3712/MH

B-2058

ANALYSIS-II

Paper-V (ii)

Semester-IV

Time Allowed : 3 Hours]   [Maximum Marks : 36

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 5½ marks each and the entire Section C consisting of 7 short answer type questions carrying 2 marks each.

SECTION—A

1. Prove that the sequence $\{a_n\}$, where $a_n = \left(1 + \dfrac{1}{n}\right)^n$ is convergent. Also show that :

    (i) $2 \le \displaystyle\lim_{n \to \infty} \left(1 + \dfrac{1}{n}\right)^n \le 3$

(ii) $\displaystyle \lim_{n \to \infty}\left(1+\frac{1}{n}\right)^{n} = \lim_{n \to \infty}\left(1+\frac{1}{\angle 1}+\frac{1}{\angle 2}+....+\frac{1}{\angle n}\right) = e.$

5½

2. (a) Prove that necessary and sufficient condition for the convergence of a sequence $\{x_n\}$ of real numbers is that it is a Cauchy sequence. 4

   (b) Apply above principle of convergence to show that $\{a_n\}$ where $a_n = 1+\dfrac{1}{2^2}+\dfrac{1}{3^2}+....+\dfrac{1}{n^2}$ converges.

5½

1½

3. Test the series :

$$1+\frac{\alpha}{1.\beta}x+\frac{\alpha(\alpha+1)^2}{1.2.\beta(\beta+1)}.x^2+\frac{\alpha(\alpha+1)^2(\alpha+2)^2}{1.2.3.\beta(\beta+1)(\beta+2)}.x^3+...x>0.$$

   for convergence. 5½

4. Prove that the series

$$\sum_{n=2}^{\infty}\frac{1}{n^P(\log n)^2}$$

   converges if either $P>1$ or $P=1$ and diverges for $P<1$ and $q>1$. 5½

SECTION—B

5. A sequence of functions $\{f_n\}$ defined on interval U, converges uniformly on U iff for every $\epsilon > 0$ and for all $x \in U$, there exists a positive integer N such that

$$\left|f_{n+p}(x)-f_n(x)\right|<\epsilon \quad \forall n \ge N, P \ge 1. \qquad 5½$$

6. State Weierstrass's M-test for uniform convergence of series. Test for uniform convergence the series

$$\sum_{n=1}^{\infty}\frac{x}{n(1+nx^2)} \qquad\qquad 5½$$

7. Show that :

   (a) $\log(1-x) = -x-\dfrac{x^2}{2}-\dfrac{x^3}{3}......$ for $-1\le x<1.$

   (b) $\log 2 = 1-\dfrac{1}{2}+\dfrac{1}{3}-\dfrac{1}{4}+......$

   (c) $\dfrac{1}{2}\left[\log(1-x)\right]^2 = \dfrac{x^2}{2}+\dfrac{x^3}{3}\left(1+\dfrac{1}{2}\right)+\dfrac{x^4}{4}\left(1+\dfrac{1}{2}+\dfrac{1}{3}\right)$

   +.... for $-1\le n<1.$ 5½

8. Find the radius of convergence and interval of convergence of the power series :

$$x + \frac{x^2}{2^2} + \frac{\angle 2 x^3}{3^2} + \frac{\angle 3 . x^4}{4^2} + \ldots \ldots$$ 5½

SECTION—C

9. Attempt all questions :

1. Show that $\displaystyle\lim_{n \to \infty} \frac{1}{n}\left[1 + 2^{1/2} + 3^{1/3} + \ldots + n^{1/n}\right] = 1.$

2. Prove that every bounded sequence has a convergent subsequence.

3. Prove that if $\displaystyle\sum_{n=1}^{\infty} a_n$ is convergent, then

    $\displaystyle\lim_{n \to \infty} a_n = 0.$

4. State De Morgan Test of convergence of series.

5. Difference between pointwise convergence and uniform convergence of sequence.

6. State Leibnitz's test to check convergence of series.

7. Give an example of convergent series which is not absolutely convergent.   7×2=14

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B–2058

SOCIAL CHANGE IN INDIA

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 70

Note :   Attempt *two* questions each from Sections A & B carrying 10½ marks each and the entire Section C consisting of 14 short answer type questions carrying 2 marks each.

SECTION—A

I.   Define Social Change and its features.

II.   How Technology brings changes in Rural Structure?

III.   Describe the cultural factors of Social Change.

IV.   Write a note on Evolution and describe its features.

SECTION—B

V.   Differentiate between Modernization and Westernization.

VI.   Write note on Globalization.

VII. Write a detailed note on Panchayati Raj Institution.

VIII. Write note on MGNREGA.

SECTION—C

(Compulsory)

IX.   Write short notes on :

1. Evolution

2. Modernization

3. Sanskritization

4. Urbanism

5. Aims of Swarn Jyanti Gram Swai Rojgar Yojna

6. Progress

7. Economic factors of social change

8. Define Social processes

9. Secularization

10. Material Culture

11. Development

12. Implications of Westernization

13. Technology as factor of Social Changes

14. Secularization.

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B-2058

MUSIC (VOCAL) THEORY-A

Semester–IV

Time Allowed : 3 Hours] [Maximum Marks : 38

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 6 marks each and the entire Section C consisting of 7 short answer type questions carrying 2 marks each.

SECTION—A

1. Write down the origin and development of Dhrupad Gayan Shailly.

2. Write down the definition of any **two** of the following musical terms :

   (a) Kan

[P. T. O.

