

Handwritten signature and circled number 1

(4)

(b) Define any *one* of the following giving suitable examples :

- (i) Alliteration
- (ii) Personification. 6 marks

(c) Give phonemic transcription of any *five* words :

- (i) Nature (ii) Eternal (iii) Prosper
- (iv) Reason (v) Reign (vi) World
- (vii) Company (viii) Awake. 5 marks

or

(For blind candidates only)

Give antonyms for the following words : (Do any *five*).

- (i) Rough (ii) Wise (iii) Rustic
- (iv) Presence (v) Outworn (vi) Empty
- (vii) Tender (viii) Fresh.

(d) Write synonyms of any *four* words :

- (i) Lovely (ii) Rough (iii) Prey
- (iv) Forbade (v) Tireless (vi) Widenning. 4 marks

5. Write an essay on any *one* of the following in about 300 words :

- (i) Drug addiction
- (ii) Rising prices
- (iii) Influence of modern technology
- (iv) Youth and politics. 12 marks

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GSM / D-17
ENGLISH

Time allowed : 3 hours]

[Maximum marks : 80

Note : All questions are compulsory.

1. Explain the following stanza with reference to the context :

Shall I compare thee to a summer's day ?

Thou art more lovely and more temperate ;

Rough winds do shake the darling buds of May.

And summer's lease hath all too short a date :

or

Where the mind is without fear and the head is held high ;

Where knowledge is free :

Where the world has not been broken up into fragments by

narrow domestic walls.

8 marks

2. (a) Answer any six of the following questions in a word/ phrase/sentence :

(i) Name the writer of the poem 'Know Then Thyself'.

(ii) Explain the line 'the paths of glory lead but to the grave.'

(iii) Why does the poet refer to the urn as 'cold pastoral' ?

(iv) Whose statue did Claus of Innsbruck cast in bronze for the Duke ?

(v) How does Yeats nostalgically recall his beloved ?

(vi) How is the 'World broken by narrow domestic walls' ?

(2)

- (vii) Why are the bangle sellers going to the temple fair ?
- (viii) What makes the woman uncomfortable in 'Another Woman' ? 6 marks
- (b) Answer any two of the following questions in about 100 words each :
- (i) Discuss the development of the theme of transience and permanence in the poem 'Ode on a Grecian Urn'.
- (ii) Comment on the title of the poem 'When You Are Old'.
- (iii) Attempt a character-sketch of the Duchess from your reading of 'My Last Duchess'. 6+6=12

3. Answer the following in about 200 words :

'The World Is Too much With Us' is a criticism of life in this modern mechanical world. Discuss.

or

Explain the beauty and significance of bangles as brought out by the poet in his poem 'The Bangle Sellers'. 12 marks

4. (a) Attempt any 15 out of the following :

Choose the correct option to complete the sentence

- (i) I dislike _____ lies. (telling, to tell)
- (ii) Your future depends on your _____ hard.
(to work, working)
- (iii) This table is worth _____. (to buy, buying)
- (iv) His aim was _____ good marks. (getting, to get)

(3)

Fill in the blanks with suitable prepositions :

- (v) How did you come _____ this ring ?
- (vi) She is blind _____ one eye.
- (vii) I returned from Delhi _____ a month.
- (viii) The river abounds _____ fish.

Identify and underline the main clause and subordinate clause in the sentences given below.

- (ix) He lost the book that I had given him.
- (x) I like the students who work hard.
- (xi) Listen to what your teacher says.
- (xii) He fulfilled his promise that he would help me.

Fill in the blanks by using 'verb' given in brackets :

- (xiii) Mohan _____ his work. (do)
- (xiv) The parents _____ there baby Mahesh. (name)
- (xv) My father _____ a new pen for me. (buy)
- (xvi) She _____ very fat. (grow)

Combine the following sets of simple sentences using the conjunctions given in brackets :

- (xvii) The box is too heavy. No one can lift it.
(too to)
- (xviii) Ramesh is very rich. He is a miser. (although)
- (xix) The sum is very difficult. We cannot solve it.
(so that) 15 marks
- (xx) She is good, she is beautiful. (as as)

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GSM/D-17

HINDI (Compulsory)

Time allowed : 3 hours]

[Maximum marks : 80

नोट : सभी प्रश्न करने हैं।

1. निम्नलिखित पद्यांश में से दो की सप्रसंग व्याख्या कीजिए :

(i) सखि, वे मुझसे कहकर जाते,

कह, तो क्या मुझको वे अपनी पथ-बाधा ही पाते ?

मुझको बहुत उन्हींने माना,

फिर क्या पूरा पहचाना ?

मैंने मुख्य उसी को माना

जो वे मन में लाते।

सखि, वे मझसे कहकर जाते।

(ii) अरुण ! यह मधुमय देश हमारा।

जहाँ पहुँच अनजान क्षितिज को मिलता एक सहारा।

सरस तामरस गर्भ विभा पर, नाच रही तरु शिखा मनोहर,

छिटका जीवन-हरियाली पर मंगल कुमकुम सारा।

(iii) स्नेह निर्झर बह गया है,

रेत ज्यों तन रह गया है,

आम की यह डाल जो सूखी दिखी,

कह रही है “अब यहाँ” पिक या शिखी”

नहीं आते, पंक्ति में वह हैं लिखी

नहीं जिसका अर्थ

जीवन ढह गया।

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[P.T.O.]

(2)

- (iv) देने स्वर यदि मुझे विधाता
अपने पतझर के सपनों का
मैं भी जग को गीत सुनाता
गा-गा कर बह रही निर्झरी,
पाटल मूक खड़ा तट पर है।
गीत, अगीत कौन सुन्दर है।

2×6=12

2. अयोध्यासिंह उपाध्याय हरिऔध अथवा रामधारी सिंह दिनकर का साहित्यिक परिचय दीजिए।
8

3. निम्नलिखित में से चार प्रश्नों के उत्तर दीजिए :

- (i) भैरवार्णशरण गुप्त के काव्य का प्रकृति चित्रण
(ii) जयशंकर प्रसाद के काव्य की विशेषताएँ
(iii) निराला के काव्य की विशेषताएँ
(iv) दिनकर के काव्य की भाषा
(v) महादेवी वर्मा के काव्य की विशेषताएँ
(vi) भारत भूषण अग्रवाल के काव्य की विशेषताएँ।

4×4=16

4. निम्नलिखित में से किसी दो प्रश्नों के उत्तर दीजिए :

- (i) रीतिकालीन हिन्दी कविता की पृष्ठभूमि का विवेचन कीजिए।
(ii) रीतिकाल के नामकरण की सार्थकता का वर्णन कीजिए।
(iii) रीतिवद्ध काव्य की विशेषताएँ लिखिए।
(iv) रीतिमुक्त काव्य की विशेषताएँ लिखिए।

2×8=16

(3)

5. निम्नलिखित प्रश्नों में से दो के उत्तर 150 शब्दों तक दीजिए :

- (i) रीतिकाल को कलाकाल क्यों कहा जाता है ?
(ii) रीतिसिद्ध काव्य का सीमित परिचय दीजिए।
(iii) रीतिकाल की भक्ति-भावना
(iv) रीतिकाल के कवि विहारी।

2×5=10

6. निम्नलिखित प्रश्नों में से दो के उत्तर दीजिए :

- (i) कम्प्यूटर की महत्ता पर प्रकाश डालिए।
(ii) ई-मेल से क्या अभिप्राय है, इसे कैसे प्रेषित किया जाता है ?
(iii) इण्टरनेट की उपयोगिता पर प्रकाश डालिए।
(iv) मशीनी अनुवाद पर विस्तारपूर्वक लिखिए।

2×5=10

7. वस्तुनिष्ठ प्रश्नों के उत्तर दीजिए :

- (i) 'सुदामा' कविता किसकी है ?
(ii) 'मधुमय देश' कविता किसकी है ?
(iii) 'दीपावाहिनी वर दे' कविता किसकी है ?
(iv) रीतिवद्ध काव्य के दो कवियों के नाम लिखिए।
(v) 'रामचन्द्रिका' रचना किसकी है ?
(vi) प्रयोजनमूलक हिन्दी का अभिप्राय क्या है ?
(vii) आंकड़ा संसाधन क्या है ?
(viii) विहारी की भक्ति भावना का दोहा लिखिए।

8×1=8

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GSM / D-17
HINDI ELECTIVE

Time allowed : 3 hours

[Maximum marks : 80]

नोट : सभी प्रश्नों के उत्तर अनिवार्य हैं।

1. किन्हीं दो काव्यांशों की सप्रसंग व्याख्या कीजिए : 6×2=12

(क) इस विकल वेदना को ले

किसने सुख को ललकारा

वह एक अबोध अकिञ्चन

बेसुध चैतन्य हमारा।

(ख) हैंस उठते पल में आर्द्र नयन

धुल जाता ओठों से विषद,

छा जा जाता जीवन में वसन्त

लुट जाता चिर संचित विराग;

आँखें देती सर्वस्व वार !

(ग) भूखा देख तुझे गर उमड़े आँसू नयनों में जग-जन के,

तो तू कह दे; नहीं चाहिए हमको रोने वाले जनखे

तेरी भूख; असंस्कृति तेरी, यदि न उभाड़ सके क्रोधानल

तो फिर, समझूँगा कि हो गयी सारी दुनिया कायर निर्बल

(घ) साम्य की वह रश्मि स्निग्ध, उदार

कब खिलेगी, कब खिलेगी विश्व में भगवान ?

कब सुकोमल ज्योति से अभिसिक्त,

हो, सरस होंगे जली-सुखी रसा के प्राण ?

2. सुमित्रानन्दन पंत अथवा महादेवी वर्मा का साहित्यिक परिचय दीजिए : 7×1=7

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[Turnover]

(2)

3. किन्हीं दो प्रश्नों के उत्तर 250 शब्दों में दीजिए : $4 \times 2 = 8$
- (क) 'भारत' कविता का सन्देश स्पष्ट कीजिए।
- (ख) भारतमाता को कवि ने ग्रामवासिनी क्यों कहा है ?
- (ग) 'विलव गायन' कविता में अभिव्यक्त कवि की भावनाओं को अपने शब्दों में लिखिए।
- (घ) 'अभिनव मनुष्य' कविता का उद्देश्य स्पष्ट कीजिए।
4. किन्हीं दो गद्यांशों की सप्रसंग व्याख्या कीजिए : $6 \times 2 = 12$
- (क) "तमाशा देखने नहीं, दिखाने निकला हूँ। कुछ पैसे ले जाऊँगा, तो माँ को पथ्य दूँगा। मुझे शराबत न पिलाकर आपने मेरा खेल देखकर मुझे कुछ दे दिया होता तो मुझे अधिक प्रसन्नता होती।"
- (ख) यूनिवर्सिटी की शिक्षा तो वह पाणी ही, इसके बाद शिक्षाक्रम पूरा करने के लिए उसका विलायत जाना भी आवश्यक और निश्चित है। सत्तान के प्रति शिक्षा के उत्तरदायित्व का यह आदर्श किन्तनी सत्तानों के प्रति पूरा क्रिया जा सकता है ? साहब कहते हैं- यों कीड़े-मकोड़े की तरह पैदा करके क्या फायदा ?
- (ग) "आपस में खींचतान तो होती ही रहती है, उससे कोई छोटा थोड़े ही हो जाता है ? कभी हमने दबा लिया, तुम दब गए ; कभी तुमने जोर से मारा तो हमने पैतरा बदल लिया। कभी हमने तुम्हारी गर्दन नाप ली, कभी तुम्हारे सामने हमने मुँहे नीची कर ली।"
- (घ) कुन्दन उसे कॉलेज छोड़ता हुआ ऑफिस जाया करता था। पर अकेलेपन की यह अनुभूति तभी तक रहती जब तक वह पोर्टिको में खड़ी रहती। जैसे ही फ्लैट का दरवाजा खोलकर वह भीतर घुसती लक-दक फर्नीचर, शीशों के दरवाज़े और खिड़कियाँ पर झूलते लम्बे-लम्बे पर्दे, मित्रियों की खटपट नए-नए डिस्टेम्पर और वार्निश की हल्की-सी गन्ध के बीच न जाने कहाँ डूब जाती।
5. जैनेन्द्र कुमार अश्वाम मनु भण्डारी का साहित्यिक परिचय दीजिए : $1 \times 7 = 7$

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(3)

6. किन्हीं दो प्रश्नों के उत्तर 200 शब्दों में दीजिए : $2 \times 4 = 8$
- (क) 'छोटा जादूगर' कहानी के नायक का चरित्र-चित्रण कीजिए।
- (ख) 'पूढ़ाई' कहानी के कथानक की विशेषताएं लिखिए।
- (ग) 'दरोगा अभीवन्द' कहानी की भाषा पर विचार कीजिए।
- (घ) 'नई नौकरी' कहानी का उद्देश्य स्पष्ट कीजिए।
7. निम्नलिखित में से किन्हीं दो समीक्षात्मक प्रश्नों के उत्तर दीजिए : $2 \times 5 = 10$
- (क) रीतिकाल की परिस्थितियों का वर्णन कीजिए।
- (ख) रीतिमुक्त काव्य की प्रवृत्तियों का उल्लेख कीजिए।
- (ग) रीतिकालीन काव्य की प्रमुख उपलब्धियों का वर्णन कीजिए।
- (घ) "बिहारीलाल रीतिकाल के प्रतिनिधि कवि हैं।" समीक्षा कीजिए।
8. निम्नलिखित लघुतरा प्रश्नों के उत्तर 200 शब्दों में दीजिए : $2 \times 4 = 8$
- (क) रीतिबद्ध काव्य की प्रमुख प्रवृत्तियों का वर्णन कीजिए।
- (ख) 'भक्ति और नीति, रीतिकाल की प्रमुख प्रवृत्ति है।' समीक्षा कीजिए।
- (ग) रीतिसिद्ध काव्य से क्या अभिप्राय है ? उदाहरण सहित उल्लेख कीजिए।
- (घ) "घनानंद रीतिमुक्त काव्य के प्रतिनिधि कवि हैं।" समीक्षा कीजिए।
9. निम्नलिखित वस्तुनिष्ठ प्रश्नों के उत्तर दीजिए : $8 \times 1 = 8$
- (क) मैथिलीशरण गुप्त का जन्म कब हुआ ?
- (ख) 'विलव गायन' किस कवि की कविता है ?
- (ग) 'छोटा जादूगर' किस नगर में घटित कहानी है ?
- (घ) 'सुनयना' किस कहानी की पात्रा है ?
- (च) कहानीकार 'अज्ञेय' का पूरा नाम लिखिए।
- (छ) किस कवि को 'कठिन काव्य का प्रेत' कहा जाता है।
- (ज) 'रीति' शब्द का शाब्दिक अर्थ बताइये।
- (झ) 'घनानंद' कवि की प्रेमिका का क्या नाम है ?

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(4)

Roll No.

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(vii) ਧਾਲੀ ਸਭ ਤੋਂ ਵੱਧ ਪਿਆਰ ਕਿਸ ਨੂੰ ਕਰਦਾ ਹੈ ?

(ੳ) ਚਰਗਾ ਨੂੰ (ਅ) ਆਪਣੀ ਮਾਂ ਨੂੰ

(ੲ) ਪਠਾਣ ਨੂੰ (ਸ) ਦਾਗਾਂ ਨੂੰ

(viii) ਜੀਨਤ ਆਪਾ ਕਹਾਣੀ ਦਾ ਲੇਖਕ ਕੌਣ ਹੈ ?

(ੳ) ਕਰਤਾਰ ਸਿੰਘ ਦੁਗੱਲ (ਅ) ਅਜੀਤ ਕੌਰ

(ੲ) ਗੁਰਬਖਸ਼ ਸਿੰਘ (ਸ) ਸੁਖਬੀਰ

(ix) ਫੈਕਟਰੀ ਦੇ ਮਾਲਕ ਦੇ ਮੁੰਡੇ ਦੀ ਮੌਤ ਕਿਵੇਂ ਹੋਈ ਹੈ ?

(ੳ) ਬਿਮਾਰੀ ਨਾਲ (ਅ) ਦੁਰਘਟਨਾ ਕਾਰਨ

(ੲ) ਮਸ਼ੀਨ ਦੇ ਪੱਟੇ ਵਿੱਚ ਫਸ ਕੇ (ਸ) ਛੱਤ ਤੋਂ ਡਿਗ ਕੇ

(x) ਬੁੱਤ ਸ਼ਿਕਨ ਕਹਾਣੀ ਦਾ ਲੇਖਕ ਕੌਣ ਹੈ ?

(ੳ) ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ (ਅ) ਬਲਜੀਤ ਕੌਰ ਬੱਲੀ

(ੲ) ਅਜੀਤ ਕੌਰ (ਸ) ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ

1×10=10

Printed Pages : 4

GSM / D-17

PANJABI

(Elective)

Time allowed : 3 hours]

[Maximum marks : 80

1. ਹੇਠ ਲਿਖੇ ਕਾਵਿ-ਟੋਟਿਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਦੇ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ :

(ੳ) ਬਣ ਹਾਫਿਜ਼ ਹਿਫਜ਼ ਕੁਰਾਨ ਕਰੇਂ.

ਪੜ੍ਹ ਪੜ੍ਹ ਕੇ ਸਾਫ਼ ਜ਼ਬਾਨ ਕਰੇਂ.

ਫਿਰ ਨਿਆਮਤ ਵਿੱਚ ਪਿਆਨ ਕਰੇ.

ਮਨ ਫਿਰਦਾ ਜਿਉਂ ਹਲਕਾਰਾ ਹੈ ।

(ਅ) ਹੀਰ ਆਖਦੀ ਬਖਸ਼ ਗੁਨਾਹ ਮੇਰਾ.

ਸੋਜੇ ਸੁਤੜਾ ਆਣ ਜਗਾਇਆ ਏ ।

ਘੋਲ ਘੱਤਿਆਂ ਮੈਂ ਉਸ ਰਾਹ ਉੱਤੇ.

ਜਿਸ ਰਾਹ ਨੂੰ ਚੱਲ ਕੇ ਆਇਆ ਏ.

ਬਾਪ ਦਾਇਓ ਜਾਤ ਦਾ ਕੌਣ ਹੈ ਤੂੰ.

ਕਿਸ ਮਾਂ ਸੁਪਤੜੀ ਜਾਇਆ ਏਂ ।

ਔਸੀ ਪਾਉਂਦੀ ਕਾਂ ਉਡਾਉਂਦੀ ਨੂੰ.

