faults in TV antenna and feeder.

ii) Requirements of a PA system.

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Total No. of Questions : 4]

SEAT No. :

P379

[Total No. of Pages : 2

[4117] - 249

S.Y. B.Sc. (Vocational)

SEED TECHNOLOGY

Seed Quality Control

(2008 Pattern) (Paper - II) (Sem. - II) (58922)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat and labeled diagrams wherever necessary.***

Q1) Attempt the following: **[10 x 1 = 10]**

a) Give any one concept of seed quality.

b) What is nucleus seed?

c) Write any two objectives of seed certification agency.

d) Give any two general principles of field inspection.

e) Define isolation distance.

f) What are the types of seed legislation?

g) Write any two responsibilities of seed inspector.

h) How many members comprise a central seed certification board?

i) What is the maximum period of a member on central seed committee?

j) Give any two state seed certification agencies.

Q2) Attempt any two of the following: **[2 x 5 = 10]**

a) Describe any one type of seed legislation.

b) Write an account on central seed testing laboratory.

c) Explain the powers of seed inspector.

P.T.O.

Q3) Write notes on (Any Two): **[2 x 5 = 10]**

a) Seed certification agency and its organization.

b) Duties of seed inspector.

c) Objectives of field inspection.

Q4) Describe in detail minimum seed certification standards. **[10]**

OR

Give an account of techniques employed in field inspection with suitable example.

Total No. of Questions : 4]

SEAT No.:

P637

[Total No. of Pages : 2

[4117]-241

S.Y. B.Sc. (Vocational)

COMPUTER HARDWARE AND NETWORK ADMINISTRATION

Microprocessor & Interfacing Techniques

(Paper - I) (Sem. - II) (2008 Pattern) (58712)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following : **[4 × 1 = 4]**

i) What is Plotter?

ii) Write full form of MAN.

iii) List different types of Controllers used in PC.

iv) State two applications of Card reader.

b) Attempt the following : **[4 × 2 = 8]**

i) What is Flash BIOS?

ii) List the different types of Mouse available.

iii) State atleast two standard Protocols used in Wireless communication.

iv) What is full form of DVD? What is its storage capacity?

Q2) Attempt Any Two of the following : **[2 × 4 = 8]**

a) What is Multimedia PC? State minimum requirement for Multimedia PC.

b) Describe computer system Peripherals in brief.

c) Describe Local Area Network (LAN) in brief.

Q3) Attempt Any Two of the following : **[2 × 4 = 8]**

a) Explain Disk Drive Controller with the help of block diagram.

b) Explain the different types of Printer and their advantages and disadvantages.

c) Write a note on serial data communication protocols.

P.T.O.

Q4) Attempt Any Two of the following : **[2 × 6 = 12]**

a) Explain the ways by using which the performance of devices and interfaces can be echanced.

b) List different storage devices with the storage media they use. Describe their typical features.

c) Explain the concept of speech synthesis along with its typical application.

Total No. of Questions : 4]

SEAT No.:

P638

[Total No. of Pages : 2

[4117]-248

S.Y. B.Sc. (Vocational)

COMPUTER HARDWARE AND NETWORK ADMINISTRATION

Computer System Management - II

(Paper - II) (Sem. - II) (2008 Pattern) (58722)

Time : 2 Hours] *[Max. Marks : 40*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) a) Attempt the following : **[4 × 1 = 4]**

i) What is a Software?

ii) What is a Client Server Network?

iii) State any one Role of a System Administrator.

iv) Give one Use of a Blue Tooth Device in a Laptop.

b) Attempt the following : **[4 × 2 = 8]**

i) What does DRP stand for?

ii) Give any Two Types of Keyboard.

iii) Give one application of Each :

1) UPS.
2) ROUTER.

iv) List any Two Network Operating System.

Q2) Attempt Any Two of the following : **[2 × 4 = 8]**

a) What are the various advantages of a Wireless Network?

b) What is a Change Process?

c) What Precautions should one take during Storage of Storage Media?

Q3) Attempt Any Two of the following : **[2 × 4 = 8]**

a) Explain the importance of Network Resource Sharing.

b) Write a note on 'Need of Upgradation'.

c) Name any four Software utilities and their use.

P.T.O.

Q4) Attempt Any Two of the following : **[2 × 6 = 12]**

a) Explain the importance of Roles and Responsibilities of an user while implementing SOD.

b) Give Steps to Install a USB Printer on WinXP Desktop.

c) List out the various Accessories required for a PC. Give one application of Each.

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