(b) Murki

(c) Khatka.

3. What is the role of computer and internet in the field of music?

4. Give brief life sketch and contributions towards Indian Music of Pt. Onkar Nath Thakur Ji.

SECTION—B

5. Write in detail about Tanpura and Sahayak Nad.

6. Write in detail about the importance of music in Sri Guru Granth Saheb Ji.

7. Write in Notation a Bada Khayal (Slow) with two tanas in any prescribed Rag of your course.

8. Write down the single (ekgun) and double (dugun) of Tal Dhamar and Sooltal.

SECTION—C

9. Write brief answers :

1. Name any four ragas mentioned in Sri Guru Granth Saheb Ji.

2. Name any two books written by Pt. Onkar Nath Thakur Ji.

3. Name the Gharana and Guruji of Prof. Tara Singh Ji.

4. Which Sahayak Nadas are generated on tuning Tanpura on the Swaras Pa Sa Sa Sa?

5. Name the similar Ragas of Rag Des and Bhimplasi.

6. Name any two Books/Granthas written in 12th Century.

7. Name any two Talas of your course played with Dhrupad Gayan Shailly.

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हिंदी साहित्य

Semester-IV

Time Allowed : Three Hours]

[Maximum Marks : 75

खण्ड—क

1. आधुनिक काल की परिस्थितियों का विस्तार सहित वर्णन करें। 9

अथवा

जयशंकर प्रसाद का जीवन तथा साहित्यिक परिचय दें।

2. निम्नलिखित अलंकारों में से **दो** अलंकारों का लक्षण तथा उदाहरण लिखें : 8

उपमा, उत्प्रेक्षा, दृष्टांत, अन्योक्ति।

खण्ड—ख

1. (1) "अकेलेपन में हरेक के मन में एक मूर्ति उपज आती है, चाहे वह काल्पनिक हो या यथार्थ—उस क्षीण तंतु के बल पर ही लम्बे, अकेले पल कटते जाते हैं।"

अथवा

"एकांत में बैठी सुषमा के मुख पर अव्यक्त वेदना, रात में टूटते तारों की तरह आँसू और पकड़े जाने पर उसकी झेंपी-सी हंसी भी देखी थी।"

(2) "कमाया है तो फायदा ! न तीरथ, न जप तप, न धर्म। कभी हरिद्वार भी न गए। मैं तो तुम्हारा पैसा जानती ही नहीं।"

अथवा

"नहीं, बर्बर बनने की क्या जरूरत है ? मनुष्य सीमाओं को छूता हुआ क्यों चले ? मध्य का मार्ग क्यों न अपनाए ?" 5×2=10

2. 'पचपन खम्भे लाल दीवारें' उपन्यास एक सामाजिक समस्याओं पर आधारित सफल रचना है, स्पष्ट करें। 9

अथवा

उपन्यास के नारी पात्रों का परिचय तथा विशेषताएं लिखें।

3. 'चंपक' अथवा 'सीमा रेखा' एकांकी का सार तथा उद्देश्य लिखें। 9

खण्ड—ग

निम्नलिखित सभी लघु प्रश्नों के उत्तर दें : 15×2=30

1. आधुनिक काल की चार विशेषताएं लिखें।

2. छायावाद की चार विशेषताएं लिखें।

3. सूर्यकांत त्रिपाठी निराला की चार रचनाओं के नाम लिखें।

4. महादेवी वर्मा की चार रचनाओं का परिचय दें।

5. सुषमा के परिवार का परिचय दें।

6. नील के चरित्र की चार विशेषताएं लिखें।

7. 'पचपन खम्भे लाल दीवारें' नाम की सार्थकता सिद्ध करें।

8. मीनाक्षी का संक्षिप्त परिचय दें।

9. उषा प्रियम्बदा की चार रचनाओं के नाम लिखें।

10. 'दस हजार' एकांकी का उद्देश्य लिखें।

11. मधु का संक्षिप्त परिचय दें।

12. 'तौलिये' एक व्यंग्यात्मक एकांकी है, स्पष्ट करें।

13. 'एक दिन' के पात्रों का परिचय दें।

14. मोहन के चरित्र की विशेषताएं लिखें।

15. 'रूपक' अलंकार का लक्षण तथा उदाहरण लिखें।

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Total Pages : 3

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B/2058

ENGLISH LITERATURE (Elective) : MODULE-I
LITERARY MASTERPIECES : STUDY OF THE CLASSICS
(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt all the questions.

UNIT–I

I. Critically analyse various functions of chorus in Sophocles's play 'Oedipus Rex'.

OR

Sophocles's Oedipus has been called an authentic tragic hero. Why ? Justify your answer.   11½

II. Critically comment on the nature of sin, punishment and repentance as one of the importance themes of Defoe's 'Robinson Crusoe.'

OR

Write a detailed note on the Role and character of Friday from your study of Defoe's novel 'Robinson Crusoe'.

11½

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[P.T.O.

UNIT-II

III.   Write a critical summary of Shelley's poem 'Songs to Men of England.'

OR

Thematically analyse Tennyson's poem 'The Lady of Shalott'.   11

IV.   Write a detailed note on the philosophy of 'Animalism' as embodied in Orwell's 'Animal Farm'.

OR

Justify the title of George Orwell's novel 'Animal Farm'.   11

UNIT-III

V.   Answer the following short-answer type questions in about 100 words each :

   (i) Write a short note on Delphie oracle in 'Oedipus Rex'.