ਮੈਨੂੰ ਮੁਕਬਲਾ ਰੱਬ ਮਿਲਾਇਆ ਏਂ ।

(ੲ) ਤੋੜ ਸਿੰਗਾਰ ਸੱਸੀ ਉਠ ਦੌੜੀ, ਖੋਲ੍ਹ ਲਿਟਾਂ ਘਰ ਬਾਰੇਂ ।

ਚੜਿਆ ਆਣ ਕਿ ਹੋਰ ਸੱਸੀ ਨੂੰ ਜ਼ਿੰਦ ਜੁ ਤਾਂ ਪਰ ਵਾਰੇਂ

ਡਰਦੀ ਸਾਥ ਪੁੰਨੂੰ ਦਾ ਤੱਕਦੀ, ਤੇਗ ਰਿਜਰ ਦੀ ਮਾਰੇਂ ।

ਹਾਜ਼ਮ ਸਹਿਣ ਮੁਹਾਲ ਜੁਦਾਈ, ਸਖਤ ਬੁਰੀ ਤਲਵਾਰੇਂ ।

(2)

- (ਸ) ਚੜ ਤਖਤ ਤੇ ਬੈਠਾ ਨਾਦਰਸ਼ਾਹ, ਰਾਜ ਸਿੱਕੇ ਚੱਲੇ ।
ਉਹ ਨੂੰ ਨਿਵੀਆਂ ਸਭ ਵਲਾਇਤਾਂ, ਕੋਈ ਢੰਗ ਨਾ ਝੱਲੇ ।
ਸਦ ਬਹਾਈਆਂ ਉਸ ਓਮਰਾ, ਵਿੱਚ ਬੈਠੇ ਗੱਲੇ
ਯਾਰੇ ਤੀਰ ਕਲੇਜੇ ਵਰਮਦਾ, ਦਿਹੂ ਰਾਤੀਂ ਹੱਲੇ । 5+5=10
2. ਹੇਠ ਲਿਖੇ ਸਾਹਿਤਕਾਰਾਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਦੀ ਸਾਹਿਤਕ ਸੇਵਾ ਉੱਪਰ ਚਰਚਾ ਕਰੋ :
(ਉ) ਹਾਸ਼ਮ (ਅ) ਮੁਕਬਲ
(ੲ) ਬੁਲ੍ਹੇਸ਼ਾਹ ।
3. ਨਨਕ ਸਿੰਘ ਜਾਂ ਮੋਹਨ ਭੰਡਾਰੀ ਦੀ ਪੰਜਾਬੀ ਕਹਾਣੀ ਨੂੰ ਦੇਣ ਉੱਪਰ ਨੋਟ ਲਿਖੋ । 5
ਹੇਠ ਲਿਖੀਆਂ ਕਹਾਣੀਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਦੀ ਸਾਹਿਤਕ ਪੜਚੋਲ ਕਰੋ ।
(ਉ) ਦਾਗਾਂ (ਅ) ਦੇ ਅਨੇ ਦਾ ਘਾਹ
(ੲ) ਸਾਂਝੀ ਕੰਧ । 10
5. ਹੇਠ ਲਿਖੇ ਵਿਸ਼ਿਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਉੱਪਰ ਨਿਬੰਧ ਲਿਖੋ :
(ਉ) ਸਵੱਛਤਾ ਤੇ ਸਾਫ਼ਾ ਜੀਵਨ
(ਅ) ਪ੍ਰਦੂਸ਼ਣ ਦੀ ਸਮੱਸਿਆ
(ੲ) ਟੈਕਨੋਲੋਜੀ ਤੇ ਸਮਾਜ
(ਸ) ਵਿਦਿਆਰਥੀ ਤੇ ਅਨੁਸ਼ਾਸਨ । 10
6. ਦੋ ਛੰਦਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਲੱਛਣ ਦੱਸਦੇ ਹੋਏ ਉਧਾਰਨ ਵੀ ਦਿਓ :
(ਉ) ਦੋਹਰਾ (ਅ) ਸਵੱਈਆ
(ੲ) ਸਿਰਖੰਡੀ (ਸ) ਚੌਪਈ । 5+5=10
7. ਸ਼ਬਦ ਜੋੜਿਆਂ ਦੇ ਅਰਥ ਭੇਦ ਵਾਕਾਂ ਰਾਹੀਂ ਸਪਸ਼ਟ ਕਰੋ :
ਸਤੀ-ਸੱਤੀ, ਅਸੀਂ-ਐਸੀ, ਬਾਗ-ਬਾਘ, ਔਤ-ਐਤ, ਉੱਠ-ਉੱਠ । 10

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(3)

8. ਹੇਠ ਲਿਖੇ ਸਾਹਿਤਕ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕਿਸੇ ਦੋਸ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਲਿਖੋ ।
Actor, Biography, Comedy, Concept, Content, Director, Duet Song, Element, Epic, Force, Folksong, Literature, Journalism, Aptitude, Example.
9. ਹੇਠ ਲਿਖੇ ਬਹੁ-ਵਿਕਲਪੀ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਠੀਕ ਉੱਤਰ ਛਾਂਟ ਕੇ ਲਿਖੋ :
(i) ਸਾਈਂ ਬੁਲ੍ਹੇ ਸ਼ਾਹ ਨੇ ਕਿਸ ਕਾਵਿ ਰੂਪ ਵਿੱਚ ਚਰਚਾ ਕੀਤੀ ?
(ਉ) ਕਾਫ਼ੀਆਂ (ਅ) ਸ਼ਬਦਾਂ (ੲ) ਸ਼ਲੋਕ (ਸ) ਵਾਰਾਂ
(ii) ਨੀ ਸੈਂ ਕਮਲੀ ਹਾਂ । ਕਿਸ ਕਵੀ ਦੀ ਰਚਨਾ ਹੈ ?
(ਉ) ਸ਼ਾਹ ਹੁਸੈਨ ਦੀ (ਅ) ਫਜ਼ਲ ਸ਼ਾਹ ਦੀ
(ੲ) ਸ਼ਾਹ ਮੁਹੰਮਦ ਦੀ (ਸ) ਬੁਲ੍ਹੇ ਸ਼ਾਹ ਦੀ ।
(iii) ਗੰਝਾ ਕਿਸ ਦੇ ਪਲੀਘ ਉੱਤੇ ਖੁੱਤਾ ਪਿਆ ਸੀ ?
(ਉ) ਆਪਣੇ (ਅ) ਹੀਰ ਦੇ
(ੲ) ਲੁੱਡਣ ਦੇ (ਸ) ਮੌਜੂ ਦੇ
(iv) ਪੰਨੂੰ ਦੇ ਪਿਤਾ ਦਾ ਨਾਂ ਕੀ ਸੀ ?
(ਉ) ਹਾਨੀ (ਅ) ਹੋਤ ਅਲੀ
(ੲ) ਆਦਮ ਜਾਪ (ਸ) ਐਤਾ
(v) ਸਾਰੇ ਮੁੰਡੀਆਂ ਨੇ ਹਕੀਕਤ ਗਾਇ ਦੀ ਸ਼ਿਕਾਯਤ ਕਿਸ ਅੱਗੇ ਕੀਤੀ ?
(ਉ) ਮੰਤਰੀ ਅੱਗੇ (ਅ) ਕਾਜੀ ਅੱਗੇ
(ੲ) ਮੁੱਲਾ ਅੱਗੇ (ਸ) ਵਜੀਰ ਅੱਗੇ
(vi) ਅਰਜੀ ਕਹਾਣੀ ਦਾ ਮੁੱਖ ਪਾਤਰ ਕੌਣ ਹੈ ?
(ਉ) ਬਿਸ਼ਨਾ ਜੱਟ (ਅ) ਪਾਰੋ
(ੲ) ਰਾਮੇਸ਼ਾਹ (ਸ) ਟਾਂਗੇ ਵਾਲਾ

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[P.T.O.]

GSM / D-17

SANSKRIT (Compulsory)

Time allowed : 3 hours]

[Maximum marks : 80

नोट : सभी प्रश्न अनिवार्य हैं।

1. निम्नलिखित के उत्तर दीजिए -

- (i) नाटककार भास के एक नाटक का नाम लिखें।
- (ii) चारुदत्त कौन है ?
- (iii) द्वितीय अङ्क में गणिका के साथ किसका प्रवेश होता है ?
- (iv) किसकी जन्मभूमि पाटलिपुत्र है ?
- (v) 'कृत्वा' प्रत्यय किसके साथ प्रयुक्त होता है ? (धातु/शब्द)
- (vi) 'शानच्' प्रत्यय कौन-सी धातुओं के साथ लगता है ?
- (vii) द्वन्द्व समास में कौन-सा पद प्रधान होता है ? (पूर्व/दोनों)
- (viii) 'दुर्ह' धातु के साथ किस विभक्ति का प्रयोग होता है ?

(तृतीया/द्वितीया)

2. (क) किन्हीं दो श्लोकों का सप्रसंग सरलार्थ कीजिए :

- (i) सुखं हि सुखान्धुभूय शोभते,
यथान्धकारादिव दीपदर्शनम् ।
सुखातु यो याति दशां दरिद्रतां,
स्थितः शरीरेण मृतः स जीवति ॥
- (ii) लिप्स्विव तमोऽङ्गानि वर्षतीवाञ्जनं नभः ।
असत्पुरुषसेवेव दुष्टिर्निष्कलतां गता ॥

(2)

- (ii) एषा हि वयसो दर्पात् कुलपुत्रावमानिनी ।
केशेषु कृसुमन्यासैः सेवितव्येषु धर्षिता ॥
- (iii) स मद्विधानां प्रणयै कृशीकृतो
न तस्य कश्चिद् विभवेरमण्डितः ।
निदाघसंशुष्क इव हृदो महान्
नृणां तु तृष्णामपनीय शुष्यति ॥
- (ख) एक सूक्ति की सप्रसंग व्याख्या कीजिए :
(i) अधिकमधुरस्य आप्रस्य अयोग्यतया अस्थि न भश्यते ।
(ii) उद्भूत पुष्पं सहकारं मधुकरा उपासते ।

2×5=10

6

3. (क) 'चारुदत्तम्' नाटक के द्वितीय अंक का सार लिखिए ।

अथवा

- महाकवि भास के नाटक-चक्र पर प्रकाश डालिए । 8
(ख) चारुदत्त अथवा वसन्तसेना का चरित्र-चित्रण कीजिए । 8
(क) निम्नलिखित में से किसी चार के प्रकृति प्रत्यय अलग कीजिए :
4×2=8

कर्तव्य; दर्शनीय, वाच्य; सेवमान; जानन्, नीति; भवितुम्, ज्ञात्वा ।

- (ख) निम्नलिखित में से किसी चार के कृदन्त रूप लिखिए :

कृ + क्त, दा + तव्यत्, गम् + तुमुन्, हन् + क्तवत्, दा + यत्,
रक्ष् + अनीयर्, याच् + शानच्, नम् + शतृ । 4×2=8

5. (क) निम्नलिखित में से किसी चार का विग्रह करते हुए समास का नाम लिखिए-
उपराजम्, अनुरूपम्, सचकम्, विद्याहीनः, प्रार्थार्थ, अब्राहणः, वीरपुरुषः,
जितेन्द्रियः । 4×2=8

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(3)

- (ख) निम्नलिखित में से किसी आठ वाक्यों का संस्कृत में अनुवाद कीजिए -
(i) वह नगर में रहता है ।
(ii) बच्चा शेर से डरता है ।
(iii) छात्रों में राम श्रेष्ठ है ।
(iv) नगर के चारों ओर वृक्ष हैं ।
(v) परिश्रम के बिना सफलता कहाँ ?
(vi) वह विद्यालय जाएगा ?
(vii) वह पैर से लंगड़ा है ।
(viii) वह पत्थर पर बैठता है ।
(ix) पिता पुत्र पर क्रोध करता है ।
(x) सदा सच बोलो ।
(xi) आपका स्वागत है ।
(xii) ज्ञान के बिना मुक्ति नहीं ।
(xiii) जननी और जन्मभूमि स्वर्ग से भी महान् है ।
(xiv) राजा ब्राह्मण को धन देता है ।
(xv) वह पढ़ने में दक्ष है ।
(xvi) भारत हमारा देश है ।

8

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GSM / D-17

SANSKRIT (Elective)

Time allowed : 3 hours]

[Maximum marks : 80

नोट : सभी प्रश्न अनिवार्य हैं। यथाक्रम उत्तर दीजिए।

1. निम्नलिखित सभी प्रश्नों के दो-तीन पंक्तियों में लघु उत्तर दीजिए : $8 \times 2 = 16$

- (i) 'पञ्चरात्रम्' की कथा का मूल आधार क्या है और 'पञ्चरात्रम्' की क्रमिक परामर्श पर रखी ?
- (ii) भीष्म पितामह किन कारणों से दुर्योधन को द्रोणाचार्य का अभिवादन करने के लिए कहते हैं ?
- (iii) 'भास-नाटकचक्र' में गिने जाने वाले नाटकों की संख्या बताकर किन्हीं तीन का नामोल्लेख कीजिए।
- (iv) सुबन्धु की प्रसिद्ध रचना का संक्षिप्त परिचय दीजिए।
- (v) किन्हीं दो समासों की सोदाहरण परिभाषा लिखिए।
- (vi) कत्ता तथा तुमुन और शतृ तथा शानच् प्रत्ययों में अन्तर स्पष्ट कीजिए।
- (vii) माहेश्वर कृत चौदह प्रत्याहार सूत्रों में से किन्हीं तीन का उल्लेख करके उनके अन्तर्गत आने वाले वर्णों की संख्या स्पष्ट कीजिए।
- (viii) पुत्र द्वारा पिता को लिखे जाने वाले पत्रों में प्रयुक्त होने वाले सम्बोधन, अभिवादन और अन्त में प्रयुक्त औपचारिक शब्दों का उल्लेख कीजिए।

2. (क) किन्हीं दो पद्यों की सप्रसङ्ग व्याख्या कीजिए : $5 \times 2 = 10$

- (i) शुठकेभैकेन वृक्षेण वनं पुष्पितपादपम्।
कुलं चरित्रहीनेन पुरुषेणैव दृश्यते॥
- (ii) बाणाधीना क्षत्रियाणां समृद्धिः,
पुत्रापेक्षीवञ्च्यते सन्निधाता।

(2)

विप्रोक्तस्मिन् वित्तमावर्ज्यसर्वं,

राज्ञा देयं चापमानं सुतेभ्यः॥

(iii) द्रुतैश्च वत्सैर्व्यथितैश्च गोणैः,

निरिक्षणत्रस्तुमुखैश्च गोवृषैः।

कृतार्तानादाकुलितं समन्ततो,

गवांकुलं शोष्यभिहाकुलमाकुलम्॥

(iv) अकारणं रूपमकारणं कुलं,

महत्सु नीचेषु च कर्म शोभते।

इदं हि रूपपरिभूतपूर्वकं,

तदेव भूयो बहुमानमागतम्॥

(ख) 'पञ्चरात्रम्' में वर्णित दुर्योधन के चरित्र का वर्णन कीजिए। $6 \times 1 = 6$

अथवा

'पञ्चरात्रम्' के प्रथम अंक में वर्णित यज्ञ की सम्पन्नता और समृद्धि का वर्णन कीजिए।

3. (क) किन्हीं चार पारिभाषिक शब्दों की परिभाषा लिखकर स्पष्ट कीजिए :

$4 \times 2 = 8$

सूत्रधार, विदूषक, प्रस्तावना, नेपथ्य, अपवर्जितम्, भरतवाक्यम्।

(ख) सुबन्धु अथवा अभिषेकदत्तव्यास का साहित्यिक परिचय दीजिए। $8 \times 1 = 8$

4. (क) किन्हीं चार समस्त पदों का विग्रह करके समास का नाम भी लिखिए :

प्रतिक्षणम्, उपनगरम्, दुःखातीत, राजपुत्रः, मातापितरौ, हस्तापादम्, चन्द्रशेखरः, दशाननः।

$4 \times 2 = 8$

(ख) किन्हीं आठ के यथानिर्दिष्ट कृदन्त रूप लिखिए :

$8 \times 1 = 8$

चल् + क्त्वा, भी + क्त्वा, ब्रू + तुमुन्, नम् + तुमुन्, हृ + ण्यत्, दा + यत्, कश् + मत्, दुर्ह + क्त, वद् + क्तवत्, लिख् + क्तवत्, गर्ज + शतृ, ईक्ष् + शानच्, कृञ् + तव्य, ग्रह् + अनीयर।

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(3)

5. (क) किन्हीं चार संज्ञा सूत्रों की व्याख्या कीजिए :

$4 \times 2 = 8$

अदर्शनं लोपः, उच्चैरुदात्तः, मुखनासिकाववनोऽनुनासिका;

परः सनिकर्षःसहिताः, तुल्यास्य प्रथमसवर्णम्, उक्तालोऽङ्गस्व दीर्घयुत।

(ख) विद्यालयात् अवकाशार्थं प्राचार्यं प्रति प्रार्थना-पत्रं लिखतु। $8 \times 1 = 8$

अथवा

विद्यायाः महत्त्वं प्रतिस्वानुजं प्रति पत्रं लिखतु।

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Roll No.
Printed Pages : 3

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[Maps of India]

GSM / D-17

HISTORY

Opt.-(i)

Political History of India (1526-1857 AD)

Time allowed : 3 hours

[Maximum marks : 80

Note : Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory. The part relating to the explanatory note on map will carry full marks for visually handicapped candidates only.

नोट : प्रत्येक इकाई से कम से कम एक प्रश्न का चयन करते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए। प्रश्न संख्या-1 अनिवार्य है। नेत्रहीन विद्यार्थियों को मानचित्र सम्बन्धी टिप्पणी वाले भाग को करने पर पूरे अंक दिए जाएंगे।

Compulsory Question (अनिवार्य प्रश्न)

1. Answer the following questions : 2×8=16
- निम्नलिखित प्रश्नों के उत्तर दीजिए : 2×8=16
- (a) Who was the ruler of Delhi on the eve of Babur's Invasions ?
- (b) In which year Din-i-Ilahi was introduced by Akbar ?
- (c) In which year Aurangzeb re-impose Jaziya on Hindus ?
- औरंगजेब ने हिन्दुओं पर फिर से जजिया कब लगाया ?

(2)

- (d) Who was the last Mughal Emperor?
मुगल वंश का अंतिम सम्राट कौन था ?
- (e) In which year Vasco-da-Gama reached India ?
वास्कोडिगामा किस वर्ष भारत आया ?
- (f) The battle of Buxar was fought in which year ?
बक्सर की लड़ाई किस वर्ष लड़ी गई ?
- (g) In which year Awadh was annexed by Lord Dalhousie ?
लार्ड डलहौजी द्वारा अवध का विलय किस वर्ष किया गया ?
- (h) What was the immediate cause for the uprising of 1857 ?
1857 की क्रांति का तात्कालिक कारण क्या था ?

Unit-I (इकाई-I)

- 2. Giving an account of the first Battle of Panipat, examine its significance in history. 16
पानीपत की पहली लड़ाई का विवरण देते हुए इसकी इतिहास में महत्ता बताएं। 16
- 3. Critically examine the Religious Policy of Aurangzeb. 16
औरंगजेब की धार्मिक नीति का आलोचनात्मक अध्ययन कीजिए। 16

Unit-II (इकाई-II)

- 4. What do you know about the causes and significance of Guru Arjun Dev's martyrdom ? 16
गुरु अर्जुन देव जी की शहीदी के कारणों तथा महत्व के बारे में आप क्या जानते हैं ? 16
- 5. Describe the Provincial and Local administration of the Mughal emperors. 16
मुगल सम्राटों के प्रांतीय एवं स्थानीय प्रशासन का वर्णन करें। 16

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(3)

Unit-III (इकाई-III)

- 6. Give a brief account of the Anglo-French struggle for political supremacy of the Deccan. 16
अंग्रेजों तथा फ्रांसिसियों के बीच दक्षिण भारत में राजनीतिक सर्वोच्चता के लिए संघर्ष का संक्षिप्त वर्णन करें। 16
- 7. What do you understand by the Doctrine of Lapse ? Was Dalhousie justified in applying this doctrine to the Native States ? 16
लैप्स सिद्धान्त से आप क्या समझते हैं ? क्या देसी रियासतों पर इस सिद्धान्त को लागू करना डलहौजी का उचित कार्य था ? 16

Unit-IV (इकाई-IV)

- 8. On the outline map of India, show the Political condition of India in 1526 AD. Also write an explanatory note. 10+6
भारत के रेखांकित मानचित्र पर 1526 ई. में भारत की राजनीतिक दशा को दर्शाइए। एक व्याख्यात्मक टिप्पणी भी लिखिए। 10+6
- 9. On the outline map of India, show the Mughal Empire at the death of Aurangzeb in 1707. Also write an explanatory note. 10+6
भारत के रेखांकित मानचित्र पर औरंगजेब की मृत्यु के समय मुगल साम्राज्य (1707) को दर्शाइए। एक व्याख्यात्मक टिप्पणी भी लिखिए। 10+6

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(4)

- छुली मतदान व्यवस्था का समर्थन किसने किया ? 2
 (अ) वैथम (ब) जे. एस. मिल
 (स) प्लेटो (द) होब्स
- (viii) Who is the writer of "Introduction to the Principle of morals and Legislation"? 2
 (a) Bentham (b) J. S. Mill
 (c) Hobbes (d) Rousseau
- "Introduction to the Principle of morals and Legislation" के लेखक कौन है ? 2
 (अ) वैथम (ब) जे. एस. मिल
 (स) होब्स (द) रूसो

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GSM / D-17

POLITICAL SCIENCE

Paper-I, Opt. (i)

Western Political Thinkers-I

Time allowed : 3 hours]

[Maximum marks : 80

Note : Attempt any five questions. All questions carry equal marks.