   (ii) Write a brief note on the Role of Teiresias in 'Oedipus Rex'.

   (iii) Comment briefly on the quarrel between Oedipus and Creon in the play 'Oedipus Rex'.

   (iv) Write a brief note on 'Autobiographical Elements' of the novel 'Robinson Crusoe'.

   (v) Briefly comment on religious elements of the novel 'Robinson Crusoe'.

   (vi) How does Crusoe treat misery in the life in the novel 'Robinson Crusoe' ?

   (vii) Enlist some qualities which Shelley did not like in Wordsworth.

   (viii) Write a brief note on the significance of the concluding stanza of Shelley's poem 'Prometheus'.

   (ix) Briefly comment on the central idea of the poem 'To Wordsworth' by P.B. Shelley.

   (x) Briefly describe the Land of 'Lotus-Eaters'.

   (xi) Write a brief note on Allegorical significance of the poem 'Crossing the Bar'.

   (xii) Write a brief note on Tennyson as a Nature Poet.

   (xiii) What was Old Major's warning to the animals in the novel 'Animal Farm' ?

   (xiv) Write a brief note on the character of Napolean in George Orwell's 'Animal Farm'.

   (xv) In which two classes the animals got divided in 'Animal Farm' ?   (15×2=30)

_____

Total Pages : 4

PC–3715/MH

B–2058

ਮੱਧਕਾਲੀਨ ਅਤੇ ਆਧੁਨਿਕ ਧਾਰਮਿਕ ਲਹਿਰਾਂ

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *two* questions from Section A carrying 10 marks each, *five* questions from Section B carrying 5 marks each and the entire Section C consisting of 15 short answer type questions carrying 2 marks each.

SECTION—A

I.   Discuss in detail the origin and development of Bhagati Movement.

II. Discuss the life and message of Bhagat Kabir Ji in detail.

III. Discuss the origin and development of Sufism in detail.

IV. Discuss the life and message of Baba Farid Ji.

SECTION—B

V.   Discuss Ram Krishan Mission in detail.

VI. Discuss the origin and development of Brahmo Samaj.

VII. What was Arya Samaj? Discuss in detail.

VIII. Discuss Namdhari Movement in detail.

IX. Discuss Gurdwara Reform Movement in detail.

X. What is Ahmadya Movement? Discuss.

XI. What is Singh Sabha Movement? Discuss in detail.

SECTION—C
(Compulsory)

XII. Write brief answers :

1. What is Bhagati Movement?

2. What are the effects of Bhagati Movement?

3. Who was Bhagat Kabir Ji?

4. When was he born?

5. Define Sufism.

6. When is it originated?

7. How is it originated?

8. What is Ram Krishan Movement?

9. What is Arya Samaj?

10. What is Namdhari Movement?

11. What is Gurdwara Reform Movement?

12. What is Singh Sabha Movement?

13. What is Ahmadya Movement?

14. Who was Baba Farid?

15. When was he born?

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ENGLISH (COMMUNICATION SKILLS)

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt all questions.

SECTION–A

I.   How does Charles Dickens prove the triumph of good over evil in the novel 'Oliver Twist' ?

OR

What picture of contemporary society does Charles Dickens present in his novel 'Oliver Twist' ?   10

II. Draw a character-sketch of Nancy.

OR

Write a character-sketch of Mr. Bumble.   10

SECTION–B

III. Attempt any *four* short answer type questions out of the given *six* :

(a) Describe Oliver's plight during the punishment period.

(b) Who was Agnes Fleming ? Who was she married to ?

(c) Describe briefly the conversation between Nancy and Rose in the hotel room.

(d) Why does Rose not accept Harry's proposal ?

(e) How do Nancy and Sikes take Oliver back to Fagin ?

(f) Describe the condition of Sikes after killing Nancy.

(4×3=12)

IV. (a) Compose a dialogue on the basis of the given prose passage :

Doctor asked Renu how she was feeling then. Renu told the doctor that the giddiness was over but she felt quite weak. Doctor asked her when she had taken her breakfast that day. Renu told him that she did not remember. She thought that she had forgotten to take it. Doctor asked Renu if she usually skipped taking breakfast. Renu refused and told that sometimes when she was hard pressed for time, she forgot the breakfast.

6

(b) Write a paragraph on *one* of the following topics in about 250 words :

(i) Terrorism in India.

(ii) A Road Accident.

(iii) Value of Newspaper.

(iv) Fashions Among Students.

7

SECTION-C

V. Attempt any *twenty*. Do as directed :   (20×1½=30)

(a) Put in the correct preposition :

(i) He jumped .... the swimming pool.

(ii) The passengers had to stand .... a queue.

(iii) I have been waiting .... forty minutes.

(iv) My parent's flat is .... the twenty-first floor.

(b) Put in tell or say :

(v) Could you .... me the way to the railway station, please ?

(vi) Why don't you just .... what the matter is ?

(vii) You should not .... lies.

(c) Put in during or while :

(viii) Shall we have a coffee .... we're waiting ?

(ix) It happened .... the night.

(d) Join each pair of sentences by putting the words in brackets :

(x) Nick used to smoke. He seems to be in good health. (although)

(xi) We couldn't get tickets. We queued for all an hour. (inspite of)

(e) Complete the second sentence so that it has a similar meaning to the first. Use the word in brackets :

(xii) They talked about the plan. (discussed)

(xiii) I wouldn't tolerate such terrible conditions. (put)

(xiv) I am trying to find my diary. (looking)

(f) Put in if or unless :

(xv) I will be pleased .... I pass the driving test.

(xvi) The bus won't stop .... you ring the bell.

(g) Comment on these situations. Use a type 2 conditionals with would or could :

(xvii) Andrew is such a boring person because he works all the time.

(xviii) David has so many accidents because he is so clumsy.

(h) Write the sentence correctly :

(xix) I can't find my diary, what is a real nuisance.

(xx) That we should do is ring the police.

(xxi) Martin is someone with which I usually agree.

(i) Put in about, of or to :

(xxii) Rohan is writing a letter .... his friends.

(xxiii) The man over there reminds me ....
someone I know.

(j) Rewrite the sentences replacing each <u>underlined</u> verb with a phrasal verb :

(xxiv) The problem is not going to just <u>disappear</u>.

(xxv) I am trying to <u>calculate</u> how much money I have spent.

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PC 3732-MH

B-2058
PHYSICAL EDUCATION
Semester–IV

Time Allowed : 3 Hours]   [Maximum Marks : 76

Note :– Candidates are required to attempt *two* questions each from Unit I and II carrying 12 marks each and *all* questions from the entire Q.No. 1 which is compulsory carrying 2 marks each.

(Compulsory)

1.   (i)   What do you mean by Learning ?

(ii)   Write any two cultural poses.

(iii)   Write any two types of Sudhi Kirya.

(iv)   Write any two names of Arjuna Awardees in Football.

(v)   Name any two types of Pranayam.

(vi)   What do you mean by Sports Psychology ?

(vii)   Define Motor-Learning.

(viii)   Name any two types of Motivation.

(ix)   Define Play.

(x)   What do you mean by Personality ?

(xi)   Define Aggression.

(xii) Write about the officials in Football Game.

(xiii) What do you mean by Asanas ?

(xiv) Write any two remedial measures of anxiety.   2×14=28

UNIT–I

2. What do you mean by Yoga ? Explain its types in detail.

3. Write the procedure, precaution and their effects of Sarvangasana and Bhujangasana in detail.

4. Write the meaning and importance of Pranayam in detail.

5. Write the History, General rules and regulations and major tournaments of Football in detail.   12×2=24

UNIT–II

6. What is meaning and importance of Sports Psychology in Physical Education and Sports ? Write in detail.

7. What do you mean by Learning Curve ? Explain its types in detail.

8. Define Play. Explain any five Theories of Play in detail.

9. What do you understand by Personality ? Explain the role of Physical Education, activity and sports in Personality Development in detail.
                              12×2=24

PC-3722/MH

B-2058

ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ (ਮੁੱਢਲਾ ਗਿਆਨ)

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

ਭਾਗ—ੳ

I. ਹੇਠ ਲਿਖੀਆਂ ਕਹਾਣੀਆਂ ਵਿਚੋਂ ਕਿਸੇ *ਇਕ* ਦਾ ਸਾਰ ਲਿਖੋ :

(ੳ) ਪੇਮੀ ਦੇ ਨਿਆਣੇ

(ਅ) ਕੁਲਫ਼ੀ   8

II. ਹੇਠ ਲਿਖੇ ਪਾਤਰਾਂ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਨਾਲ ਜਾਣ-ਪਛਾਣ
    ਕਰਾਓ :

(ੳ) ਉਧਾਲੀ ਹੋਈ ਔਰਤ

(ਅ) ਗੀਡੂ ਸ਼ਾਹ   4

III. ਹੇਠ ਲਿਖੇ ਪਾਤਰਾਂ ਵਿਚੋਂ ਕਿਸੇ *ਇਕ* ਦਾ ਪਾਤਰ ਚਿਤਰਨ ਕਰੋ :

(ੳ) ਵਸਾਵਾ ਸਿੰਘ

(ਅ) ਅੱਲਾ ਬਖ਼ਸ਼

(ੲ) ਬੇਬੇ   8

ਭਾਗ—ਅ

IV. ਤੁਹਾਡੇ ਜਨਮ ਦਿਨ ਤੇ ਤੁਹਾਡੇ ਚਾਚਾ ਜੀ ਨੇ ਇਕ ਤੋਹਫਾ ਭੇਜਿਆ ਹੈ। ਉਨ੍ਹਾਂ ਦਾ ਧੰਨਵਾਦ ਕਰਨ ਲਈ ਇਕ ਪੱਤਰ ਲਿਖੋ।

ਜਾਂ

ਤੁਸੀਂ ਹੋਸਟਲ ਵਿਚ ਰਹਿੰਦੇ ਹੋ, ਤੁਹਾਡਾ ਵਿਦਿਅਕ ਟੂਰ ਜਾਣਾ ਹੈ। ਪਿਤਾ ਜੀ ਤੋਂ ਆਗਿਆ ਲਈ ਪੱਤਰ ਲਿਖੋ।   9

V. (ੳ) ਹੇਠ ਲਿਖੇ ਸ਼ਬਦਾਂ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ ਕਰੋ :

Habit, Magic, Race, Facility, Weather, Vacation, Punctual, Poison.