नोट : किसी पाँच प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

1. Critically discuss Plato's Theory of Justice.
 प्लेटो के न्याय के सिद्धान्त की आलोचनात्मक व्याख्या करें। 16
2. Discuss Aristotle's Theory of Revolution.
 अरस्तू के क्रांति सभ्यन्धी विचारों का वर्णन करें। 16
3. Discuss the main Political Ideas of St. Augustine.
 सेंट ऑगस्टाइन के मुख्य राजनीतिक विचारों का वर्णन करें। 16
4. Discuss Machiavelli's views on religion and morality.
 मार्कस निकोलास पर धर्मशास्त्र की विचारों की व्याख्या करें। 16
5. Critically discuss Hobbes theory of Sovereignty.
 होब्स के प्रभुसत्ता के सिद्धान्त की आलोचनात्मक व्याख्या करें। 16
6. Discuss John Locke's views regarding Human Nature.
 जॉन लॉक के मानव-प्रकृति सम्बन्धी विचारों का वर्णन करें। 16
7. Discuss Bentham's contribution to Political Thought.
 राजनीतिक चिन्तन को वैथम की देन का वर्णन करें। 16

(2)

8. Critically discuss J. S. Mill views about Democracy. 16
मिल के लोकतंत्र सम्बन्धी विचारों की आलोचनात्मक व्याख्या करें। 16

9. Objective Type Questions :

(वस्तुनिष्ठ प्रश्न):

- (i) Who was the father of Political Science ? 2×8=16
(a) Plato (b) Aristotle
(c) J. S. Mill (d) Bentham
राजनीति विज्ञान का जनक कौन था ? 2×8=16
(अ) प्लेटो (ब) अरस्तू
(स) जे. एस. मिल (द) बैथम
- (ii) Famous book of Plato is : 2
(a) Republic (b) Politics
(c) The Prince (d) Social Contract
प्लेटो की प्रसिद्ध रचना कौन-सी है ? 2
(अ) रिपब्लिक (ब) राजनीति
(स) प्रिंस (द) सामाजिक सम्झौता
- (iii) The political ideas of St. Augustine is : 2
(a) Concept of the city (b) Utilitarianism of good
(c) Social contract (d) General Will
सेंट ऑगस्टाइन के राजनीतिक विचार हैं : 2
(अ) ईश्वरीय राज्य सम्बन्धी (ब) उपयोगितावाद
धारणा
(स) सामाजिक सम्झौता (द) सामान्य इच्छा

(3)

- (iv) Who was the writer of 'The Prince' ? 2

- (a) J. S. Mill (b) Machiavelli
(c) Bentham (d) Hobbes

'The Prince' का लेखक कौन था ? 2

- (अ) जे. एस. मिल (ब) मैक्यावेली
(स) बैथम (द) हॉब्स

- (v) Who said "Man is born free but he is everywhere in chains" ? 2

- (a) Rousseau (b) Locke
(c) Hobbes (d) Bentham

“मनुष्य स्वतंत्र पैदा होता है लेकिन वह प्रत्येक स्थान पर बंधन में है” यह कथन किसका है ? 2

- (अ) रूसो (ब) लॉक
(स) हॉब्स (द) बैथम

- (vi) Who justified the Revolution of 1688 ? 2

- (a) Aristotle (b) Locke
(c) Hobbes (d) J. S. Mill
1688 की क्रान्ति को किसने उचित माना ? 2

- (अ) अरस्तू (ब) लॉक
(स) हॉब्स (द) जे. एस. मिल

- (vii) Who support the open Ballot System ? 2

- (a) Bentham (b) J. S. Mill
(c) Plato (d) Hobbes

Unit-IV (इकाई-IV)

9. Explain the concept of marginal efficiency of capital with the help of formula. What are the short term and long term factors which determine it? 16

पूँजी की सीमान्त उत्पादकता की धारणा की व्याख्या करें। इसे निश्चित करने वाले विभिन्न अल्पकालीन एवं दीर्घकालीन तत्व कौन-कौन से हैं? 16

10. Explain the main types of investment. What is the importance of investment? 16

निवेश के मुख्य प्रकारों का वर्णन करें। निवेश का क्या महत्व है? 16

Roll No.
Printed Pages : 8

GSM / D-17

ECONOMICS**Micro Economics-I**

Time allowed : 3 hours]

[Maximum marks : 80

Note : Attempt five questions in all. Question no. 1 and 2 are compulsory. Attempt remaining three questions, selecting one question each from any of three units out of the four units. All questions carry equal marks.

नोट : कुल पाँच प्रश्नों के उत्तर दीजिए। प्रश्न संख्या-1 अनिवार्य है। शेष तीन प्रश्न दो नई चार इकाइयों में से किन्हीं तीन इकाइयों से एक-एक प्रश्न चुनते हुए करें। सभी प्रश्नों के समान अंक हैं।

1. Industries in Ludhiana hired labour services from households for which the households were paid wages. The households spent some of their wages and save the rest. The industries have imported the technology from Japan for payment of which the industries took loans from banks. On their sales, the industries have to pay taxes to the government. The industries make sales not only in domestic market but also export to Middle - east. 16

Based on this information answer the following questions :

- (i) Which model is described in the above study? Explain that model with the help of a diagram. 16

(2)

- (ii) What is the difference between real and monetary flows?
- (iii) Identify the real and monetary flows in the above case study.

(iv) Explain the concepts of leakages and injections.

रिसाव एवं समावेशकी धारणाओं की व्याख्या करें।

सुधियाना के उद्योगों ने गृहस्थों से श्रम सेवाये ली जिसके बदले में गृहस्थों को मजदूरी दी गई। गृहस्थों ने अपनी मजदूरी का कुछ अंश उपभोग पर खर्च कर दिया और शेष बचा बचि। उद्योगों ने सामान से तकनीक का आयात किया जिसके मुगलान के लिए उद्योगों ने बैंकों से ऋण लिया। बिक्री होने पर उद्योगों ने सरकार को कर देना है। उद्योग केवल घरेलू बाजार में ही नहीं बेचते बल्कि मध्यपूर्व को भी निर्यात करते हैं।

16

(i) इस सूचना के आधार पर निम्न प्रश्नों के उत्तर दें :

इस अध्ययन में किस मॉडल की व्याख्या की गई है ? इस मॉडल का रेखाचित्र की सहायता से वर्णन करें।

(ii) वास्तविक और मौद्रिक प्रवाहों में क्या अन्तर है ?

(iii) दिए गए अध्ययन में वास्तविक एवं मौद्रिक प्रवाहों को पहचानें एवं दिखाएं।

(iv) रिसाव एवं समावेश की धारणाओं की व्याख्या करें।

2. (I) Choose the correct answers from the given alternatives :

दिए गए विकल्पों से सही उत्तर चुनें :

(3)

(a) According to Keynes, the main cause of unemployment was the deficiency of -

केन्स के अनुसार बेरोजगारी का मुख्य कारण कमी था-

(i) Aggregate demand

कुल मांग की

(ii) Aggregate supply

कुल पूर्ति की

(iii) Consumption expenditure

उपभोग व्यय की

(iv) Investment expenditure

निवेश व्यय की

(b) Slope of the MEC curve is -

मैजो की सीमान्त उत्पादकता वक्र का ढलान होता है-

(i) Upward from left to right.

बाएं से दाएं ऊपर की तरफ बढ़ता हुआ।

(ii) Downward from left to right.

बाएं से दाएं नीचे की तरफ गिरता हुआ।

(iii) A horizontal straight line.

X अक्ष के समानान्तर सरल रेखा।

(iv) Curvilinear

रेखीय वक्र।

(4)

(c) Say's Law of markets was criticized by :
से के बाजार नियम की आलोचना की गई-

(i) Marshall

मार्शल के द्वारा

(ii) Keynes

केन्ज के द्वारा

(iii) Pigou

पीगू के द्वारा

(iv) Oscar Lange

ऑस्कर लॉंगे के द्वारा

(d) Public investment refers to -

सार्वजनिक निवेश से अभिप्राय-

(i) Investment made by citizens of a country.

देश के नागरिकों द्वारा निवेश

(ii) Investment made by local self government

स्थानीय स्वयं सरकार के द्वारा निवेश

(iii) Investment made by the private companies.

निजी कम्पनियों के द्वारा निवेश

(iv) All of these

ये सभी

(5)

(e) Consumption is a function of-
उपभोग फलन है-

(i) Income

आय का

(ii) Labour

श्रम का

(c) Time

समय का

(iv) None of these

इनमें से कोई नहीं

(II) Match the following with their correct answers :

निम्न का सही उत्तरों के साथ मिलान करें :

(a) Study of

individual units

अकेली इकाइयों का अध्ययन

(b) Investment

निवेश

(c) Consumption + Saving

उपभोग + बचत

(d) Autonomous investment

curve

स्वतन्त्र निवेश वक्र

(i) Closed economy

बन्द अर्थव्यवस्था

(ii) Horizontal straight

line parallel to X axis

X अक्ष के समानान्तर सरल रेखा

(iii) An injection

एक समावेश

(iv) Disposable Income

प्रयोज्य आय

(7)

- ## Unit-I (इकाई-I)

- ## Unit-II (इकाई-II)

- ### Unit-III (इकाई-III)

- ## Turnover

GSM / D-17
MUSIC (SITAR)
Theory

Time allowed : 3 hours]

[Maximum marks : 40

Note : *The question paper is divided into 3 sections, comprising of 10 questions in all. The candidate is required to attempt five questions in all, selecting at least one question from each section. All questions carry equal marks.*

नोट : प्रश्न पत्र को तीन खण्डों में बांटा गया है, जिसमें कुल 10 प्रश्न हैं। परीक्षार्थी को कम से कम एक प्रश्न प्रत्येक खण्ड से चुनते हुए कुल पाँच प्रश्न करने हैं। सभी प्रश्नों के अंक समान हैं।

Section-A (खण्ड-अ)

1. Detailed description of the following ragas : 4+4
निम्नलिखित रागों का परिचय विस्तार से लिखें : 4+4

- (a) Bhairav
भैरव
(b) Bhairavi
भैरवी

2. Write the notation of Maseetkhani Gai in the Raga Bhairav or Raga Bhairavi. 4+4
राग भैरव या भैरवी में मसीतखानी गत लिखें। 4+4

3. Detailed description of the following Talas with Dugun and Chaugun : 4+4
निम्नलिखित तालों का परिचय देते हुए दुगुन और चौगुन लिखिए : 4+4

- (a) Teevra
तीव्र

(2)

(b) Deepachandi
दीपचन्दी

4. Detailed study about the historical development of Tala system. 8

ताल प्रणाली के ऐतिहासिक विकास के बारे में विस्तारपूर्वक वर्णन कीजिए। 8

Section-B (खण्ड-ब)

5. Short notes on the following: 4+4

निम्नलिखित पर टिप्पणी लिखिए : 4+4

(a) Parnel Praveshak Raag

परमेल परवेशक राग

(b) Gram

ग्राम

6. What is the Swayambhu naad ? Describe in detail. 8

स्वभू नाद किसे कहते हैं ? विस्तार से लिखो। 8

7. Detailed description of structure and part of Sitar and its Method of tuning. 4+4

सितार के ऐतिहासिक विकास और इसको भिलाने की विधि विस्तार से लिखें। 4+4

Section-C (खण्ड-स)

8. Write on the life sketch of Ustad Vilayat Khan and his style of the Sitar Vadan. 4+4

उस्ताद विलायत खान के जीवन वृत्त तथा उनकी सितार वादन शैली पर लिखिए। 4+4

9. What is the contribution of Pt. Pannalal Ghosh towards music ? Explain with detail. 8

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(3)

संगीत के प्रति पं. पन्नालाल घोष का योगदान क्या है ? विस्तारपूर्वक व्याख्या कीजिए। 8

10. Write in your own words about the origin and development of Guitar. 8

गीटार के उद्भव तथा विकास के बारे में अपने शब्दों में लिखिए। 8

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(4)

Unit-IV

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8. (a) Find the equation of osculating plane of the curve
 $x = 2 \log t, y = 4t, z = 2t^2 + 1$ $2\frac{1}{2}$

- (b) Show that the radius of spherical curvature of a circular helix

$$x = a \cos \theta, y = a \sin \theta, z = a \theta \cot \alpha$$

is equal to the radius of circular curvature $2\frac{1}{2}$

9. (a) Find the involute of a circular helix $2\frac{1}{2}$

- (b) Find the envelope of the sphere

$$(x - a \cos \theta)^2 + (y - a \sin \theta)^2 + z^2 = b^2. \quad 2\frac{1}{2}$$

Time allowed : 3 hours

[Maximum marks : 27]

Note : Attempt five questions in all, selecting at least one question from each unit. **Question No. 1 is compulsory.**
All questions carry equal marks.

(Compulsory Question)

1. (a) Using $\epsilon - \delta$ definition, prove that $|x|$ is a continuous function. $1\frac{1}{2}$

- (b) Verify Lagrange's mean value theorem for $f(x) = \log x$ in $[1, e]$ $1\frac{1}{2}$

- (c) Evaluate:
$$\lim_{x \rightarrow 0} \frac{(\tan^{-1} x)^2}{\log(1+x^2)}$$
 1

- (d) Let $f: \mathbb{R}^2 \rightarrow \mathbb{R}$ be defined as

$$f(x, y) = \frac{x-y}{x+y}, \quad x \neq 0, y \neq 0.$$

- find $\lim f(x, y)$
 $(x, y) \rightarrow (0, 0)$ 1

- (e) Write the necessary conditions for the function $f(x, y)$ to have extreme value at (a, b) 1

- (f) Define principal normal, binormal. 1

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[P.T.O.]

(2)

Unit-I

2. (a) Let f be a function defined by

$$f(x) = \begin{cases} 1, & \text{when } x \text{ is rational} \\ -1, & \text{when } x \text{ is irrational} \end{cases}$$

Show that f is discontinuous at every point of \mathbb{R} . $2\frac{1}{2}$

- (b) State and prove Darboux intermediate value theorem for derivatives. $2\frac{1}{2}$

3. (a) The expansion of function $f(x) = (1-x)^{\frac{5}{2}}$ is

$$f(0) + x f'(0) + \frac{x^2}{2} f''(\theta x).$$

Find the value of θ as $x \rightarrow 1$. $2\frac{1}{2}$

- (b) Show that :

$$\lim_{x \rightarrow 0} \frac{(1+x)^{\frac{1}{x}} - e + \frac{ex}{2} - \frac{11}{24} ex^2}{x^3} = -\frac{7e}{16} \quad 2\frac{1}{2}$$

Unit-II

4. (a) Show that the function f defined by

$$f(x, y) = \begin{cases} \frac{x^3 - y^3}{x^2 + y^2}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$$

is continuous at $(0, 0)$ $2\frac{1}{2}$

- (b) If $u = f(r)$ where $r = \sqrt{x^2 + y^2}$, prove that

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = f''(r) + \frac{1}{r} f'(r). \quad 2\frac{1}{2}$$

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5. (a) If x and y are functions of u and v defined by

$$u = x + e^{-y} \sin x, \quad v = y + e^{-y} \cos x$$

prove that $\frac{\partial x}{\partial v} = \frac{\partial y}{\partial u}$ $2\frac{1}{2}$

- (b) Expand $x^4 + x^2 y^2 - y^4$ about the point $(1, 1)$ upto the terms of the second degree. $2\frac{1}{2}$

Unit-III

6. (a) Show that for the function

$$f(x, y) = \begin{cases} \frac{x^2 y^2}{x^2 + y^2}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$$

$f_{xy}(0, 0) \neq f_{yx}(0, 0)$, even though the conditions of Schwarz's theorem and also of Young's theorem are not satisfied. $2\frac{1}{2}$

- (b) Examine for extreme values

$$f(x, y) = x^4 + y^4 - 2x^2 + 4xy - 2y^2 \quad 2\frac{1}{2}$$

7. (a) Find the volume of the largest rectangular parallelepiped that can be inscribed in the ellipsoid

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1 \quad 2\frac{1}{2}$$

- (b) Show that the function :

$$f(x, y) = \begin{cases} \frac{x^2 y^2}{x^4 + y^4}, & \text{for } (x, y) \neq (0, 0) \\ 0, & \text{for } (x, y) = (0, 0) \end{cases}$$

is not differentiable at the origin. $2\frac{1}{2}$

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[P.T.O.]

Roll No.

913

Printed Pages : 3

GSM / D-17

MATHEMATICS

Paper-BM-232

Partial Differential Equations

Time allowed : 3 hours]

[Maximum marks : 26

Note : Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) From the partial differential equation by eliminating the arbitrary constants from the equation :

$$Z = ax + a^2 y^2 + b.$$

1½

- (b) Solve the equation $p \tan x + q \tan y = \tan z$ 1½

- (c) Examine whether the system of equations are compatible or not ?

$$\frac{\partial Z}{\partial x} = 7x + 18y - 1$$

$$\frac{\partial Z}{\partial y} = 9x + 11y - 2.$$

1½

- (d) Write two dimensional wave equation and one dimensional Heat Equation. 1½

Unit-I

2. (a) Solve : $p \tan x + q \tan y = \tan z$ 2½
(b) Solve : $(x - y)p + (x + y)q = 2xz$ 2½

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[P.T.O.]

(2)

3. (a) Find the complete integral of :
 $p xy + pq + qy = yz$ 2½
- (b) Find the complete integral of the equation :
 $z^2 = 1 + p^2 + q^2$ by using Charpit's method. 2½

Unit-II

4. (a) Solve the equation :
 $(D^2 + 2 D' D + D'^2) Z = e^{2x+3y}$ 2½
- (b) Solve :
 $(D - D' - 1) (D - D' - 2) z = \sin (2x + 3y)$ 2½
5. (a) Solve :
 $x^2 \frac{\partial^2 z}{\partial x^2} + 2xy \frac{\partial^2 z}{\partial x \partial y} - x \frac{\partial z}{\partial x} = \frac{x^3}{y^2}$ 2½
- (b) Find the general solution of the partial differential equation :
 $x^2 \frac{\partial^2 z}{\partial x^2} - 4y^2 \frac{\partial^2 z}{\partial y^2} - 4y \frac{\partial z}{\partial y} - z = x^2 y^2.$ 2½

Unit-III

6. (a) Classify and reduce the equation :
 $\frac{\partial^2 z}{\partial y^2} - \frac{\partial^2 z}{\partial x \partial y} + \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \left(1 + \frac{1}{x} \right) + \frac{z}{x} = 0$
 to canonical form. 2½
- (b) Classify and reduce the equation :
 $\frac{\partial^2 z}{\partial x^2} + y^2 \left(\frac{\partial^2 z}{\partial y^2} \right) = y$ to canonical form. 2½

(3)

7. (a) Solve :
 $r - t \cos^2 x + p \tan x = 0$ 2½
- (b) Solve :
 $3s + (rt - s^2) = z$ 2½

Unit-IV

8. (a) Find the characteristic of
 $x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = 0.$ 2½
- (b) Solve the one dimensional heat equation
 $\frac{\partial^2 u}{\partial x^2} = \frac{1}{c^2} \cdot \frac{\partial u}{\partial t}$
 with boundary conditions $u(0, t) = u(\ell, t) = 0$
 and $\lim_{t \rightarrow \infty} u(x, t) = 0$ 2½
9. Solve the equation :
 $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$
 subject to the conditions :
 $u(0, y) = u(\pi, y) = 0$ for all y .
 $u(x, 0) = k, \quad 0 < x < \pi$
 and $u(x, \infty) = 0, \quad 0 < x < \pi.$ 5

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force is $\sqrt{x^2 + y^2 + z^2}$ and the equation to its lines of

$$\text{action are } \frac{yZ - zY}{L} = \frac{zX - xZ}{M} = \frac{xY - yX}{N} = 1 \quad 2\frac{1}{2}$$

Unit-IV

8. (a) Find the resultant wrench of two given forces R_1 and R_2 inclined at an angle θ . 2½
 (b) On three given screws, whose axes are mutually perpendicular and concurrent, there act wrenches of pitch p_1, p_2, p_3 whose resultant is on a screw of given pitch p . Show that the Locus of this latter screw is. 3
 $(p - p_1)x^2 + (p - p_2)y^2 + (p - p_3)z^2 + (p - p_1)(p - p_2)(p - p_3) = 0$ the co-ordinate axes being the axes of given screws. 3
9. Show that the wrench $(X, Y, Z; L, M, N)$ is equivalent to two forces, one along the line $x = y = z$ and the other along the line given by $Lx + My + Nz = 0$, 5½
 $x(Y - Z) + y(Z - X) + z(X - Y) = L + M + N$ and find the magnitude of the two forces.