(ਅ) ਹੇਠ ਲਿਖੇ ਸ਼ਬਦਾਂ ਦਾ ਅੰਗਰੇਜ਼ੀ ਵਿਚ ਅਨੁਵਾਦ ਕਰੋ :

ਆਗਿਆ, ਸੰਚਾਰ, ਪਾਠਸ਼ਾਲਾ, ਮਿਹਨਤ ਕਰਨਾ, ਤਰੱਕੀ, ਘਰ, ਗਿਆਨ, ਸਤਿਕਾਰ।   8+8=16

ਭਾਗ—ੲ

VI. ਹੇਠ ਲਿਖੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਸੰਖੇਪ ਉੱਤਰ ਲਿਖੋ :

1. ਕਹਾਣੀ 'ਪੇਮੀ ਦੇ ਨਿਆਣੇ' ਵਿਚ ਬੱਚਿਆਂ ਨੂੰ ਕਿਹੜੀਆਂ ਥਾਵਾਂ ਜਾਂ ਕੰਮ ਸਵਰਗ ਸਮਾਨ ਲਗਦੇ ਹਨ?

2. ਬੱਚਿਆਂ ਨੇ ਅੰਤ ਵਿਚ ਸੜਕ ਕਿਵੇਂ ਪਾਰ ਕੀਤੀ?

3. ਬੱਚਿਆਂ ਨੇ ਵਾਹਿਗੁਰੂ ਦਾ ਨਾਮ ਲੈਣ ਦਾ ਖਿਆਲ ਕਿਉਂ ਛੱਡ ਦਿੱਤਾ?

4. ਮੁਰਮੁਰੇ ਲਈ ਟਕਾ ਮੰਗ ਰਹੇ ਕਾਕੇ ਨੂੰ ਟਾਲਣ ਲਈ ਮੈਂ ਪਾਤਰ ਨੇ ਕੀ-ਕੀ ਬਹਾਨੇ ਬਣਾਏ?

5. ਦੂਜੇ ਦਿਨ ਕੁਲਫੀ ਵਾਲੇ ਦੇ ਹੋਕਾ ਦੇਣ ਉੱਤੇ ਕਾਕੇ ਨੇ ਕੀ ਕੀਤਾ?

6. ਮੈਂ ਪਾਤਰ ਨੇ ਕੁਲਫੀ ਖਾਣ ਦੀ ਇੱਛਾ ਤੋਂ ਬਚਣ ਲਈ ਕੀ ਕੀਤਾ?

7. ਮੈਂ ਪਾਤਰ ਨੂੰ ਭਾਰਤ ਵਲੋਂ ਕਿਹੜੀ ਜਿੰਮੇਵਾਰੀ ਸੌਂਪੀ ਗਈ ਸੀ?

8. ਉਧਾਲੀ ਹੋਈ ਔਰਤ ਦੀ ਹਾਲਤ ਕਿਹੋ ਜਿਹੀ ਸੀ?

9. ਔਰਤ ਭਾਰਤ ਜਾਣ ਦੀ ਬਜਾਏ ਮੈਂ ਪਾਤਰ ਸਾਹਮਣੇ ਕੀ ਮੰਗ ਰੱਖਦੀ ਹੈ?

10. 'ਮਾਂ ਦਾ ਡਿਪਟੀ' ਇਕਾਂਗੀ ਕਿਸ ਦੀ ਰਚਨਾ ਹੈ?

11. ਨਰਾਇਣ ਆਪਣੀ ਮਾਂ ਨਾਲ ਪੰਜਾਬੀ ਤੋਂ ਇਲਾਵਾ ਕਿਹੜੀ ਭਾਸ਼ਾ ਦੇ ਸ਼ਬਦ ਵਰਤਦਾ ਹੈ?

ਹੇਠ ਲਿਖੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਠੀਕ ਉੱਤਰ ਚੁਣੋ :

12. ਮਾਮੇ ਦੀ ਗੱਲ ਕੌਣ ਸੁਣਾਉਂਦਾ ਹੁੰਦਾ ਸੀ?

(ੳ) ਮਾਂ (ਅ) ਪਿਤਾ (ੲ) ਦਾਦੀ (ਸ) ਨਾਨੀ

13. ਜਦੋਂ ਤੀਜੇ ਦਿਨ ਕੁਲਫੀ ਵਾਲੇ ਨੇ ਹੋਕਾ ਦਿਤਾ ਤਾਂ ਕਾਕਾ ਕੀ ਕਰ ਰਿਹਾ ਸੀ?

(ੳ) ਖੇਡ ਰਿਹਾ ਸੀ (ਅ) ਸੌਂ ਰਿਹਾ ਸੀ (ੲ) ਰੋ ਰਿਹਾ ਸੀ (ਸ) ਰੋਟੀ ਖਾ ਰਿਹਾ ਸੀ

14. ਸ਼ਰਨਾਰਥੀ ਕਿਸ ਅਫ਼ਸਰ ਦੇ ਸਾਹਮਣੇ ਆਪਣੀਆਂ ਤਕਲੀਫਾਂ ਦੱਸਦੇ ਸਨ?

(ੳ) ਤਹਿਸੀਲਦਾਰ (ਅ) ਲੈਜ਼ਾਨ ਅਫ਼ਸਰ (ੲ) ਸਰਪੰਚ (ਸ) ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ

15. 'ਮਾਂ ਦਾ ਡਿਪਟੀ' ਇਕਾਂਗੀ ਦੀਆਂ ਕਿੰਨੀਆਂ ਝਾਕੀਆਂ ਹਨ?