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GSM / D-17 MATHEMATICS Paper-BM-233 STATICS

Time allowed : 3 hours]

[Maximum marks : 27

Note :- Attempt five questions in all, selecting at least one from each unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) The resultant of two like parallel forces P and Q acting at A and B , 8 cm apart, is 40 N. If the resultant passes through C , where $AC = 3$ cm, Find the magnitude of the forces. 1½
 (b) What is the geometrical representation of moment? 1½
 (c) Define coefficient of friction. 1
 (d) Write the condition when the system of forces in three dimension reduces to a single force. 1

Unit-I

2. (a) O is the point in plane of triangle ABC . AO meets BC in D . Show that the components along AB and AC respectively of the forces represented by AD are $\frac{b}{b+c} AB$ and $\frac{c}{b+c} AC$ of O is the incentre. 3
 (b) Two like parallel forces P and Q act at given points of a body. If Q be changed to $\frac{P^2}{Q}$, show that the line of action of the resultant is same as it would be if the forces were simply interchanged. 2½

(2)

3. (a) A uniform rod 6m long and weighing 18 kg is placed in a horizontal position upon two pegs 3m apart. If the breaking pressure of each peg is 10 kg; find the greatest Length of the portion of the rod that may project beyond either peg. 3
- (b) The moments of a system of coplanar forces about the points (1,0), (0,2) and (2,3) referred to rectangular axes are G_1, G_2, G_3 respectively. If θ be the inclination of the resultant to the axis of x, prove that $\tan \theta = \frac{G_1 - 3G_2 + 2G_3}{2G_1 - G_2 - G_3}$ 2 1/2

Unit-II

4. (a) A uniform beam of length '2a', rests in equilibrium against a smooth vertical wall and upon a peg at a distance 'b' from the wall. Show that the inclination of the beam to the vertical is $\sin^{-1} \left(\frac{b}{a} \right)^{1/3}$. 2 1/2

- (b) A heavy uniform beam is hung from a fixed point by two strings attached to its extremities. If the lengths of the strings and beam be as 2:3:4, show that the tensions of the strings and the weight of the beam are as 2:3:√10. 3

5. (a) A particle is at rest on the inner surface of a sphere of radius 'r'. If the co-efficient of friction be 'μ', show that the greatest distance of the particle from the vertical diameter

$$\text{is } \frac{\mu r}{\sqrt{1+\mu^2}}$$

(3)

- (b) A square hole is punched out of a circular lamina, the diagonal of the square, being a radius of the circular lamina. Show that the centre of gravity of the remainder is at a distance $\frac{a}{8\pi-4}$ from the centre of the circle, where 'a' is the diameter of the circle. 2 1/2

Unit-III

6. (a) Prove that the virtual works done by the thrust in a virtual extension of a Light rod from length ℓ to $\ell + \delta \ell$ is $T \cdot \delta \ell$, where T is the thrust in the rod. 2 1/2
- (b) A solid hemisphere is supported by a string fixed to a point on its rim and to a point on a smooth vertical wall with which the curved surface is in contact. If θ and ϕ are the inclinations of the string and the plane base of the hemisphere to the vertical, show that $\tan \phi = \frac{3}{8} + \tan \theta$. 3

7. (a) Two forces P and Q act along the straight lines whose equations are $y = x \tan \alpha$, $z = c$ and $y = -x \tan \alpha$, $z = -c$ respectively. Show that their central axis lies on a straight line. 3

$$\frac{y}{x} = \frac{P-Q}{P+Q} \tan \alpha \text{ and } \frac{z}{c} = \frac{P^2 - Q^2}{P^2 + 2PQ \cos 2\alpha + Q^2}$$

- (b) A single force is equivalent to component forces X, Y, Z along the axes of the co-ordinates and to couples L, M, N about these axes. Prove that the magnitude of the single

[Turn over]

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GSM / D-17

POLITICAL SCIENCE

Paper-I opt (I)

Western Political Thinkers - I

Time allowed : 3 hours]

[Maximum marks : 80

Note :- Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory.

नोट:- प्रत्येक इकाई से एक प्रश्न का चयन करते हुए कुल पाँच प्रश्नों के उत्तर दीजिए। प्रश्न सं० 1 अनिवार्य है।

1. Short Answer Questions.

2×8=16

लघु उत्तरीय प्रश्न

(a) Write the important works of Plato.

प्लेटो की प्रमुख रचनाएँ बताएं।

(b) In how many parts politics is divided?

पॉलिटिक्स कितने भागों में विभाजित है?

(c) When did St. Augustine die?

संत अगस्टाइन का निधन कब हुआ?

(d) Who is the author of the book "The Prince"?

“द प्रिंस” नामक पुस्तक का लेखक कौन है?

(e) Which theory of the origin of the State was propounded by Hobbes?

हॉब्स ने राज्य उत्पत्ति का कौन-सा सिद्धान्त दिया?

(f) Who propounded the theory of 'General will'?

सामान्य इच्छा सिद्धान्त के प्रवर्तक कौन हैं?

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[Turn over

(2)

(g) According to Benham, mention the nature of state.

बेन्थम के अनुसार राज्य कैसी संस्था है?

(h) Mention two important writings of Mill.

मिल की दो महत्वपूर्ण रचनाएं बताओं।

Unit-I (इकाई-I)

2. Critically discuss the Plato's theory of Justice. 16

प्लेटो के न्याय की धारणा की व्याख्या करें।

or

3. Examine Aristotle's theory of citizenship. 16

अरस्तू के नागरिकता सम्बन्धी सिद्धान्तों की समीक्षा कीजिए।

Unit-II (इकाई-II)

4. Critically examine St. Augustine's theory of State and Government. 16

सेंट आगस्टाइन के राज्य एवं सरकार संबंधी विचारों की समीक्षा कीजिए।

or

5. Machiavelli was primarily a realist-Discuss. 16

प्रथमतः मैकियावेली यथार्थवादी था व्याख्या करें।

Unit-III (इकाई-III)

6. Compare the views of Hobbes and Locke. 16

हॉब्स और लॉक के विचारों की तुलना करें।

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(3)

or

7. Explain Rousseau's theory of 'General Will'. 16

रूसों की 'सामान्य इच्छा' सिद्धान्त की व्याख्या कीजिए।

Unit-IV (इकाई-IV)

8. Examine Bentham's views on State. 16

बेन्थम के राज्य सम्बंधी विचारों की समीक्षा कीजिए।

or

9. Examine Mill's views on Liberty. 16

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MUSIC (VOCAL) (THEORY)

Paper-I

Time allowed : 3 hours]

[Maximum marks : 40

Note :- The candidates will be required to attempt five questions in all, selecting at least one question from each unit. All questions will carry equal marks.

नोट:- प्रत्येक इकाई में से कम से कम एक प्रश्न चुनते हुए कुल पाँच प्रश्न करें। सभी प्रश्नों के अंक समान हैं।

Unit-I (इकाई-I)

1. Give the historical study of Raag 'Jai Jaivanti' with an Introduction. राग 'जयजयवन्ती' का परिचय ऐतिहासिक वर्णन सहित कीजिए।
2. Write in detail about Raag Chhayarat. राग 'छायानट' के बारे में विस्तार से लिखिए।
3. Write the notation of a Drut Khayal in Raag 'Gaud Sarang'. राग गौड सारंग के द्रुत ख्याल की स्वरलिपि लिखिए।
4. Give the full description of 'Deepchandi' Taal with Ekgun, Dugun and Chougun Layakaries. ताल 'दीपचन्दी' का वर्णन एकगुन, दुगुन एवं चौगुन लयकारियों सहित दीजिए।

Unit-II (इकाई-II)

5. Write the essays on the following musical terms:

निम्नलिखित संगीतिक शैलियों पर निबंध लिखिए।

- (i) Khayal
 - (ii) Thumri
- ख्याल ठुमरी

6. What do you know about 'Avirbhav and Tirobhav'? Write in detail. आविर्भाव एवं तिरोभाव के बारे में आप क्या जानते हैं, विस्तारपूर्वक लिखिए।
7. Describe the placement of swaras on Shruti according to Pandit Ahobal. पं० अहोबल के अनुसार श्रुति स्वर स्थापना का वर्णन कीजिए।

Unit-III (इकाई-III)

8. Describe the role of Science in promoting cultural aspects of Music during modern period. वर्तमान समय में संगीत के सांस्कृतिक पक्ष के प्रचार-प्रसार में विज्ञान की क्या भूमिका है?
9. Write an essay on Relationship of Science and Music. विज्ञान एवं संगीत के सम्बन्धों पर निबन्ध लिखिए।
10. Write the contribution towards Hindustani Classical music by Ustad Bade Gulam Ali Khan. उस्ताद बड़े गुलाम अली खां के संगीत को दिए योगदान का वर्णन कीजिए।

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Printed Pages : 3

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GSM / D-17

ADVANCED CALCULUS

Paper-BM-231

Time allowed : 3 hours/

(Maximum marks : 40

Note : Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory.

(Compulsory Question)

1. (a) Evaluate : $\lim_{x \rightarrow a^+} \frac{\log (x-a)}{\log (e^x - e^a)}$ 2

(b) If $Z = e^{2x+3y}$, prove that

$$\frac{\partial^2 Z}{\partial x \partial y} = \frac{\partial^2 Z}{\partial y \partial x}$$
 2

(c) Examine for Extreme value

$$f(x, y) = x^2 + y^2 + 6x + 12$$
 2

(d) Find the equation of normal to the surface $xyz = 4$ at the point $(1, 2, 2)$. 2

Unit-I

2. (a) Examine the applicability of Rolle's theorem for the function :

$$f(x) = (x^2 - 4x + 3) e^{2x} \text{ in } [1, 3]$$
 4

(b) Establish the following inequality using Lagrange's Mean Value theorem :

$$\frac{x^2}{2} < x - \log (1+x) < \frac{x^2}{2(1+x)} \text{ on } (-1, 0)$$
 4

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[P.T.O.]

(2)

3. (a) Evaluate : $\lim_{x \rightarrow 0} \left(\frac{\tan x}{x} \right)^{\frac{1}{x}}$ 4

(b) Show that the function f defined by

$$f(x) = 2x^2 - 3x + 5 \text{ is uniformly continuous on } [-2, 2].$$

4

Unit-II

4. (a) Let $f(x, y) = \begin{cases} \frac{xy}{\sqrt{x^2 + y^2}}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$ 4

Show that $f(x, y)$ is continuous at $(0, 0)$.

(b) If $z(x + y) = x^2 + y^2$, show that

$$\left(\frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)^2 = 4 \left(1 - \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)$$

4

5. (a) If $u = \cos^{-1} \left(\frac{x+y}{\sqrt{x} + \sqrt{y}} \right)$, show that

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + \frac{1}{2} \cot u = 0$$

4

- (b) Expand $e^x \cos y$ in terms of x and y as far as terms of third degree. 4

Unit-III

6. (a) If $f: \mathbb{R}^2 \rightarrow \mathbb{R}$ be a function such that both f_x and f_y are differentiable at a point (a, b) of the domain, then prove that $f_{xy}(a, b) = f_{yx}(a, b)$. 4

(3)

- (b) Show that the function

$$f(x, y) = \begin{cases} \frac{xy^2}{x^2 + y^2}, & (x, y) \neq (0, 0) \\ 0, & (x, y) = (0, 0) \end{cases}$$

is not differentiable at origin

4

7. (a) Find the values of x, y, z for which

$$\frac{5xyz}{x + 2y + 4z} \text{ is maximum given that } xyz = 8. \quad 4$$

- (b) A rectangular box without top is to have volume 32 cubic feet. Find the dimensions of the box requiring least material for its construction. 4

Unit-IV

8. (a) Express the curve $\vec{r} = e^{2t} \cos t \hat{i} + e^{2t} \sin t \hat{j} + e^{2t} \hat{k}$, $-\infty < t < \infty$ in the normal form. 4

- (b) Find the equation of osculating plane at any point t on the curve $\vec{r} = t \hat{i} + t^2 \hat{j} + t^3 \hat{k}$. 4

9. (a) For a spherical curve, prove that

$$\rho + \frac{d^2 \rho}{d\psi^2} = 0$$

where ψ is such that $d\psi = r ds$. 4

- (b) Find the involute of a circular helix

$$\vec{r} = a \cos u \hat{i} + a \sin u \hat{j} + bu \hat{k}.$$

4

(4)

9. Solve:

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$$

satisfying the boundary conditions:

$$u(0, y) = u(\pi, y) = 0 \text{ for all values of } y.$$

$$u(x, \infty) = 0 \quad 0 < x < \pi$$

$$\text{and } u(x, 0) = kx \quad 0 < x < \pi$$

8

Roll No.

Printed Pages : 4

GSM / D-17

PARTIAL DIFFERENTIAL EQUATION

Paper-BM-232

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all selecting at least one question from each unit. Question No. 1 is compulsory.

All questions carry equal marks.

1. (a) Find the differential equations of the set of all right circular cones whose axes coincide with Z axis. 2
- (b) Solve $(D^2 - DD' - 2D)Z = 0$ 1
- (c) Write two dimensional wave and Laplace equation. 1
- (d) Classify the following differential equation :

$$\frac{\partial^2 Z}{\partial x^2} - \frac{\partial^2 Z}{\partial y^2} = 0$$
 2
- (e) Find whether the following partial differential equation is hyperbolic, parabolic or elliptic in nature

$$\frac{\partial^2 Z}{\partial x^2} + x^2 \frac{\partial^2 Z}{\partial y^2} = 0 \quad x \neq 0$$
 2

Unit-I

2. (a) Form the partial differential equation by eliminating arbitrary function from

$$Z = f\left(\frac{xy}{z}\right)$$

4

(2)

(b) Solve : $yzp + zxq = xy$ 43. (a) Solve : $(p^2 + q^2) y = qz$ using Charpit's Method. 4

(b) Find the complete integral of

$$p_1 x_1 (p_1 + p_2) + x_1 + x_2 = 0$$

by using Jacobi's method. 4

Unit-II4. (a) Solve : $(D^2 - DD' - 2D^2) z = (2x^2 + xy - y^2) \sin xy - \cos xy$ 4(b) Solve : $(D^2 - DD' - 2D) z = \sin(3x + 4y)$ 4

$$(D^2 - DD' - 2D) z = \sin(3x + 4y)$$

5. (a) Solve : $x^2 \frac{\partial^2 z}{\partial x^2} - y^2 \frac{\partial^2 z}{\partial y^2} = x^2 y$ 4(b) Solve : $(3D^2 - 2D'^2 + D - 1) z = 4e^{xy} \cos(x + y)$ 4

$$(3D^2 - 2D'^2 + D - 1) z = 4e^{xy} \cos(x + y)$$

Unit-III

6. (a) Classify and reduce the equation to canonical form

$$\frac{\partial^2 z}{\partial x^2} - x^2 \frac{\partial^2 z}{\partial y^2} = 0$$

(3)

(b) Reduce the equation :

$$x^2 r - 2xys + y^2 t - xp + 3yq - \frac{8y}{x} = 0$$

to the canonical form and hence solve it. 4

7. (a) Prove that the Green's function for the equation

$$\frac{\partial^2 z}{\partial x \partial y} + \frac{2}{x+y} \left(\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} \right) = 0$$

subject to conditions

$$z = 0, \quad \frac{\partial z}{\partial x} = 3x^2 \quad \text{on } y = x \text{ is given by}$$

$$w(x, y, \xi, \eta) = \frac{(x+y) \{2xy + (\xi - \eta)(x-y) + 2\xi\eta\}}{(\xi - \eta)^3}$$

(b) Solve : $r = a^2 t$ 4**Unit-IV**

8. (a) Determine the characteristics of the equation

$$e^{2x} \frac{\partial^2 u}{\partial x^2} + 2e^{xy} \frac{\partial^2 u}{\partial x \partial y} + e^{2y} \frac{\partial^2 u}{\partial y^2} = 0$$

(b) Solve :

$$\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$$

satisfying the conditions : $u(0, t) = u(a, t) = 0 \quad \forall t$

$$u(x, 0) = u_a \sin\left(\frac{\pi x}{a}\right)$$

$$\text{and } \left(\frac{\partial u}{\partial t}\right)_{t=0} = 0$$

(4)

- (c) P and Q are two like parallel forces. A couple of moment G is combined with them. Show that their resultant is displaced through a distance $\frac{G}{P+Q}$. 2

- (d) Three forces P, Q and R act on a particle and keep it in equilibrium. If the angle between the forces P and Q and Q and R each be 120° . Prove that $P = Q = R$. 2

- (e) The resolved part of force F in a direction is $\frac{\sqrt{3}}{2}F$. Find its inclination with the force. Also find the other resolved part. 2

Roll No.

Printed Pages : 4

GSM/D-17

MATHEMATICS

Paper-BM-233

Statics

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five question in all selecting one question from each unit. Q. No. 9 is compulsory.

Unit-I

1. (a) A transversal with the lines of action of three concurrent forces P, Q, R in L, M, N respectively. If R is the resultant of P and Q. Show that $\frac{P}{OL} + \frac{Q}{OM} = \frac{R}{ON}$ where O is the point of concurrence of the forces. 4

- (b) Three forces P, 2P and 3P act along the sides AB, BC and CA of a given equilateral triangle ABC. Find the magnitude and direction of their resultant. Also find the point D in which the line of action meets the side BC. 4

2. (a) Prove that two-coplanar couples of equal and opposite moments, balance each other. 4

(2)

- (b) P and Q are two like parallel forces. If P be moved parallel to itself through a distance x, show that their resultant moves through a distance $\frac{xP}{P+Q}$.

Unit-II

3. Two equal beams AB and AC are hinged at A and are placed in a vertical plane with their extremities B and C resting on a horizontal plane, the are kept from falling by strings attached at B and C joining the mid-points of opposite beam. Show that the tension of either string is $\frac{W}{8}\sqrt{1+\cot^2\theta}$. Where θ is the inclination of each beam with horizontal and W is the weight of each beam. Also find the action of the hinge on either beam. 7
4. Find the position of the C.G. of the cycloid $x = a(\theta + \sin\theta)$, $y = a(1 - \cos\theta)$ which lies in the positive quadrant. 7

Unit-III

5. A force F acts along the axis of x and a force nF along a st. line, intersecting the axis of y at a distance c from the origin and parallel to the plane of zx. Show that as this straight line turns around the axis of y, the central axis of the forces generates the surface $[n^2x^2 + (n^2-1)z^2](c-y)^2 = y^2x^2$. 7

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(3)

6. A solid hemisphere is supported by a string fixed to a point on its rim and to a point on a smooth vertical wall with which the curved surface is in contact. If θ and ϕ are the inclinations of the string and the plane base of the hemisphere to the vertical. Show that $\tan\phi = \frac{3}{8} + \tan\theta$. 7

Unit-IV

7. (a) If P and Q be two non-intersecting forces whose directions are perpendicular. Show that the ratio of distance of the central axis from their lines of action are Q^2 to P^2 . 4
- (b) Find the null point of the plane $lx+my+nz = 1$ for the system of the forces $< x, y, z; L, M, N >$. 4
8. A heavy uniform rod rests with one end against a smooth vertical wall and with a point in its length resting on smooth peg. Find the position of equilibrium and show that it is unstable. 8

Unit-V

(Compulsory Question)

9. (a) Find the centre of gravity of a uniform triangular lamina. 2
- (b) To find the least force to drag a heavy body on a rough horizontal plane. 2

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[P.T.O.]