(ੳ) ਇਕ (ਅ) ਦੋ (ੲ) ਤਿੰਨ (ਸ) ਚਾਰ

15×2=30

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PC–3721/MH

B–2058

ਪੰਜਾਬੀ ਸਾਹਿਤ (ਚੋਣਵਾਂ)

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

ਭਾਗ—ੳ

I.   ਹੇਠ ਲਿਖੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਕਿਸੇ ਦੋ ਦੇ ਉੱਤਰ ਲਿਖੋ :

(ੳ) 18ਵੀਂ ਤੇ 19ਵੀਂ ਸਦੀ ਵਿਚ ਉਪਜੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਬਾਰੇ ਸੰਖੇਪ ਵਿਚ ਲਿਖੋ।

(ਅ) ਈਸਾਈ ਮਿਸ਼ਨਰੀਆਂ ਦੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਨੂੰ ਕੀ ਦੇਣ ਹੈ?

(ੲ) 18ਵੀਂ ਸਦੀ ਵਿਚ ਉਪਜੀ ਸੂਫੀ ਕਾਵਿਧਾਰਾ ਬਾਰੇ ਚਰਚਾ ਕਰੋ।

3721/MH/23510/HHH/233   [P. T. O.

(ਸ) 19ਵੀਂ ਸਦੀ ਵਿਚ ਰਚੇ ਜੰਗਨਾਮਿਆ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦਿਓ।

(ਹ) 18ਵੀਂ ਸਦੀ ਵਿਚ ਉਪਜੀ ਪੰਜਾਬੀ ਵਾਰਤਕ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਕਰਾਓ। 2×10=20

ਭਾਗ—ਅ

II. ਕਿਸੇ *ਇਕ* ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਲਿਖੋ :

(ੳ) ਕਾਫੀ ਦੇ ਭੱਤਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਕਰਾਓ।

(ਅ) ਵਾਰ ਕੀ ਹੈ? ਇਸ ਦੇ ਭੱਤਾਂ ਬਾਰੇ ਨੋਟ ਲਿਖੋ।

(ੲ) ਨਿਬੰਧ ਦੀ ਪ੍ਰਕਿਰਤੀ ਤੇ ਭੱਤਾਂ ਦਾ ਵਰਨਣ ਕਰੋ। 13

III. ਹੇਠ ਲਿਖੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਕਿਸੇ *ਇਕ* ਦਾ ਉੱਤਰ ਲਿਖੋ :

(ੳ) 'ਸਭਿਆਚਾਰ : ਸੰਕਲਪ, ਲੱਛਣ ਅਤੇ ਪਰਿਭਾਸ਼ਾ' ਲੇਖ ਦਾ ਸਾਰ ਲਿਖੋ।

(ਅ) 'ਚਾਰ ਚਿਰਾਗ' ਲੇਖ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਲਿਖੋ।

(ੲ) 'ਪੰਜਾਬੀਆਂ ਦਾ ਖੇਡ ਸਭਿਆਚਾਰ' ਲੇਖ ਵਿਚ ਆਏ ਵਿਚਾਰਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। 12

ਭਾਗ—ੲ

IV. ਹੇਠ ਲਿਖੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਸੰਖੇਪ ਉੱਤਰ ਲਿਖੋ :

1. 19ਵੀਂ ਸਦੀ ਦੇ ਸੂਫੀਆਂ ਦੇ ਨਾਂ ਲਿਖੋ।

2. ਬੁਲੇ ਸ਼ਾਹ ਦਾ ਜਨਮ ਕਦੋਂ ਤੇ ਕਿਥੇ ਹੋਇਆ? ਉਸ ਦੇ ਮੁਰਸ਼ਦ ਦਾ ਕੀ ਨਾਂ ਸੀ?

3. ਵਾਰਿਸ ਸ਼ਾਹ ਦੀ ਰਚਨਾ 'ਹੀਰ' ਦਾ ਅੰਤ ਕਿਹੋ ਜਿਹਾ ਹੈ?

4. ਪੰਜਾਬੀ ਵਿਚ ਸਭ ਤੋਂ ਵੱਧ ਕਿੱਸੇ ਕਿਸ ਨੇ ਲਿਖੇ?

5. ਮੱਧਕਾਲ ਵਿਚ ਕਿਹੜੀਆਂ ਪ੍ਰਸਿੱਧ ਕਹਾਣੀਆਂ ਨੂੰ ਅਧਾਰ ਬਣਾਕੇ ਕਿੱਸੇ ਲਿਖੇ ਗਏ?

6. 'ਚੱਠਿਆਂ ਦੀ ਵਾਰ' ਵਿਚ ਕਿਹੜੀਆਂ ਧਿਰਾ ਵਿਚਕਾਰ ਲੜਾਈ ਹੁੰਦੀ ਹੈ?

7. ਸ਼ਾਹ ਮੁਹੰਮਦ ਦਾ ਜੰਗਨਾਮਾ ਕਿਸ ਘਟਨਾ ਕ੍ਰਮ ਨੂੰ ਲੈ ਕੇ ਲਿਖਿਆ ਗਿਆ?

8. 18ਵੀਂ ਤੇ 19ਵੀਂ ਸਦੀ ਵਿਚ ਰਚੀਆਂ ਗਈਆਂ ਚਾਰ ਜਨਮਸਾਖੀਆਂ ਦੇ ਨਾਂ ਲਿਖੋ।

9. ਅਜੋਕੇ ਸਮੇਂ ਵਿਚ ਸਰਕਸ ਦੇ ਕਲਾਕਾਰਾਂ ਦੀ ਕੀ ਸਥਿਤੀ ਹੈ?

10. ਮੈਰਿਜ ਪੈਲੇਸ ਵਿਚ ਵਿਆਹ ਕਰਨ ਨਾਲ ਕਿਹੜੀਆਂ ਸਭਿਆਚਾਰਕ ਰਸਮਾਂ ਬਦਲ ਰਹੀਆਂ ਹਨ?

11. ਪੰਜਾਬ ਦੇ ਪੰਜ ਦਰਿਆਵਾਂ ਦੇ ਨਾਂ ਲਿਖੋ।

12. ਆਰੀਆ ਲੋਕਾਂ ਦਾ ਮੁੱਢਲਾ ਗ੍ਰੰਥ ਕਿਹੜਾ ਸੀ?

13. ਪਾਠ ਅਨੁਸਾਰ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੀ ਕੇਂਦਰੀ ਕਦਰ ਕਿਹੜੀ ਹੈ?

14. ਸਿਖਿਆ ਦੇ ਪਸਾਰ ਨੇ ਔਰਤ ਦੀ ਸਥਿਤੀ ਨੂੰ ਕਿਵੇਂ ਸੁਧਾਰਿਆ?

15. ਜੰਗਨਾਮਾ ਕੀ ਹੁੰਦਾ ਹੈ? ਪਰਿਭਾਸ਼ਾ ਲਿਖੋ।   15×2=30

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PC–3718/MH

B–2058

FINANCIAL ADMINISTRATION IN INDIA

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

Note :   Attempt *two* questions each from Sections A & B carrying 12 marks each and the entire Section C consisting of 9 short answer type questions carrying 3 marks each.

SECTION—A

I.   Describe the various Agencies of Financial Administration.

II.   Define Budget. Discuss its various kinds.

III. What is meant by ZBB? Discuss its merits and demerits.

IV. Write the procedure for the passage of Budget in India.

SECTION—B

V. How does Parliament exercise control over Public Finance? Explain.

VI. Describe the organisation and functions of the Estimate Committee.

VII. How is the Comptroller and Auditor General of India appointed? Discuss his Powers.

VIII. Discuss the Historical Background and role of the Ministry of Finance.

SECTION—C

(Compulsory)

IX. Write brief answers :

1. What is meant by Financial Administration?

2. Write two Parliamentary Financial Committees.

3. Write the Central Grants in aid given to the States.

4. What is meant by Rule of Lapse?

5. Name the Division of Department of Expenditure.

6. Write any three functions of Finance Commission.

7. Write any three objectives of Audit.

8. How the comptroller and Auditor general of India is removed from office?

9. What is the provision of the Financial Emergency in the Indian Constitution?

PC-3720/MH

B-2058

ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 75

ਨੋਟ : ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ।

I.   (ੳ) 'ਅਟਕ' ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ।

ਜਾਂ

'ਖਤਾਂ ਦੀ ਉਡੀਕ' ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ।

ਜਾਂ

ਪਾਸ਼ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਉਪਰ ਨੋਟ ਲਿਖੋ।   12

(ਅ) ਕਿਸੇ ਦੋ ਕਵਿਤਾਵਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ :

(i)   ਸੁਹਣਿਆਂ! ਮੁੱਲ ਪਾ ਤੂੰ ਆਪਣਾ,
      ਵੱਧ ਥੀਂ ਹੋਰ ਹਾਲੀਂ ਬਹੂ ਸਾਰਾ
      ਹੋਰ ਹਾਲੀਂ ਬਹੂ ਸਾਰਾ, ਹੋਰ ਵੀ ਹੋਰ
      ਤੇਰਾ ਮੁੱਲ ਕੋਈ ਨਾਂਹ,
      ਤੂੰ ਕੀਮਤਾਂ ਥੀਂ ਪਰੇ,
      ਓ ਯੂਸਫਾ ਦੇ ਯੂਸਫਾ!

(ii) ਇੱਕ ਬੂਟਾ ਅੰਬੀ ਦਾ, ਘਰ ਸਾਡੇ ਲੱਗਾ ਨੀ।
ਜਿਸ ਥੱਲੇ ਬਹਿਣਾ ਨੀ, ਸੁਰਗਾਂ ਵਿਚ ਰਹਿਣਾ ਨੀ।
ਕੀ ਉਸ ਦਾ ਕਹਿਣਾ ਨੀ, ਵੇਹੜੇ ਦਾ ਗਹਿਣਾ ਵੀ।
ਪਰ ਮਾਹੀ ਬਾਝੋਂ ਨੀ, ਪਰਦੇਸੀ ਬਾਝੋਂ ਨੀ,
ਇਹ ਮੈਨੂੰ ਵੱਢਦਾ ਏ, ਤੇ ਖੱਟਾ ਲਗਦਾ ਏ।

(iii) ਮੈਂ ਦੋਸਤੀ ਦੇ ਜਸ਼ਨ ਤੇ
ਇਹ ਗੀਤ ਜੋ ਅੱਜ ਪੜ੍ਹ ਰਿਹਾ
ਮੈਂ ਦੋਸਤਾਂ ਦੀ ਦੋਸਤੀ ਦੀ ਨਜ਼ਰ
ਇਸਨੂੰ ਕਰ ਰਿਹਾ ਮੈਂ ਦੋਸਤਾਂ ਲਈ
ਫੇਰ ਅੱਜ ਇੱਕ ਵਾਰ ਸੂਲੀ ਚੜ੍ਹ ਰਿਹਾਂ।