Roll No.
Printed Pages : 3

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GSM/D-17
PHYSICS
Paper-PH-301-V

Computer Programming and Thermodynamics

Time allowed : 3 hours

[Maximum marks : 40]

Note : *Attempt five questions in all, selecting at least one from each unit. Question No. 1 is compulsory. Use of Scientific (non-programmable) calculator is allowed. Log tables may be asked for.*

Compulsory Question

1. (a) Convert the decimal number 116.5625 to binary number. 2
(b) What are valid characters used in Fortran also discuss program organization. 2
(c) State and prove principle of degradation of energy. 2
(d) Using first Latent heat equation, explain that boiling point of water at Shimla (H.P.) is less than Kurukshetra. 2

Unit-I

2. (a) State and explain sub-routine and function subprograms. 4
(b) Explain the use of GOTO statement with the help of an example. 4
3. Explain different components of the computer using the block diagram. 8

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[P.T.O.]

(2)

Unit-II

4. Develop an algorithm, draw flow chart and write a program to solve quadratic equation. 8
5. Write an algorithm and program to find
 - (a) Maximum, minimum and range of given set of numbers. 4
 - (b) Average and Standard Deviation. 4

Unit-III

6. (a) State Joule-Thomson Effect. Explain Porous plug Experiment. 4
- (b) What is TS diagram ? Derive the expression for the efficiency of Carnot's engine from it. 4
7. (a) Define entropy. Derive expressions of entropy of a perfect gas in terms of pressure, volume and temperature. 6
- (b) A Carnot engine has an efficiency of 50%, when its sink temperature is 27°C. What must be the change in its source temperature, so that efficiency becomes 60%. 2

Unit-IV

8. (a) Derive Clausius heat equation

$$C_2 - C_1 = \frac{dL}{dT} - \frac{L}{T}$$

(3)

- (b) Calculate the Latent heat of ice, given that change of pressure of 1 atmosphere changes the melting point of ice by 0.008°C and when one gram of ice melts, the change in volume is 0.0907 cc. 3
9. Define the four thermodynamical functions and hence derive Maxwell's thermodynamical relations. 8

Roll No.

941

Printed Pages : 3

GSM/D-17

PHYSICS

Paper-VI

Waves and Optics-I

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting one question from each unit. **Question No. 1 is compulsory.** All questions carry equal marks.

Compulsory Question

1. (a) Can a sustained interference pattern be obtained with two electric lamps placed close to each other? 2
- (b) In Michelson's interferometer 180 fringes cross the field of view when the moveable mirror is moved through 0.0589 mm. Calculate the wavelength of light used. 2
- (c) Why the contrast of fringes formed in transmitted system in Newton's rings is poor? $1\frac{1}{2}$
- (d) Define Fresnel's half period zones. 1
- (e) What is the condition of absent spectra in a grating? $1\frac{1}{2}$

Unit-I

2. (a) Prove that in case of interference, dark and bright bands are of equal width. 3
- (b) Discuss the formation of fringes by Lloyd's mirror and explain why the central fringe is black? Find the expression for fringe width. 5

3. (a) Describe the biprism method of producing the interference fringes. How can it be used to find the thickness of thin transparent sheet ? 5
(b) Explain Stoke's treatment of reflection. 3

Unit-II

4. (a) How interference take place in thin films ? Show that transmitted and reflected patterns are complementary. 5
(b) How can Michelson's interferometer be used for the standardization of a meter ? 3
5. (a) Derive an expression for the diameter of bright rings in Newton's ring experiment. 3
(b) Explain the interference by wedge shaped film and find the expression of fringe width. 5

Unit-III

6. (a) What is Zone plate ? Explain that zone plate has multiple foci. 5
(b) Calculate the radii of three transparent zones of a zone plate which focus a parallel beam of wavelength 50000\AA at a distance of 2 cm. 3
7. (a) Discuss the formation of Fresnel's diffraction patterns produced by a circular aperture analytically. 6
(b) What is the nature of diffraction pattern due to straight edge ? 2

Unit-IV

8. (a) Discuss the Fraunhofer diffraction at double slit. Find the positions of maxima and minima in the diffraction pattern. 6
(b) Derive an expression for the dispersive power of grating. 2
9. (a) Explain Rayleigh's criterion of resolution. Derive an expression of resolving power of a telescope. 5
(b) A plane grating has 15000 lines per inch. Find the angle of separation of 5048\AA lines of helium in second order. 3

Roll No.
Printed Pages : 3

942

GSM / D-17

CHEMISTRY

Paper-VIII-CH-201

Inorganic Chemistry

Time allowed : 3 hours]

[Maximum marks : 32

Note :- Attempt five questions in all, selecting at least two questions from each section. Question No. 1 is compulsory.

1. (i) What is a chelate? Give example.
- (ii) Name a transition metal which is liquid at room temperature.
- (iii) Name the 3d series element which is not included in category of transition elements.
- (iv) What is Ziegler Natta Catalyst?
- (v) Give an example of protic solvent and of amphiprotic solvent.
- (vi) Write a complex ion of Fe (II).
- (vii) Ru is one of the _____ metals.
- (viii) AgCl is soluble in liquid _____ but insoluble in water. 1×8

Section-A

2. (i) Why are transition metals less reactive than s-block elements? 2
- (ii) Describe the structure of $\text{Ni}(\text{CO})_4$. 4

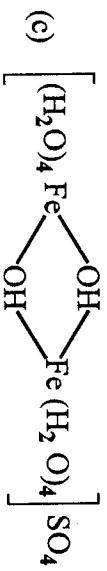
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[Turn over

(2)

3. (i) Describe the irregular electronic configurations of Cr and Cu. 2
- (ii) Explain the structure of FeCl_3 . 3
- (iii) Give maximum oxidation state exhibited by Os. 1
4. (i) Describe the main differences between the 2nd and 3rd row transition elements. 3
- (ii) Which of the following is more paramagnetic and why? 2
- (iii) Which will have higher value of electronegativity? Explain. Fe (II) or Fe (III) 1
5. (i) Explain the trends of variation of atomic radius in 1st transition series. 2
- (ii) How will you account for the following: I.E. of Hg is higher than that of Cd. 2
- (iii) Explain that Cr^{+2} is strongly reducing while Mn (III) is strongly oxidising. 2

Section-B

6. (i) Write IUPAC names of the following: 3
- (a) $\text{H}_2\text{Cr}_2\text{O}_7$
- (b) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$
- (c)  2

(3)

- (ii) Square Planar complexes do not exhibit optical isomerism. Explain. 1½
- (iii) Discuss structure of $[\text{Cr}(\text{NH}_3)_6]^{+3}$ according to valence Bond Theory.
7. (i) Discuss the structure of ethylene diamine tetra-acetate ligand showing its donor sites. Draw the structure of $[\text{Co}(\text{EDTA})]^{-1}_{\text{ion}}$ also. 2
- (ii) What is Effective Atomic number and EAN rule. Give one example. 2
- (iii) Explain the geometry and magnetic behaviour of $[\text{MnCl}_4]^{-2}$ with the help of VBT. 2
8. (i) Define the term non-aqueous solvent with two examples. 1½
- (ii) Why SO_2 is a better solvent for organic compounds? 1½
- (iii) In aqueous solution, Na liberates H_2 gas but is stable in NH_3 solution. Discuss giving equations. 3
9. (i) Explain with examples that non-polar compounds are usually soluble in strong polar solvents. 2
- (ii) Discuss.
 - (a) Acid-base reactions in liquid NH_3 with example. 2
 - (b) Precipitation reactions in liquid SO_2 . Give example also. 2

Roll No.

944

Printed Pages : 3

GSM / D-17

CHEMISTRY

Paper-IX (CH-202)

Physical Chemistry

Time allowed : 3 hours

[Maximum marks : 32]

***Note :** Attempt five questions in all, selecting at least two questions from each section. Question No. 1 is compulsory. Use of Log-table and Non-Programming calculator is allowed.*

Compulsory Question

- I.**
- | | | |
|-------|---|---|
| (a) | What do you understand by inversion temperature ? | 1 |
| (b) | State the variable which are kept constant in the following processes : | |
| (i) | Isothermal process | |
| (ii) | Isobaric process | |
| (iii) | Isochoric process | 2 |
| (c) | What is the change in internal energy when an ideal gas expands isothermally and reversibly ? | 1 |
| (d) | Define the term 'Chemical Potential'. Write an expression for it. | 2 |
| (e) | Why 100% extraction is not possible howsoever large number of instalments of the extracting solvent may be used ? | 2 |

(2)

Section-A

2. (a) Derive an expression for the work done in a reversible and isothermal expansion of ideal gas. 3
(b) Show that for one mole of ideal gas,
 $C_p - C_v = R$
Where the symbols have their usual meanings. 2
(c) Under what condition an extensive property may become intensive property ? Give an example. 1
3. (a) Show that for reversible and adiabatic expansion of an ideal gas, $PV^\gamma = \text{constant}$. 3
(b) Show that work done by the system is maximum if the process is carried out under reversible conditions. 2
(c) What is the physical significance of enthalpy ? 1
4. (a) Define Joule-Thomson Coefficient. Prove thermodynamically that Joule-Thomson Coefficient for an ideal gas is zero. 3
(b) If pressure, volume and temperature of one mole of a gas are related as $(P + \frac{a}{V^2})V = RT$, show that (i) P is a state function (ii) dP is exact differential. 3
5. (a) State first law of thermodynamics. Derive its mathematical formulation. 2½
(b) Calculate the maximum work done by the system during reversible and isothermal expansion of one mole of an ideal gas from 2.24 litres to 22.4 litres at 273K. 2
(c) What is the main difference between an Open, Closed and isolated systems ? 1½

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(3)

Section-B

6. (a) Define Law of Chemical Equilibrium. How can it be derived thermodynamically ? 3
(b) Define Distribution Law. What are the conditions under which the law is applicable ? 2
(c) Can we find the distribution coefficient of iodine between water and ethyl alcohol ? Why or why not ? 1
7. (a) Derive Clausius-Clapeyron equation in the integrated form for liquid-vapour equilibrium. 4
(b) Derive Nernst Distribution Law using the concept of chemical potential. 2
8. (a) Derive Van't Hoff equation in the integrated form. 3
(b) 1000CC of an aqueous solution containing 30 g of an organic acid is extracted with 300 cc of ether using 100 cc in each operation. Calculate the amount of organic acid left in aqueous solution. The distribution coefficient of organic acid between ether and water is 3. 3
9. (a) Describe the use of distribution law in determining the equilibrium constant of the following chemical equilibrium : 4
 $KI + I_2 \rightleftharpoons KI_3$
(b) The value of equilibrium constant K_p for the reaction
 $N_2O_2 \rightleftharpoons 2NO_2$
at 25°C is 0.14. Calculate standard free energy change for the reaction. 2

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GSM / D-17
CHEMISTRY
Paper-X-CH-203
Organic Chemistry

Time allowed : 3 hours

[Maximum marks : 32]

Note : Attempt five questions in all, selecting at least two from each section. Question No. 1 is compulsory.

Compulsory Question

1. (a) Which geometrical isomer of stilbene absorbs at higher wave length and why ? 2
- (b) Why phenol is acidic in nature ? 2
- (c) What is trans-esterification ? Explain with example. 2
- (d) What happens when :
 - (i) Ethylene glycol is distilled with conc. H_2SO_4 . 1
 - (ii) Ethylene oxide is treated with Phenylmagnesium bromide followed by hydrolysis. 1

Section-A

2. (a) Explain dehydration of z-butanol with mechanism ? 2
- (b) Explain with mechanism preparation of ethanol from ethanol using $LiAlH_4$? 2
- (c) What happens when ethyl alcohol reacts with
 - (i) Thionylchloride
 - (ii) Ethylmagnesium bromide ? 2

(2)

3. (a) Discuss the mechanism of Claisen rearrangement ? 2
 (b) Discuss the epoxidation of ethene using OSO_4 with mechanism ? 2
 (c) Compare the acidic character of 1° , 2° and 3° alcohols giving reasons ? 2
4. (a) Discuss with mechanism oxidative cleavage of ethylene glycol using HIO_4 . 2
 (b) Complete the following :
 (i) Phenol + dil. $\text{HNO}_3 \rightarrow ?$
 (ii) Phenol + aq. $\text{Br}_2 \rightarrow ?$
 (iii) Ethanol + conc. $\text{H}_2\text{SO}_4 \xrightarrow{443\text{K}} ?$
 (iv) $\text{CH}_3 - \overset{\text{CH}_3}{\underset{\text{O}}{\text{C}}} - \text{CH}_2 + \text{CH}_3\text{OH} \xrightarrow{\text{H}^+} ?$
5. (a) Give the mechanism of base catalysed ring opening of epoxide ? 2
 (b) Which one is more acidic and why ?
 (i) p-nitrophenol or (ii) m-nitrophenol 2
 (c) Explain Kolbe's Reaction with mechanism ? 2

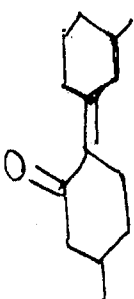
Section-B

6. (a) Outline following reactions : 3
 (i) Rosenmund Reaction
 (ii) Hofmann Bromamide Reaction
 (iii) Hell-Volhard Zelinsky Reaction

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(3)

- (b) Arrange acid halides, ester anhydride and amides in increasing order of stability and give reasons ? 3
7. (a) How acetic acid can be prepared using :
 (i) Carbon dioxide
 (ii) Ethanitrile ? 2
 (b) Why acid anhydrides are weakly basic in nature ? 2
 (c) Acetone absorbs at 279 nm in n-hexane whereas in water it absorbs at 264.5 nm. Explain. 2
8. (a) Explain various types of electronic transitions in UV region and arrange them in order of increasing energy. 3
 (b) Explain with example effect of conjugation on λ_{max} . 2
 (c) Define Bathochromic shift. 1
9. (a) Calculate λ_{max} for following compound : 2



- (b) Name the type of electronic transition in following compounds : 2
 (i) Acetophenone
 (ii) 1, 3 butadiene
- (c) Bring out following conversions :
 (i) Acetic acid into ethane
 (ii) Acetic acid into acetic anhydride. 2

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GSM / D-17

BOTANY

Paper-II

Plant Anatomy

Time allowed : 3 hours

[Maximum marks : 40]

Note : Attempt five questions in all, selecting at least two questions from each unit. *Question No. 1 is compulsory. Support your answer with relevant diagrams wherever necessary. All questions carry equal marks.*

Compulsory Question

1. Answer briefly :

- (a) What are annual plants ? Give an example.
 - (b) What is a meristematic tissue ?
 - (c) What do you understand by conjoint, collateral and closed vascular bundle ?
 - (d) What is a companion cell ?
 - (e) Define Phyllotaxy.
 - (f) What are casparian strips ?
 - (g) What are pneumatophores ?
- 8×1=8

Unit-I

2. Write short notes on :

- (a) Collenchyma and its functions
- (b) Sieve tubes
- (c) Tracheids

3+3+2

3. Write short notes on :

- (a) Annual Growth Rings
- (b) Tunica corpus theory
- (c) Cambium and its function

2+3+3

4. Write short notes on :

- (a) Periderm
- (b) Anatomy of a dicot stem

4+4

5. With suitable diagrams explain the abnormal secondary growth in *Dracaena*.

8

Unit-II

6. Write short notes on :

- (a) Multiseriate epidermis
- (b) Phyllotaxy
- (c) Cell inclusions in leaves.

3+3+2

7. Briefly explain the stomatal apparatus and their morphological types.

8

8. Write short notes on :

- (a) Secondary growth in dicot root.
- (b) Structural modification in epiphytic roots.

4+4

9. Write short notes on :

- (a) Anatomy of dicot root
- (b) Leaf abscission.

4+4

Printed Pages : 2

GSM / D-17
ZOOLOGY
Paper-I

Life and Diversity of Chordates-I

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting two questions each from Section-A and B. Question No. 1 is compulsory. Support your answer with neat and well-labelled diagram(s) wherever required.

1. Answer the following in about 20 words each :

- (a) Retrogressive metamorphosis
 - (b) Dorsal tubercle
 - (c) Vanadocytes
 - (d) Velum
 - (e) Anadromous migration
 - (f) Solenocytes
 - (g) Buccal funnel
 - (h) Intestinal bulb
 - (i) Physostomus
 - (j) Pineal eye
- 10×1=10

Section-A

2. Describe the blood vascular system of *Herdmania*. 7.5

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P.T.O.

3. Write short note on the following:

- (a) Hatschek's nephridium
- (b) Primary gill bars
- (c) Endostyle of *Herdmania* 3×2.5=7.5
- 4. (a) Enlist the general characters of Vertebrata 3.5
- (b) Enumerate various theories of chordate origin. 4
- 5. Write short note on the following:
- (a) Test of *Herdmania* 4
- (ii) Endostyle of *Amphioxus* 3.5

Section-B

- 6. Describe external features of *Petromyzon*. 7.5
- 7. Describe the digestive system of *Labeo*. 7.5
- 8. Write brief notes of the following:
- (a) Fish migration 4
- (b) Affinities of Cyclostomes 3.5
- 9. (a) Give a brief account of the metamorphosis of ammocoetes larva. 3.5
- (b) Describe lateral line system of *Labeo* 4

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Printed Pages : 2

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(2)

**GSM / D-17
ZOOLOGY**

Paper-II

Mammalian Physiology-I

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting at least two questions from each Section. Question No. 1 is compulsory. Draw well labelled diagrams wherever necessary.

1. Explain the following:

- (a) Oligosaccharide
- (b) Enzyme
- (c) Osteoarthritis
- (d) Assimilation
- (e) Single muscle twitch
- (f) Diffusion
- (g) Marasmus
- (h) Smooth muscle
- (i) Pellagra
- (j) Endocytosis

1×10=10

Section-A

- 2. (a) Give an account of secondary structure of protein. 4
- (b) Discuss functions of carbohydrates. 3½

- 3. (a) Describe nomenclature of enzymes. 5
- (b) Write a note on buffers. 2½

- 4. (a) Discuss structure and role of fatty acids. 5
- (b) Explain Heterosaccharides. 2½

- 5. (a) Give a detailed account of induced fit theory. 4½
- (b) Explain pinocytosis 3

Section-B

- 6. (a) Discuss digestion carbohydrates in human beings. 5
- (b) Explain role of vitamins. 2½

- 7. (a) Describe various types of nutrition and feeding in mammals. 4½

- (b) Discuss absorption of proteins. 3

- 8. (a) Describe mechanism of muscle contraction. 5
- (b) Give an account of oxygen debt. 2½

- 9. (a) Explain in detail structure of bone. 5
- (b) Discuss osteoporosis. 2½

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GSM / D-17
ELECTRONICS
Paper-I

OPAMP And Linear Integrated Circuits-I

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) What are the advantages and disadvantages of integrated circuit over conventional circuits ?
- (b) What is buried layer in an I.C. ? Why is it used ?
- (c) What is virtual ground in an OPAMP ?
- (d) What is the effect of -ve feed back in non-Inverting amplifier on the input resistance of OPAMP. 2×4

Unit-I

2. Discuss in detail the various steps involved in fabricating a monolithic Integrated Circuits. 8
3. Write note on the following processes used in I.C. fabrication.
 - (i) Epitaxy 4×2
 - (ii) Photolithography

Unit-II

4. Discuss the fabrication of the following in an Integrated circuit :
 - (i) Resistor
 - (ii) Capacitors 2+3+3
 - (iii) JFET.

5. (a) How I.C. diodes are fabricated ? Sketch the cross-section of two types of emitter base diodes. 4
- (b) Describe a supergain transistor. 4

Unit-III

6. Draw and explain the circuit of an emitter coupled differential amplifier and derive an expression for the differential voltage gain. 8

7. (a) Explain the operation of an OPAMP as difference amplifier. 4

- (b) Design a summing amplifier using OPAMP for an output

$$V_o = - \left[\frac{A}{3} + \frac{B}{2} + \frac{C}{6} \right] \text{ where A, B and C are the input voltages if the feed back resistor is } 30 \text{ K}\Omega. \quad 4$$

Unit-IV

8. (a) Explain the input offset voltage in an OPAMP. Find the expression for the output offset voltage due to input offset voltage in an OPAMP used in Inverting and Non-Inverting configuration. 5
- (b) Explain the operation of OPAMP as Integrator. 3
9. Discuss the advantages of Active filters. Explain the operation of a first order High pass filter using OPAMP and calculate the expression for the cut off frequency. 8

GSM / D-17

ELECTRONICS

Paper-II

Digital Electronics-I

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all, selecting one from each unit. Question No. 1 is compulsory.

Compulsory Question

1. (a) Define half subtractor and full subtractor. $1\frac{1}{2}$
(b) Describe the applications of demultiplexer. $1\frac{1}{2}$
(c) Differentiate between synchronous and asynchronous counter. $1\frac{1}{2}$
(d) Explain the difference between RS latch and RS flip-flop. $1\frac{1}{2}$
(e) Realize a full adder using two half adders. 2

Unit-I

2. (a) Design a full adder using NOR gates only. 4
(b) Discuss the design of 4-bit parallel binary adder. 4
3. (a) Draw and explain a binary half adder. Find out its sum and carry bit outputs. Show how it can be designed using five NAND gates only. 4
(b) Draw and explain a four bit BCD adder. 4

Unit-II

4. (a) What is Multiplexer ? Design full subtractor circuit two 8:1 MUX. 4

- (b) What is a decoder ? Explain how two 3-to-8 line decoder be used to design 4-to-16 line decoder. 4

5. (a) Explain to implement 16:1 MUX using two 8:1 MUX(s). 5

- (b) What is a demultiplexer and how does it differ from a decoder ? Can a decoder be used as a demultiplexer ? 3

Unit-III

6. (a) Draw and explain the working of a positive edge triggered J-K flip-flop. Also explain the race around problem. 4
(b) Draw circuit diagram for asynchronous R-S flip-flop using NAND gates and discuss its operation. 4
7. (a) Describe the working of a R-S flip-flop. How it differs from D flip-flop ? 4
(b) Derive the expression for Q_{n+1} in terms of Q_n and J and K inputs for a clocked J-K flip-flop with active LOW J and K inputs. Q_n and Q_{n+1} have the usual meaning. 4

Unit-IV

8. (a) Describe the working of a decade counter with the help of logic diagram. 4
(b) Design MOD-4 regular synchronous counter using T-flip-flops. 4
9. (a) Discuss the design principle of digital clock. 4
(b) Design a circuit using a counter to generate the following pulse train 110100 and repeats. 4

GSM / D-17
COMPUTER SCIENCE

Paper-I

Data Structure

Time allowed : 3 hours]

[Maximum marks : B.Sc. = 40

Note : Attempt any five questions. Select one from each unit.

Question No. 1 is compulsory. All questions carry equal marks.

1. (a) Name two pattern matching algorithms. (2)
- (b) Differentiate Array¹, LIST. (2)
- (c) Name two applications of stack. (2)
- (d) Define full-binary-tree. (1)
- (e) Write formula for searching an element in Row-Major 2-D Array. (1)

Unit-I

2. Define Data Type and Data Structure. Write categories of Data Structure. (8)

3. (a) What is Time and Space Complexity? Give example. (4)
- (b) Write any 4 string operations. (4)

Unit-II

4. (a) Write an Algorithm to Insert K^{th} element in $A[N]$. (4)
- (b) Discuss Sparse Matrix and Parallel Array. (4)

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[Turn over

(2)

5. (a) Write an Algorithm to Insert an element at 'Start' and at 'END' in SLL. (4)
- (b) Discuss Garbage Collection. (4)

Unit-III

6. Define LIFO, Discuss PUSH and POP Algorithm for stack. (8)

7. (a) Differentiate stack and queue. Write an algorithm for deletion in simple queue. (4)
- (b) Discuss concept of Polish notation as application of stack. (4)

Unit-IV

8. Define tree, binary tree and discuss two algorithms for traversing a tree. (8)
9. (a) Define Graph and Types of Graph. (4)
- (b) Discuss any pattern matching algorithm. (4)

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COMPUTER SCIENCE

Paper-II

Software Engineering

Time allowed : 3 hours]

[Maximum marks : B. Sc. : 40

Note : *Attempt five questions in all, selecting one question from each unit. Question No. 1 is compulsory. All questions carry equal marks.*

1. (i) What are the quality attributes of software ?
(ii) What is stamp coupling ? Discuss using an example.
(iii) What is gold plating risk ?
(iv) What types of bugs are detected during integration testing ?
(v) What are the different uses of cyclomatic complexity ?

Unit-I

2. (a) What do you understand by software metrics ? Write a note on the role of metrics in software development.
(b) What is waterfall model of software development ? What are its limitations ? Discuss.
3. (a) What is software crisis ? Discuss the factors responsible for software crisis.
(b) What is the spiral model of software development ? Discuss.

(2)

Unit-II

4. (a) Draw a structured chart for the problem to find the product of two matrices. Identify the modules satisfying functional cohesiveness and data coupling.
(b) What are the different components of SRS ? Discuss.
5. (a) What are the problems with stamp coupling ? Discuss using a suitable example.
(b) What is function point ? Discuss the use of function points in analysis phase.

Unit-III

6. (a) What is democratic team structure ? What are its merits and demerits ? For what type of projects, it is suitable ?
(b) What are the different approaches to software cost estimation ? What is COCOMO ? Discuss.
7. (a) What is DFD ? What are the different symbols used in it ? Draw a DFD for counting the frequency of different characters in a string.
(b) What do you understand by software quality assurance ? Why is it considered as an umbrella active ?

Unit-IV

8. What is the difference between statement coverage, branch coverage and path coverage criteria of testing ? What is

(3)

the relationship between these three ? Discuss any suitable example.

9. Differentiate between following :
 - (a) Adaptive and perfective maintenance
 - (b) Verification and validation
 - (c) Unit testing and integration testing

GSM / D-17

COMPUTER APPLICATIONS

Paper-I

Web Designing Fundamentals

Time allowed : 3 hours]

[Maximum marks : 40

Note : Answer five questions in all, selecting at least one question from each unit. Question No. 1 is compulsory.

1. Compulsory Question :

- (a) What is an ISP ? Name any four ISP's. 1
- (b) What is Webcasting ? 1
- (c) Define Web Hosting. 1
- (d) Explain briefly various features of HTML. 2
- (e) Distinguish between ordered list & unordered list. 2
- (f) Explain the <FRAMESET > tag. 1

Unit-I

- 2. (a) Give features of various Browsers available in market. 4
- (b) Write short note on Hyper text transfer protocol. 4
- 3. (a) Explain different searching techniques. 4
- (b) Explain Search Engine & their tools. 4

Unit-II

- 4. (a) Explain various points while planning a website. 4
- (b) Explain various web design methodologies. 4

- 5. (a) Explain the term Domain Names. Why register a Domain ? 4
- (b) Explain various steps to developing your website. 4

Unit-III

- 6. (a) Explain the basic structure of HTML document. 3
- (b) Explain various kinds of Links of HTML. 5
- 7. How can you format a webpage ? Explain with example. 8

Unit-IV

- 8. (a) Write the steps to Inserting image or graphics on your webpage. 4
- (b) Explain with example various attributes used with table tag. 4
- 9. (a) Explain the following with example :
 - (i) Setting Frame Margin 3
 - (ii) Communication between Frames. 3
- (b) What is the purpose of <FORM> tag ? 2

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COMPUTER APPLICATIONS

Paper-II

Data Base Management System

Time allowed : 3 hours]

[Maximum marks : 40

Note : (i) All questions carry same marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt one question from each unit.

1. Explain the following:

2×4=8

(a) Users

(b) DBMS

(c) File

(e) Client Server

Unit-I

2. What are the component of DBMS ?

8

3. What are the advantages of DBMS ?

8

Unit-II

4. What are the different levels of Abstraction of data in DBMS ?

8

5. What is data Independence ?

8

(2)

Unit-III

6. Illustrate Physical data Model with example.

8

7. Explain ER-Diagram.

8

Unit-IV

8. Classify various types of Relationships and Constraints over them.

8

9. What is RDBMS ?

8

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[Turn over

964

GSM / D-17

BIOTECHNOLOGY

Paper-VI

Immunology

Time allowed : 3 hours]

[Maximum marks : 40

Note : The candidates are required to attempt question no. 1 and four others, selecting one question from each unit.

1. Explain the following in brief:

8 × 1 = 8

- (a) Macrophages
- (b) Avidity of antibody
- (c) Epitopes
- (d) Humoral immunity
- (e) Autoimmunity
- (f) Lymphokines
- (g) Name B-cell surface markers
- (h) Inactivated vaccines

Unit-I

2. (a) Discuss the features/characteristics of innate and adaptive immune system. 4

(b) Discuss B-and T-lymphocytes in detail. 4

3. (a) Explain the functioning of secondary lymphoid organs in immune system with the help of well-illustrated diagram. 4

(b) Explain the functions of different classes of antibody. 4

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[Turn over

4. (a) Write short notes on the following: 2 × 2 = 4

(i) Factors affecting antigenicity.

(ii) How antibodies are produced ?

(b) Differentiate between the following : 2 × 2 = 4

(i) Precipitation and agglutination reactions

(ii) ELISA and RIA

Unit-II

5. Discuss in detail about the cell mediated immunity giving an account of cells involved and write down its functions. 8

6. (a) What is hypersensitivity and what are its different types ? 4

(b) Discuss recombinant vaccines in detail. 4

7. Write short notes on the following : 4 × 2 = 8

(a) Structure of class II MHC molecules.

(b) Immunological tolerance

(c) Flowchart of alternate pathway of complement system

(d) T-dependent and T-independent antigens

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BIOTECHNOLOGY

Paper-VII

Molecular Biology

Time allowed : 3 hours]

[Maximum marks : 40

Note : Attempt five questions in all. Question No. 1 is compulsory. Attempt any two questions from each unit.

All questions carry equal marks.

1. State whether the following statements are True (T) or False (F):
 - (a) Denatured DNA shows hyperchromatic effect.
 - (b) Plasmids are replicated along with chromosomal DNA.
 - (c) Okazaki fragments are found on the lagging strand.
 - (d) Trp operon is regulated by attenuation.
 - (e) Ribozyme is RNA molecule having catalytic activity.
 - (f) Acridine is in inhibitor of translation.
 - (g) RNA polymerase binds at operator and repressor binds at promoter site in DNA.
 - (h) All prokaryotic and eukaryotic proteins have f-methionine on their N-terminal end.

1×8=8

Unit-I

2. (a) Describe the Hershey and chase experiment showing the nucleic acid is a genetic material. 4
- (b) Why is DNA supercoiled ? Name the enzymes involved in topological changing of DNA for its functioning? 4

971

[Turn over

3. (a) Explain the role of histones in DNA organization in eukaryotes. 4
- (b) Discuss the transposable elements in maize genome. 4
4. (a) Describe the process of replication initiation of prokaryotes. 4
- (b) How is DNA synthesized on a lagging strand ? Explain with suitable example. 4

Unit-II

5. (a) Enlist general characteristics of genetic code. 4
- (b) How is mRNA modified after transcription ? What is the importance of these modifications ? 4
6. (a) Why only standard amino acids are participating in protein synthesis ? How are these activated before translation ? 4
- (b) Explain the structural organization of ribosomes. Mention the roles of different rRNAs in the process of translation. 4
7. (a) How is the expression of lac operon regulated when both glucose and lactose are present in the growth medium ? 4
- (b) Give names and mode of action of two inhibitors of transcription in prokaryotes. 4

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PANJABI
(Compulsory)

Time allowed : 3 hours

[Maximum marks : 40]

ਨੋਟ : ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਜ਼ਰੂਰੀ ਹੈ ।

1. ਹੇਠ ਲਿਖੇ ਕਾਵਿ ਟੋਟਿਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਦੋ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ :

(ੳ) ਬਣ ਹਾਫਿਜ਼ ਹਿਫਜ਼ ਕੁਰਾਨ ਕਰੇਂ,
ਪੜ੍ਹ ਪੜ੍ਹ ਕੇ ਸਾਫ਼ ਜਬਾਨ ਕਰੇਂ,
ਫਿਰ ਨਿਆਮਤ ਵਿੱਚ ਧਿਆਨ ਕਰੇਂ,
ਮਨ ਫਿਰਦਾ ਜਿਉਂ ਹਲਕਾਰਾ ਹੈ ।

(ਅ) ਹੀਰ ਆਖਦੀ ਬਖਸ਼ੇਗਾ ਬੰਦਿਆਂ ਨੂੰ, ਮੇਰਾ ਰੋਂਬ ਰਹੀਮ ਗਫਾਰ
ਮਾਏ ।

ਮੈਨੂੰ ਆਸਰਾ ਰੋਂਬ ਕਰੀਮ ਦਾ ਹਈ, ਜਿਸ ਖਲਕ ਲੰਘਾਉਣ ਪਾਰ
ਮਾਏ ।
ਰੋਂਦ ਖਲਕ ਮਕਬੂਲ ਔਲਾਹ ਦੇ ਨੇ, ਨਹੀਂ ਜਾਹਿਲਾਂ ਦਾ ਇਤਬਾਰ
ਮਾਏ ।
ਅਸਾਂ ਇਸ਼ਕ ਵਿਹਾਜਿਆ ਮੁਕਬਲੇ ਥੋਂ, ਸਭ ਛਡਿਆ ਵਣਜ ਵਪਾਰ
ਮਾਏ ।

(ੲ) ਸੱਸੀ ਨਾਲ ਜਈਆਂ ਕਰ ਮਸਲੂਤ, ਬਾਗ ਚਲ ਆਈ ।
ਹਰ ਹਰ ਦੇ ਹਥਿ ਸ਼ਾਖ ਚਿਨਾਹੀ, ਤੇਗ ਮਿਸਾਲ ਸਿਪਾਈ ।
ਉਮਰ ਅਵਾਇਲ, ਮਾਣ ਹੁਸਨ ਦਾ, ਜਾਇ ਪਈਆਂ ਕਰ ਪਾਈ ।
ਹਾਸਮ ਮਾਰ ਪਈ ਕਰਵਾਨਾਂ, ਦੇਣ ਬਲੋਚ ਦੁਹਾਈ ।

(2)

(ਸ) ਦੋਹੀਂ ਦਲੀਂ ਮੁਕਾਬਲੇ, ਰਣ ਸੂਰੇ ਗੜਕਣ ।

ਚੜ੍ਹ ਤੋਛਾਂ ਗਭੀਂ ਛੁੱਕੀਆਂ ਲੱਖ ਸੀਗਲ ਖੜਕਣ ।

ਉਹ ਦਾਰੂ ਖਾਂਦੀਆਂ ਕੋਹਲੀਆਂ ਮਣ ਗੋਲੇ ਰੜਕਣ ।

ਜਿਉਂ ਦਾਗ ਪਲੀਤੇ ਛਡੀਆਂ, ਵਾਂਗ ਬੈਦਲ ਕੜਕਣ । $5+5=10$

2. ਹੇਠ ਲਿਖਿਆਂ ਕਹਾਣੀਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਦਾ ਸਾਰ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ :

(ਉ) ਸਾਂਝੀ ਕੰਧ

(ਅ) ਰੋਬ ਦੀ ਮੋਤ

(ੲ) ਅਰਜੀ ।

10

3. ਤੁਹਾਡਾ ਘਰ ਦਾ ਪਤਾ ਬਦਲ ਗਿਆ ਹੈ ਉਸ ਲਈ ਅਖਬਾਰ ਵਿੱਚ ਇਸ਼ਤਿਹਾਰ ਦਿਉ ।

ਜਾਂ

ਕਾਲਜ ਵਿੱਚ ਹੈਗੁਲਰ ਪੰਜਾਬੀ ਦੇ ਅਧਿਆਪਕ ਦੀ ਅਸਾਮੀ ਲਈ ਅਖਬਾਰ ਵਿੱਚ ਇਸ਼ਤਿਹਾਰ ਦਿਉ । 5

4. ਹੇਠ ਲਿਖੇ ਵਿਸ਼ਿਆਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਉਪਰ ਚਰਚਾ ਭਰਪੂਰ ਪੈਰ੍ਹਾ ਲਿਖੋ :

(ਉ) ਕਿਸਾਨਾਂ ਦੀ ਖੁਦਕੁਸ਼ੀ : ਸਮੱਸਿਆ ਤੇ ਸਮਧਾਨ

(ਅ) ਖੇਤਾਂ ਵਿੱਚ ਪਰਾਲੀ ਸਾੜਨ ਦੇ ਹਾਨੀਕਾਰਕ ਪ੍ਰਭਾਵ

(ੲ) ਭਾਰਤ ਵਿੱਚ ਖੇਡਾਂ ਦੀ ਦਾਸ਼ਾ ਤੇ ਦਿਸ਼ਾ ।

5

5. ਹੇਠ ਲਿਖੇ ਅਸ਼ੁੱਧ ਸ਼ਬਦਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖੋ :

(i) ਅਮੀਰਤਸਰ

(ii) ਅਉਰਤ

(iii) ਦੁੱਦ

(iv) ਸਤੀ ਕਾਰ

(v) ਰਾਵਨ

(vi) ਕਪਾਢਾ

(3)

(vii) ਸਰਵੈਸਦਾਨੀ

(viii) ਵਾਢੂ

(ix) ਚਾਡੀ

(x) ਕੁਰਕੁਸੇਤਰ ।

5

6. ਹੇਠ ਲਿਖੇ ਅੰਗਰੇਜ਼ੀ ਸ਼ਬਦਾਂ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਕਰੋ :

(i) Digital

(ii) Bold

(iii) Database

(iv) Command

(v) Browser

(vi) Audio

(vii) Bullating

(viii) Memory

(ix) Install

(x) Italic.

5

GSM / D-17

SANSKRIT (Compulsory)

Time allowed : 3 hours]

[Maximum marks : 40

नोट : सभी प्रश्नों के उत्तर क्रमशः दें।

1. लघु उत्तर वाले निम्नलिखित चार प्रश्नों के उत्तर दें : 2×4=8

- (क) 'साधुव्रतं चर' पाठ के मूल स्रोत ग्रन्थ का नाम लिखें।
- (ख) 'नीलवर्णः शृगालः' पाठ के मूलस्रोत ग्रन्थ का नाम लिखें।
- (ग) 'अस्मद्' शब्द का प्रथमा विभक्ति, एकवचन का रूप लिखें।
- (घ) 'सुधी + उपास्यः' में यण् सन्धि करें।

2. 'संस्कृत चयनिका' के निम्नलिखित श्लोकों में से केवल दो श्लोकों की सप्रसंग व्याख्या करें : 4×2=8

- (क) बलमसि बलं मयि धेहि,
ओजोऽसि ओजो मयि धेहि।
मन्युरसि मन्युं मयि धेहि,
सहोऽसि सहो मयि धेहि॥
- (ख) भयानां भयं भीषणं भीषणानां,
गतिः प्राणिनां पावनं पावनानाम्।
महोच्चैः पदानां नियन्तु त्वमेकं,
परेषां परं रक्षणं रक्षणानाम्॥
- (ग) तां दृष्ट्वा परमप्रीतां हुवन्तीं मन्थरां ततः।
रामस्यैव गुणान् देवी कैकेयी प्रशशंस ह॥
- (घ) मरणान्तानि वैराणि निवृत्तं नः प्रयोजनम्।
क्रियतामस्य संस्कारो ममाप्येष यथा तव॥

3. 'संस्कृत चयनिका' के निम्नलिखित गद्यांशों में से केवल दो का सप्रसंग सरलार्थ करें : 4×2=8

- (क) श्रद्धया देयम्। अश्रद्धयाऽदेयम्।
हिया देयम्। भिया देयम्। संविका देयम्।
- (ख) नैकः शून्यगृहं न चाटवीमनुप्रविशेत्।
नोर्ध्वजानुशिवरं तिष्ठेत्। न नन उपसृशेत्।
- (ग) अहो सत्यमभिहितं भवद्भिः। परं यदि
ममोपविष्टस्य अत्रनित्यमेव नैकः श्वापदः
समागमिष्यति, तन्नूनं सर्वानपि भक्षयिष्यामि।

4. संस्कृत व्याकरण के आधार पर निम्नलिखित चार शब्दों के यथानिर्दिष्ट रूप लिखें : 2×4=8

- (क) राम - प्रथमा विभक्ति, सभी वचन
- (ख) लता - द्वितीय विभक्ति, सभी वचन
- (ग) मातु - तृतीया विभक्ति, सभी वचन
- (घ) अस्मद् - चतुर्थी विभक्ति, सभी वचन
- (ङ) युष्मद् - पंचमी विभक्ति, सभी वचन

5. संस्कृत व्याकरण के आधार पर निम्नलिखित चार शब्दों के यथानिर्दिष्ट सन्धिविच्छेद करें : 2×4=8

- (क) धात्रंशः (यण्)
- (ख) लाकृतिः (यण्)
- (ग) नायकः (अयादि)
- (घ) पावकः (अयादि)
- (ङ) महेन्द्रः (गुण)
- (च) हिमौघः (वृद्धि)

7. What are the various physiological changes taking place during old age ?

वृद्धावस्था में कौन-कौनसे विभिन्न शारीरिक परिवर्तन होते हैं ?

8. Give requirements of foods and nutrients during pregnancy. गर्भावस्था में आहार अथवा पोषण सम्बन्धी जरूरतों की प्रस्तावित मात्रा की जानकारी दीजिए ।

9. Write short notes on the following :

- (i) Nutrition during lactation
 - (ii) Problems during pregnancy.
- निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :
- (i) धात्री महिला के लिए पोषण
 - (ii) गर्भावस्था में होने वाली समस्याएँ ।

Roll No.

Total Pages : 04

GSM/D-17

1174

NUTRITION IN LIFE CYCLE

Course 201

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

प्रत्येक इकाई से एक प्रश्न चुनते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है । सभी प्रश्नों के अंक समान हैं ।

Compulsory Question

(अनिवार्य प्रश्न)

1. Define any *eight* of the following :

- (i) Meal Planning
- (ii) Adolescents
- (iii) Breast feeding
- (iv) Pregnancy
- (v) Supplementary Feeding
- (vi) Nutrient
- (vii) Life-cycle

(viii) Moderate work

(ix) Adultman

निम्नलिखित में से किन्हीं आठ को परिभाषित कीजिए :

(i) आहार आयोजन

(ii) किशोरावस्था

(iii) स्तनपान

(iv) गर्भावस्था

(v) पूरक आहार

(vi) पोषक तत्व

(vii) जीवन चक्र

(viii) मध्यम कार्य

(ix) वयस्क पुरुष ।

Unit I

इकाई I

2. What are the various factors affecting meal planning ?

आहार आयोजन को प्रभावित करने वाले विभिन्न तत्व कौन-कौनसे हैं ?

3. Differentiate bottle feeding a breast feeding with reference to nutritional and bacterial qualities.

पोषक तत्वों सहित तथा रोगाणु रहित होने के संदर्भ में स्तनपान तथा बोतल से दूध पिलाने में अंतर बताइए ।

4. Select any two of the following for writing short notes :

(i) Packed lunch for school going children

(ii) Nutrition for infants

(iii) Supplementary feeding.

निम्नलिखित में से किन्हीं दो को चुनकर संक्षेप में लिखिए :

(i) स्कूल जाने वाले बच्चे के लिए दोपहर का पैकड भोजन

(ii) बाल्यावस्था में पोषण

(iii) पूरक आहार ।

5. What are the various problems which adolescents are facing ? What points will you consider for them for diet planning ? Give nutritional requirements also.

किशोरावस्था में कौन-कौनसी समस्याएँ आती हैं ? आहार आयोजन के समय किन-किन बातों का ध्यान रखेंगे ? इनकी पोषण सम्बन्धी आवश्यकताओं की जानकारी दीजिए ।

Unit II

इकाई II

6. Give nutritional requirements for adult woman who may be sedentary, moderate or heavy worker ?

हल्का, मध्यम तथा भारी श्रम करने वाली वयस्क स्त्री के पोषण के बारे में बताइए ।

9. Write short notes on the following :

2×4

- (a) Preparation of fabric for garment making
 - (b) Points to be kept in mind while cutting the fabric.
- निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :
- (अ) पोशाक बनाने से पहले वस्त्र की तैयारी
 - (ब) कपड़े को काटते समय ध्यान रखने योग्य बातें ।

Roll No.

Total Pages : 04

GSM/D-17

1175

INTRODUCTION TO CLOTHING CONSTRUCTION Course 202

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting at least *two* questions from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

प्रत्येक इकाई से कम से कम दो प्रश्न चुनते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है । सभी प्रश्नों के अंक समान हैं ।

Compulsory Question (अनिवार्य प्रश्न)

1. Write short notes on the following :

- (a) Paper pattern
- (b) Tracing wheel
- (c) Types of Scissors
- (d) Selvedge.

निम्नलिखित पर संक्षिप्त टिप्पणियाँ लिखिए :

- (अ) परतन या पेपर पैटर्न

L-1175

4

200

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P.T.O.

- (ब) ट्रेसिंग ब्लैक
- (स) विभिन्न प्रकार की कैवियाँ
- (द) किनारा या कन्नी ।

Unit I इकाई I

2. Explain the equipments used for clothing construction. 8
परिधान निर्माण में प्रयोग किए जाने वाले उपकरणों के बारे में लिखिए ।
3. Write the parts of a sewing machine. 8
सिलाई मशीन के विभिन्न पुर्जों के बारे में लिखिए ।
4. Write about the following defects of sewing machine. Explain their causes and suggest their remedies : 8
 - (a) Upper thread Breaking
 - (b) Needle Breaking
 - (c) Missing stitch
 - (d) Loop formation.

निम्नलिखित सिलाई मशीन के दोषों का उनके कारणों और समायोजन सहित वर्णन कीजिए :

- (अ) ऊपर का धागा टूटना
- (ब) सूई का टूटना
- (स) टांकों का छूटना
- (द) धागे के गुच्छे बनना ।

5. Write in detail about the care and maintenance of sewing machine. 8

सिलाई मशीन की सम्भाल और देखरेख के बारे में विस्तारपूर्वक लिखिए ।

Unit II इकाई II

6. Explain the psychological and social importance of clothing. 8
वस्त्रों के सामाजिक तथा मनोवैज्ञानिक महत्त्व के बारे में लिखिए ।
7. Write the general principles of clothing construction. 8
परिधान निर्माण के साधारण नियमों के बारे में विवरण दीजिए ।
8. Explain the tools required for drafting. Discuss its advantages. 8
ड्राफ्टिंग करते समय प्रयोग में आने वाले उपकरणों के बारे में लिखिए । ड्राफ्टिंग के महत्त्व का वर्णन कीजिए ।

Roll No.

Total Pages : 03

GSM/D-17

1176

FAMILY DYNAMICS

Course 203

Time : Three hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. 9 is compulsory.
प्रत्येक इकाई में से कम से कम एक प्रश्न चुनते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 9 अनिवार्य है ।

Unit I

इकाई I

1. Define family, explain its meaning and functions. 8
परिवार की परिभाषा दीजिए तथा इसके अर्थ एवं कार्यों को विस्तार से बताइए ।
2. What do you understand by the word Marriage ? Elaborate its functions. 8
विवाह शब्द से आप क्या समझते हैं ? इसके कार्य को विस्तृत रूप में वर्णित कीजिए ।
3. What are the various factors for changing structure of family to nuclear family ? 8
परिवार के स्वरूप को एकाकी परिवारों में बदलने वाले कारकों के विषय में विस्तृत टिप्पणी लिखिए ।

4. How have Liberalisation policies affected human development today ? 8

आधुनिक युग में, उदारीकरण की नीति ने मानव विकास को किस प्रकार प्रभावित किया है ?

Unit II

इकाई II

5. Write down the importance of various methods of Family Planning and the factors affecting it. 8
- परिवार नियोजन के विभिन्न तरीकों का महत्त्व लिखिए तथा उनको प्रभावित करने वाले तत्त्व भी बताइए ।

6. Discuss the Population Policy of India. 8
- भारत की जनसंख्या नीति की विस्तृत चर्चा लिखिए ।

7. Explain role of NGOs (Non-Governmental Organisations) in influencing children mortality. 8
- बच्चों की मृत्यु-दर को प्रभावित करने में गैर-सरकारी संस्थाओं की भूमिका को विस्तार से बताइए ।

8. Write an essay on 'reproductive rights of women' with suitable examples. 8
- उपयुक्त उदाहरणों सहित 'स्त्रियों के प्रजनन अधिकारों' पर एक निबंध लिखिए ।

Compulsory Question (अनिवार्य प्रश्न)

9. Answer the following in short : 1×8=8

- Stages of family
 - Working women
 - Care of Aged
 - Family Planning
 - Population Education
 - Child Health Programmes
 - Industrialisation
 - Population Statistics.
- निम्नलिखित का संक्षेप में उत्तर लिखिए :
- परिवार की अवस्थाएँ
 - कामकाजी महिलाएँ
 - बूढ़ों की देखभाल
 - परिवार नियोजन
 - जनसंख्या शिक्षा/ज्ञान
 - बाल स्वास्थ्य कार्यक्रम
 - औद्योगीकरण
 - जनसंख्या सांख्यिकी ।

3. Discuss the benefits and drawbacks of cash buying and credit buying.
 लाभकारी एवं उधार खरीदारी के लाभ एवं हानियों का वर्णन करें ।

Roll No.

Total Pages : 04

3SM/D-17 1177

HOUSEHOLD EQUIPMENT AND CONSUMER PROTECTION

Course 204

Time : Three hours]

[Maximum Marks : 40

NOTE : Attempt Five questions in all, selecting at least two questions from each (Part Q. No. 1 is compulsory. All questions carry equal marks.
 पाँच प्रश्नों में से कम से कम दो प्रश्न चुन लें, कुल पाँच प्रश्नों में से कम से कम दो प्रश्न चुन लें । प्रश्न संख्या 1 अनिवार्य है । सभी प्रश्नों का अंक समान है ।

Compulsory Question (अनिवार्य प्रश्न)

1. Answer the following in 3-5 sentences each :
- Guarantee
 - Name different household recreation equipment
 - How can a consumer protect herself from faulty weighing of commodities ?
 - Precautions to be followed while using pressure cooker

(i) What do you mean by consumer education ?

(ii) Adulteration

(iii) Approval buying

(iv) Principle of working of microwave.

1×8=8

निम्नांकित प्रश्नों का 3-5 वाक्यों में उत्तर दीजिए :

(i) भ्रमण

(ii) खरबू मनोरंजन हेतु उपकरणों के नाम दीजिए ।

(iii) उपरोक्ता दोषपूर्ण मापतौल से कैसे बच सकता है ?

(iv) प्रेरण कुका उपकरण में ताते हुए क्या-क्या सावधानियाँ

करनी चाहिए ?

(v) उपभोक्ता शिक्षा किसे कहते हैं ?

(vi) मित्रता

(vii) अनुमोदन तरीका

(viii) नवोन्मेष की कार्यप्रणाली का सिद्धान्त ।

Unit I

इकाई I

2. Which factors should be considered while purchasing an equipment ?

उपकरणों की खरीदारी करते हुए किन-किन बातों को ध्यान में रखना चाहिए ?

3. Describe in detail about size, design, care, cleaning, precautions to be used and tips for storage of food in your refrigerator.

उपकरणों के आकार, आकृति, सुरक्षा, सफाई व रखरखाव करने की रीति जानने वाली मापतौलों का प्रयोग कीजिए । इसमें ध्यान नई देते करते हुए आप किन-किन बातों को ध्यान में रखेंगे ?

4. How the design of an equipment affects the working efficiency and body posture ? Explain with a suitable example.

उपकरणों का प्रभाव कार्यक्षमता को एवं कारगरिता प्रभाव को कैसे प्रभावित करती है ? उचित उदाहरणों द्वारा बताइए ।

5. Write in detail about the equipments and tools related to cleaning the home.

घर की सफाई में सम्बन्धित उपकरणों एवं औजारों का विवरण स्पष्ट कीजिए ।

Unit II

इकाई II

6. Explain the contract and installment sales contract कांटेक्ट एवं इन्स्टालमेंट सेल कांटेक्ट के बारे में विवरण ।

7. Describe the various responsibilities of a consumer उपभोक्ता के विभिन्न उत्तरदायित्वों की व्याख्या कीजिए ।

8. Explain various consumer protection laws and standards.

उपभोक्ता सुरक्षा कानून एवं मानकों का वर्णन कीजिए ।

Roll No.

Total Pages : 03

GSM/D-17 1178

COMMUNITY DEVELOPMENT AND
EXTENSION EDUCATION-I
Course 205

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt Five questions in all, selecting at least two questions from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

वत्सेक इकाई से कम से कम दो प्रश्न चुनते हुए, कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न संख्या 1 अनिवार्य है । सभी प्रश्नों के अंक समान हैं ।

1. Objective Type Questions (Compulsory Questions) :

- (i) What is full form of DRDA ?
 - (ii) Communication is heart of organisation. Who said ?
 - (iii) Write two types of family on number of family.
 - (iv) Write down 2 effects of poverty.
 - (v) When was Development of Women and Children in Rural Areas Scheme started in India ?
 - (vi) Give two barriers in way of communication.
 - (vii) What is primary objective of Mid-Day Meal Programme ?
 - (viii) Give two types of society ?
- अनुचित प्रश्न (अनिवार्य प्रश्न) : 8×1=8

- (i) डी.आर.डी.ए. का पूरा नाम लिखिए ।
- (ii) किसने कहा कि संचार संगठन का हृदय है ?
- (iii) सदस्य संख्या के आधार पर परिवार के दो प्रकार बताइये ।
- (iv) गरीबी के दो प्रभाव बताइये ।
- (v) भारत में महिलाओं और बच्चों के विकास के लिये योजना कब शुरू की गयी थी ?
- (vi) संचार के नग्न की दो समस्याएँ बताइये ।
- (vii) दोपहर बाद भोजन का उद्देश्य बताइए ।
- (viii) समाज के दो प्रकार बताइए ।

Unit I

इकाई I

2. What is Communication Process ? What is importance of Communication in daily life ? 8
संचार की प्रक्रिया क्या है ? दैनिक जीवन में संचार का महत्त्व बताइये ।
3. What do you mean by Family ? Explain various types of family. 8
'परिवार' से क्या अभिप्राय है ? परिवार के विभिन्न प्रकार बताइये ।
4. What is meaning of Society ? Explain various types of society. 8
समाज से क्या अभिप्राय है ? समाज के विभिन्न प्रकार बताइये ।

5. Write down the main elements of Social Structure. 8
सामाजिक ढाँचे के प्रमुख तत्वों का वर्णन कीजिये ।

Unit II

इकाई II

6. Explain Poverty. Give effects of poverty in detail. 8
गरीबी का वर्णन कीजिये । गरीबी के दुष्प्रभाव बताइये ।
7. Explain DWACRA (Development of Women and Children in Rural Areas). 8
महिलाओं और बच्चों की विकास नामक योजना का वर्णन कीजिये ।
8. What are programmes of India for Poverty alleviation in India ? 8
भारत में गरीबी दूर करने के विभिन्न प्रोग्राम बताइये ।
9. Write down main objectives of Mid-Day Meal Programme. 8
दोपहर बाद भोजन के मुख्य उद्देश्य बताइये ।

Roll No.

Total Pages : 03

BCA/D-17 **1239**

OBJECT ORIENTED PROGRAMMING

USING C++

BCA-231

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) Compare Private and Protected Members of a Class.
(b) Describe various `put()` function with example.
(c) Explain Copy Constructor.
(d) What is Array ? What are the advantages of using array ?

4×4=16

Unit I

2. What is Object Oriented Programming ? What are its features ? What is the difference between Object Oriented Programming and Procedure Oriented Programming ? Also explain its benefits.

16

3. (a) What is Local Class ? What are the rules for using it ? Give example: 8
- (b) How can we pass class objects as arguments of a function ? Illustrate using example. 8

Unit II

4. Explain the following with example :
 (a) Parameterized constructor
 (b) Destructor. 16
5. Explain the following function with example : 16
 (a) Get() function
 (b) Write()
 (c) Precision()
 (d) Setf().

Unit III

6. Explain the following with example : 16
 (a) Delete Operator
 (b) This Pointer.
7. (a) Explain all Manipulators with example.
 (b) What is Friend function ? What are its advantages and disadvantages ? Also give example. 16

Unit IV

8. Explain the following operators by giving suitable examples :
 (a) Bitwise Operator
 (b) Size of
 (c) Comma Operator
 (d) Conditional Operator. 16
9. What are inline functions ? What are its advantages and disadvantages ? Give suitable example. 16

Roll No.

Total Pages : 03

BCA/D-17 1240

DATA STRUCTURE

BCA-232

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit in addition to compulsory Q. No. 1.

Compulsory Question

1. (a) What do you mean by Tree and level and degree of a node ? Explain with examples.
(b) Explain the concept of deque.
(c) Explain the concept of Garbage Collection.
(d) What is Time-Space Trade off ? 4×4=16

Unit I

2. (a) What is Data Structure ? Explain its various operations and applications.
(b) Describe Big-O Notation. 16
3. (a) Explain first pattern matching algorithm using an example. 10

(b) Differentiate between the following :

- (i) Linear and non-linear data structure
- (ii) Primitive and non-primitive data structure. 6

Unit II

- 4. (a) Write an algorithm for inserting an element in an array at a particular location K. 10
- (b) Explain circular link list with a suitable example. 6

- 5. (a) What is an array ? Explain the operations that are perform on an array with example.
- (b) Write an algorithm for delete a node in linked list. 16

Unit III

- 6. (a) What is Priority Queue ? What are its applications ? Explain the Multiple queue representation. 10
- (b) What is Stack ? Explain the concept of polish notation. 6

- 7. What do you mean by Queue ? Write an algorithm to insert and delete an element in the array ? 16

L-1240

2

Unit IV

- 8. What is Binary Tree ? Explain the representation of Binary tree in Memory. 16

- 9. (a) Explain the post order Traversal algorithm using the concept of stack. 10

- (b) Explain the following :
 - (i) Directed Graph
 - (ii) Weighted Graph. 6

(2-31/7) L-1240

3

3,300

Roll No.

Total Pages : 02

BCA/D-17 **1241**

COMPUTER ARCHITECTURE

BCA-233

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Discuss instruction cycle with its operations.
(b) Explain wire bus and memory data transfer.
(c) Discuss the structure of instruction format.
(d) Explain polling.

Unit I

2. Explain various approaches of control unit design and implementation.
3. Design and explain logic circuit for memory read and write operation of a basic computer.

Unit II

4. Explain Register Transfer Language (RTL) in detail.
5. What do you mean by micro operation ? Describe arithmetic logic and shift micro operations.

Unit III

6. Explain various CPU organizations.
7. Describe RISC and CISC architecture.

Unit IV

8. Explain the memory hierarchy in terms of their storage and access.
9. Explain program based data transfer techniques.

Roll No.

Total Pages : 03

BCA/D-17 1242

SOFTWARE ENGINEERING

BCA-234

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory. In addition to this attempt *four* more questions selecting *one* question from each Unit. All questions carry equal marks.

Compulsory Question

1. Answer the following questions in brief : 4×4
- (i) What are the attributes of good software ?
 - (ii) What do you mean by feasibility study ? Explain technical and operational feasibility ?
 - (iii) Explain Decision table with the help of an example.
 - (iv) Explain the Putnam Resource allocation model.

Unit I

2. (a) List the task regions in spiral model. What are the advantages and limitations of this model ? 8
- (b) Explain different software crisis problems with their causes. 8

3. (a) Discuss advantages and disadvantages of waterfall model. 8
- (b) Explain the programming paradigms given below : 4×2
 - (i) Imperative paradigm
 - (ii) Functional paradigm
 - (iii) Logical paradigm
 - (iv) Object-oriented paradigm.

Unit II

4. Define SRS. Explain various components of SRS. Also give general structure of the SRS. 16
5. (a) What is SCM (Software Configuration Management) ? Describe the process of SCM. 8
- (b) Explain SQA (Software Quality Assurance) by giving its various methods. 8

Unit III

6. Explain the concept of Data Flow Diagram (DFD). Define the following DFD terms by giving their symbols : 4×4
 - (a) External entity
 - (b) Data flow
 - (c) Process
 - (d) Data Store.

7. (a) Explain entity relationship diagram with the help of an example. 8
- (b) Discuss importance of maintenance by giving its various types. 8

Unit IV

8. (a) Differentiate between black box and white box testing. 8
- (b) What do you mean by Project Monitoring ? Explain various tools and techniques of monitoring. 8
9. Explain the following types of testing : 8×2
 - (a) Unit testing
 - (b) System testing
 - (c) Alpha testing
 - (d) Beta testing
 - (e) Acceptance testing
 - (f) Mutation testing
 - (g) Regression testing
 - (h) Stress testing.

Roll No.

Total Pages : 02

BCA/D-17 1243

FUNDAMENTALS OF DATABASE

BCA-235

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. 1 is compulsory.

1. (a) Define Data, Information, Domain and Attribute.
(b) Define physical and logical data independence.
(c) Discuss simple and complex mapping.
(d) Define primary key and foreign key with example.

16

Unit I

2. Define Database and its components. Discuss its comparison with traditional file system. **16**

3. (a) Define DBMS, its working, merits and demerits.
(b) Discuss role of DBA and its working. **16**

Unit II

4. Explain three levels of Database architecture. Also show their interlinking mappings. 16
5. Write notes on the following :
 - (a) Centralized v/s Client Server Database.
 - (b) Classification of DBMS. 16

Unit III

6. What is E-R diagram ? Discuss its symbols. Make an E-R diagram for Teacher-Student Relationship. 16
7. Discuss Record based and Object based data models with merits and demerits. 16

Unit IV

8. Explain relational model with its properties. 16
9. Write notes on the following :
 - (a) Model Based on 1 : M association
 - (b) Relational and Integrity Constraints. 16

Roll No.

Total Pages : 03

BCA/D-17 1244

COMPUTER ORIENTED
NUMERICAL METHODS

BCA-236

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. **1** is compulsory.

1. (a) What is Newton Forward Interpolation Formula ?
(b) What is approximation of function by Taylor Series ?
(c) What is Chebyshev Polynomials ?
(d) What is the use of Newton-Raphson method.
(e) Write the order of convergence for iterative method.
(f) Write the order of convergence of False position method.
(g) What is formula for Regula-Falsi method ?
(h) What is pitfalls in differentiation ?

Unit I

2. (a) Prove by example the associative and the distributive laws of arithmetic may not valid in the normalized floating point representation. 8
(b) Distinguish between absolute and relative errors. 8

3. Explain Baisrow's method. 16

Unit II

4. Given $\frac{dy}{dx} = x - 1$ with initial condition $y = 1$ at $x = 0$.
Find y for $x = 1$ by Euler's method. 16

5. Given $\frac{dy}{dx} = 1 + y^2$ with $y(0) = 0$. Find $y(0.6)$ with $h = 0.2$
by Runge-Kutta method of fourth order. 16

Unit III

6. Write short notes on the following : 16

(a) Interpolation

(b) Approximation of functions by Taylor Series.

7. Find $f(x)$ by Newton's divided difference method from the following data : 16

X	0	1	2	4	5	6
F(X)	1	14	15	5	6	19

Unit IV

8. Evaluate $\int_0^6 \frac{1}{1+x} dx$ by (i) Simpson's rule (ii) Simpson's 3/8 rule. 16

9. Evaluate $\int_2^4 (2x^3 - 3x^2 + 1) dx$ by Gaussian quadrature formula. 16

Roll No.

Total Pages : 03

BSIT/D-17

12132

TELECOMMUNICATION-I

BSIT-303

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) How AC signalling overcome the problems faced in DC signalling in Telephone System ?
- (b) Discuss the need for switching.
- (c) Why are smaller cells preferred in Mobile phone system ?
- (d) Explain how Frame Relay is a virtual circuit network ?

2×4

Unit I

2. (a) Discuss the advantages of digital signalling over analog signalling in Telephone System. **3**
- (b) Discuss various structures of Telephone System and compare their performances. **5**

(2-2072)E-12132

P.T.O.

3. (a) What do you mean by physical layer standards ?
Also discuss various specifications of RS-232-C standard. 4

- (b) Explain, how multiple analog voice signals are digitized. 4

Unit II

4. (a) Discuss how space-division and time-division switching is combined using suitable diagram. Also explain its advantages. 4

- (b) Calculate total number of crosspoints and possible number of simultaneous connections in a three-stage space-division switch with $N = 100$ having 12 crossbars at first and third stages and 6 crossbars at middle stage. 4

5. (a) What was the prime objective of ISDN system ? Justify using suitable example. 4
- (b) Discuss the various standards used for digital bit pipe in ISDN system. 4

Unit III

6. (a) Discuss security issues in cellular phone systems. 4
- (b) What do you mean by channels in AMPS ? Discuss 832 full duplex channel. 4

7. Write a note on Paging Systems. 8

Unit IV

8. (a) Discuss various fields in Frame Relay frame. 4
- (b) Explain various challenges in designing ATM. 4

9. Write a detailed note on ATM. 8

Roll No.

Total Pages : 03

BSIT/D-17 12133

MICROPROCESSOR ARCHITECTURE
AND PROGRAMMING-I
BSIT-304

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) What are software interrupts ?
(b) The positive clock edge occurs halfway through each state. Why ?
(c) What do you mean by extended register instruction ?
(d) Explain SPHL and PCHL instructions. 2×4=8

Unit I

2. Discuss SAP-I Architecture in detail. 8
3. (a) Describe with example one byte, two byte and three byte instructions of SAP-II computers. 4

(2-30/14)L-12133

P.T.O.

- (b) Write a detailed subroutine for SAP-II computer to introduce time delay of 1 milli sec using only one register. The clock frequency of the system is 1 MHz.

Unit II

4. (a) Explain the arithmetic and logic instructions with example. 6
(b) Explain JNC instruction in SAP-III. 2
5. (a) Explain PUSH and POP Instructions. 4
(b) Suppose that 1024 bytes of data are stored between address 3000H. Write a program that copies these bytes at address 5000H. 4

Unit III

6. (a) Explain Fetch-execute overlap. 4
(b) Explain the following instructions : 4
LDAX rp, SHLD address, STAX rp, LHLD address.
7. Draw and discuss the architecture of 8085 microprocessor. 8

Unit IV

8. (a) Explain an interrupt process and the difference between a maskable and non-maskable interrupt by using an example. 4
(b) Explain the following instructions : 4
(i) SIM
(ii) RIM.
9. Explain the concept of DMA in detail with diagram. 8

Roll No.

Total Pages : 03

BSIT/D-17

12134

OPERATING SYSTEM-I

BSIT-305

Time : Three Hours]

[Maximum Marks : 40

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Write short notes on the following :

- (a) Spooling
- (b) Turnaround Time and Waiting Time
- (c) Hardware Solutions of Critical Section
- (d) Safe State. 8

Unit I

2. Explain the role of operating system as :

- (a) Resource Manager 4
- (b) Extended Machine. 4

3. (a) Explain the concept of System Calls and System Programs. 4

(2-21/1) L-12134

P.T.O.

Differentiate Real Time and Time Sharing Operating System.

Unit II

- What do you mean by the term Process ? Explain Process States and their transitions.
- Consider the following set of processes, with the length of CPU Burst Time (in milliseconds) :

Process	Burst Time	Priority
P1	8	4
P2	6	1
P3	1	2
P4	9	2
P5	3	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time Zero.

- Draw four Gantt Charts illustrating the execution of these processes using FCFS, SJF, Non-Preemptive Priority (A Smaller Priority number implies a higher Priority) and RR (quantum = 1) Scheduling.
- What is the turn around time of each process for each of the scheduling in Part A

- What is the waiting time of each process for each of the scheduling in Part A ?

Unit III

- What is Mutual Exclusion ? Discuss using a note.
- What is Inter Process Communication ? Discuss the various methods for communication between processes.
- Define Critical Section. What are the requirements for critical section solution ?
- What do you mean by Race Condition ? How can it be avoided ?

Unit IV

- Describe the various necessary conditions for a deadlock to occur.
- Define Deadlock with real life example.
- Define Deadlock Detection. Explain Resource Allocation Graph with example.

Roll No.

Total Pages : 3

BSMD-17

16532

ENGLISH

[Literature in English (1750–1830)]

Paper–VI

Time : Three Hours]

[Maximum Marks : 80

Note : Do as directed. Q. No. 1 is compulsory.

Compulsory Question

1. Attempt the following in about 200 words :

(a) Depiction of country-side in *The Vicar of Wakefield*.

OR

Moral purpose in *The Vicar of Wakefield*.

(b) Organic Unity of *Emma*.

OR

Character of Olivia.

(c) Use of Paradox and Oxymoron in Lamb.

OR

Character-portrayal in Lamb's essays.

(3×8=24)

16532/400/KD/709

[P.T.O.]

UNIT-I

Note : Attempt any *two* from the following.

2. Comment on the treatment of Sentiment and Pathos in *The Vicar of Wakefield*.

OR

Elaborate on the main ideas dealt with in *The Vicar of Wakefield*. 16

3. Comment on the Plot construction of *Emma*.

OR

"*Emma* deals with the life of upper-middle class of the contemporary England." Comment. 16

4. On the basis of your study of the prescribed essays, discuss Charles Lamb as an essayist.

OR

Critically examine "Poor Relations" as an essay. 16

UNIT-II

Note : Attempt the following questions.

5. Describe in detail the reasons for the rise of the Novel in the eighteenth century.

16532/400/KD/709 2

OR

Discuss in your own words the development of English Essay from Bacon to Lamb. 12

6. Write a detailed note on the English Verse Satire in the eighteenth century.

OR

Discuss the main features of the English Novel during 1750 and 1830. 12

16532/400/KD/709 3

(g) Sub + Verb + to-infinitive.

(h) Here/There + Sub + Verb.

(i) Sub + Verb + (Prep) + (it) + that clause.

(j) Sub + Verb + Preposition + Object.

9. Rewrite the following sentences using introductory *here* there/it (Any *eight*) :

8

(a) No damage to the plane.

(b) Several people were in the room.

(c) A fierce storm in the sea.

(d) Several VIP rooms in this hotel.

(e) A page is missing from this book.

(f) No hope of his coming back.

(g) No cause of worry.

(h) Eleven players in the team of cricket.

(i) Easy to talk than sit idle.

(j) Tomorrow would be cold.

Roll No.

Total Pages : 6

BSM/D-17

16533

ENGLISH

(Grammar and Contemporary English Usage)

Paper-VII

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt all questions.

1. Write an essay in about 450 words on any *one* of the following topics :

(a) The Pleasures of Reading a Novel.

(b) Travel as a Part of Education.

(c) No man is a judge of his own merits.

(d) Life in a Big City.

14

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

I left it alone for a few days, not knowing what to do with it. I received a notice from the municipality ordering that the engine should at once be removed from the ground as otherwise they would charge rent for the occupation of the Gymkhana Grounds. After deep thoughts I consented to pay the rent, and I paid ten rupees a month for the next three months. Dear sirs, I was a poor man. Even the house which I and my wife occupied cost me only four rupees a month. And fancy my paying ten rupees a month for road-engine. It cut into my slender budget and I had to *pledge* a jewel or two belonging to my wife ! And every day my wife was

asking me what I proposed to do with this terrible property of mine and I had no answer to give her. I went up and down the town offering it for sale to all and sundry. Some one suggested that the secretary of the local Cosmopolitan Club might be interested in it. When I approached him he laughed and asked what he should do with a road-engine. I'll dispose of it at a concession for you. You have a tennis court to be rolled every morning. I began and even before I saw him smile I knew it was a stupid thing to say. Next, someone suggested, 'See the Municipal Chairman. He may buy it for the municipality.' With great trepidation I went to the municipal office one day. I buttoned up my coat as I entered the Chairman's room and mentioned my business. I was prepared to give away the engine at a great concession.

Questions :

- (i) What notice did the talkative man receive from the Municipality ?
- (ii) How much rent did he pay ?
- (iii) What had he to do when the rent cut into his budget ?
- (iv) What was his wife asking him every day ?
- (v) Whom did he try to sell the road-engine ? (2×5=10)

3. Fill in the blanks with appropriate items given in brackets (Any eight). 8

- (a) The (scenery/sceneries) of Kashmir is beautiful.
- (b) No more (information/informations) is available on this subject.

- (c) This (machine/machinery) is defective.
- (d) We had our (meal/meals).
- (e) My (thank thanks) are due to him.
- (f) Who Whom) do you want to talk ?
- (g) This is one of the best books that (has/have) ever been published.
- (h) It is (me/I).
- (i) He is weaker than (me/I).
- (j) Let (I/me) and Sohan do this work.

4. Fill in the blanks with appropriate form of the verb given in brackets (Any eight) : 8

- (a) Ice (melt) at 0° centigrade.
- (b) you (do) anything tonight ?
- (c) The movie (be) released recently.
- (d) I (play) cricket since Sunday.
- (e) Last night I (see) a horrible dream.
- (f) He (not read) his books after the examination.
- (g) The rain (stop) before I (go) out.
- (h) I wish I (not try) it.
- (i) I am sure you (like) our new house.
- (j) If I am free, I (visit) you.

5. Fill in the blanks with appropriate prepositions (Any eight) : 8

- (a) He generally travels air from Delhi to Mumbai.
- (b) Sohan got the horse.
- (c) He poured milk the jug.
- (d) He was going Bhiwani at 8 a.m.
- (e) Somesh works a farm.
- (f) Gold is found Africa.
- (g) the end, he won the game.
- (h) The train is running time.
- (i) He came back time for the project.
- (j) We work from 9 a.m. 5 p.m.

6. Correct the following sentences of adverbs (Any eight) : 8

- (a) India defeated Pakistan in cricket at length.
- (b) He eagerly wishes to go to him.
- (c) Ramesh speaks the truth seldom.
- (d) She is very weaker than Meena.
- (e) Raghu is enough powerful to defeat him.
- (f) She only sang *two* songs.
- (g) We went to theatre yesterday.
- (h) He can't scarcely see any thing in light.
- (i) Unless you don't help me, I cannot pass.
- (j) This room is rather airy and comfortable.

7. Complete each sentence by filling in the adjective equivalents given in the brackets (Any eight) : 8

- (a) He is (the weakest/weaker) of the two.
- (b) He is the (poorest/most poorest) man in the city.
- (c) Ramesh is (cleverer/more clever) than intelligent.
- (d) I shall stay at Goa for (few/a few) days.
- (e) No (lesser/fewer) than ten students came for the movie.
- (f) He does not have (something/anything) to say.
- (g) Of gold and silver, the (last/latter) is cheaper.
- (h) Raghav is (elder/older) than has sister.
- (i) There are (many/much) books in the library.
- (j) He completed the lesson without (farther/further) delay.

8. Frame sentences by using any eight sentence patterns : 8

- (a) Sub + Verb + Object.
- (b) Sub + Verb + Adjective + to-infinitive.
- (c) Sub + Verb + Adverb + Pro(noun).
- (d) Sub + Verb + Direct object + Adjective.
- (e) Sub (it) + be + Adjective/Noun + Noun clause.
- (f) Sub + Verb + Adverbial complement.

(h) Who was known as a Father of Creating Political Consciousness in the Indians mind ?

- (i) Tilak
 - (ii) Gokhale
 - (iii) Vipin Chandra Paul
 - (iv) Marx.
- भारतीयों के मन में राजनीतिक जागृति उत्पन्न करने वाले पितामह माने जाते हैं?
- (i) तिलक
 - (ii) गोखले
 - (iii) विपिन चन्द्र पाल
 - (iv) मार्क्स।

Roll No.

Total Pages : 6

BSM/D-17

16565

POLITICAL SCIENCE

(Indian Political Thinkers-I)

Paper-II

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt any five questions. All questions carry equal marks.

नोट : किन्हीं पाँच प्रश्नों के उत्तर दीजिए। सभी प्रश्नों के अंक समान हैं।

1. Is Raja Ram Mohan Roy the founder of Modern India ? 16
क्या राजा राममोहन राय आधुनिक भारत के जनक हैं?

2. Explain the social and educational ideas of Swami Dayanand Saraswati. 16
स्वामी दयानन्द सरस्वती के सामाजिक और शैक्षिक विचारों का वर्णन करो।

3. Explain the 'Drain Theory' presented by Dada Bhai Naoroji. 16

दादा भाई नौरोजी द्वारा प्रस्तुत 'धन की निकासी' के सिद्धान्त का वर्णन करो।

4. Explain the political ideas of Gopal Krishan Gokhale. 16
गोपालकृष्ण गोखले के राजनीतिक विचारों का वर्णन करो।

5. Swami Vivekanand was a Religious Reformer. Explain.

16

स्वामी विवेकानन्द एक धर्म सुधारक थे। व्याख्या करें।

6. Explain Aurobindo's philosophy of Passive Resistance. 16

अरविन्द के क्रियाहीन विरोध की भाषणा का वर्णन करें।

7. Describe the political ideas of Lala Lajpat Rai. 16

लाला लाजपत राय के राजनीतिक विचारों का वर्णन करें।

8. "Swaraj is my birth right and I shall have it." In the light of this statement explain Tilak's views about Swaraj. 16

"स्वराज मेरा जन्मसिद्ध अधिकार है और मैं इसे लेकर रहूँगा" इस विवरण को मुख्य मानकर स्वराज सम्बन्धी तिलक के विचारों का वर्णन करें।

9. Multiple choice questions.

बहुविकल्पीय प्रश्न।

(a) Who established ATMIYA Sabha ? (2×8=16)

(i) Rabindra Nath Tagore

(ii) Vipin Chandra Paul

(iii) Raja Ram Mohan Rai

(iv) Karl Mark.

'आत्मीय' सभा की स्थापना किसने की थी?

(i) रवीन्द्र नाथ टैगोर ने

(ii) विपिन चन्द्र पाल ने

(ii) राजा राममोहन राय ने
(iv) कार्ल मार्क्स ने।

(b) Who is known as the Martin Luther of India ?

(i) Raja Ram Mohan Rai

(ii) Dr. Ambedkar

(iii) Dayanand Saraswati

(iv) Dada Bhai Naoroji.

भारत का मार्टिन लूथर किसे कहा जाता है?

(i) राजा राममोहन राय को

(ii) डा. अम्बेडकर को

(iii) दयानन्द सरस्वती को

(iv) दादा भाई नौरोजी को।

(c) Who is known as the Father of Economic Nationalism in India ?

(i) Dada Bhai Naoroji

(ii) Tilak

(iii) Gokhale

(iv) Vivekanand.

भारत में आर्थिक राष्ट्रवाद का जनक किसे माना जाता है?

(i) दादा भाई नौरोजी को

(ii) तिलक को

(iii) गोखले को

(iv) विवेकानन्द को।

(d) Who established Servants of India Society ?

(i) Gopal Krishnan Gokhale

(ii) Tilak

(iii) Lala Lajpat Rai

(iv) Aurobindo Ghosh.

'भारत सेवक संघ' नाम की संस्था किसने स्थापित की

(i) गोपालकृष्ण गोखले ने

(ii) तिलक ने

(iii) लाला लाजपत राय ने

(iv) अरविन्द घोष ने।

(e) Ram Krishnan Mission was established in

(i) Almora

(ii) Bara Nagar

(iii) Baloor

(iv) Chicago.

रामकृष्ण मिशन की स्थापना कहाँ की गई थी ?

(i) अल्मोड़ा में

(ii) बारानगर में

(iii) बैलूर में

(iv) शिकागो में।

(f) Main characteristic of Aurobindo's Passive Resistance is

(i) Boycott of British goods

(ii) Boycott of Educational Institutions

(iii) Boycott of courts

(iv) All the above.

अरविन्द के निष्क्रिय विरोध की मुख्य विशेषता है

(i) ब्रिटिश सामान का बहिष्कार

(ii) शिक्षा संस्थाओं का बहिष्कार

(iii) न्यायालयों का बहिष्कार

(iv) उपर्युक्त सभी।

(g) Main writings of Lala Lajpat Rai were

(i) Mazzini and Garibaldi

(ii) Unhappy India

(iii) A Call to Young India

(iv) All the above.

लाला लाजपत जी की मुख्य रचनाएं हैं :

(i) Mazzini and Garibaldi

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