(iv) ਹੌਲੀ ਹੌਲੀ
ਕੁਮਲਾਉਣ ਲੱਗੀ ਮਾਂ ਦੀ ਮਮਤਾ
ਹੌਲੀ ਹੌਲੀ
ਪਥਰਾਉਣ ਲੱਗੇ ਮਾਂ ਦੇ ਚਾਅ
ਰੁਲਣ ਲੱਗੀ
ਮਾਂ ਦੀ ਗੀਤਾਂ ਵਾਲੀ ਕਾਪੀ
ਬਿਖਰਨ ਲੱਗੀਆਂ
ਗੀਤਾਂ ਦੀਆਂ ਸਤਰਾਂ।   2×6=12

II.   ਕਿਸੇ ਅਖ਼ਬਾਰ ਦੇ ਸੰਪਾਦਕ ਨੂੰ ਕਿਸੇ ਸੱਭਿਆਚਾਰਕ ਪ੍ਰੋਗਰਾਮ ਦੀ ਰਿਪੋਰਟ ਲਿਖ ਕੇ ਭੇਜੋ।

ਜਾਂ

ਕਿਸੇ ਅਖ਼ਬਾਰ ਦੇ ਸੰਪਾਦਕ ਨੂੰ ਆਪਣੇ ਕਾਲਜ ਦੇ ਸਾਲਾਨਾ ਖੇਡ ਸਮਾਗਮ ਦੀ ਰਿਪੋਰਟ ਲਿਖੋ।

ਜਾਂ

ਆਪਣੇ ਸ਼ਹਿਰ ਵਿਚ ਫੈਲੀ ਗੰਦਗੀ ਤੇ ਸਫਾਈ ਦੇ ਬੁਰੇ ਹਾਲ ਸਬੰਧੀ ਕਿਸੇ ਅਖ਼ਬਾਰ ਦੇ ਸੰਪਾਦਕ ਨੂੰ ਰਿਪੋਰਟ ਲਿਖੋ।   9

III. ਗੁਰਮੁਖੀ ਲਿਪੀ ਬਾਰੇ ਸੰਖੇਪ ਜਾਣਕਾਰੀ ਦਿਓ।

ਜਾਂ

ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਈਆਂ ਦੱਸੋ।   12

IV.   ਹੇਠ ਲਿਖੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ :

1.   'ਮੈਂ ਹੁਣ ਵਿਦਾ ਹੁੰਦਾ ਹਾਂ' ਕਵਿਤਾ ਕਿਸ ਦੀ ਲਿਖੀ ਹੋਈ ਹੈ?

2.   'ਮੁੱਲ ਪਾ ਤੂੰ ਆਪਣਾ' ਕਵਿਤਾ ਕਿਸ ਕਵੀ ਦੀ ਰਚਨਾ ਹੈ?

3.   ਸ਼ਿਵ ਕੁਮਾਰ ਦੀ ਕਿਹੜੀ ਰਚਨਾ 'ਕਾਵਿ-ਲਹਿਰਾਂ' ਵਿਚ ਦਰਜ ਹੈ?

4. ਨੌਜਵਾਨ ਨੂੰ ਕਿਸ-ਕਿਸ ਦੇ ਖ਼ਤਾਂ ਦੀ ਉਡੀਕ ਹੈ?

5. ਕਿਹੜੇ ਪਾਕਿਸਤਾਨੀ ਕਵੀ ਦੀ ਕਵਿਤਾ 'ਕਾਵਿ-ਲਹਿਰਾਂ' ਵਿਚ ਦਰਜ ਹੈ?

6. ਐਨ.ਆਰ.ਆਈ. ਲਈ ਇੰਡੀਆ ਨਰਕ ਕਿਉਂ ਹੈ?

7. ਕਿਸੇ ਇਕ ਇਸਤਰੀ ਲੇਖਕ ਦਾ ਨਾਂ ਦੱਸੋ, ਜਿਸ ਦੀ ਰਚਨਾ 'ਕਾਵਿ-ਲਹਿਰਾਂ' ਵਿਚ ਦਰਜ ਹੈ।

8. 'ਹੁਣ ਮਾਂ .....' ਕਵਿਤਾ ਵਿਚ ਹੁਣ ਮਾਂ ਦੀ ਹਾਲਤ ਕਿਹੋ ਜਿਹੀ ਹੈ?

9. ਲਿਪੀ ਕੀ ਹੁੰਦੀ ਹੈ?

10. ਅੰਗਰੇਜ਼ੀ ਭਾਸ਼ਾ ਕਿਸ ਲਿਪੀ ਵਿਚ ਲਿਖੀ ਜਾਂਦੀ ਹੈ?

11. ਗੁਰਮੁਖੀ ਦੇ ਪੈਂਤੀ ਅੱਖਰ ਲਿਖੋ।

12. ਗੁਰਮੁਖੀ ਵਿਚ ਕਿੰਨੇ ਅੱਖਰ ਅਤੇ ਕਿਹੜੇ ਨਵੇਂ ਸ਼ਾਮਿਲ ਕੀਤੇ ਗਏ ਹਨ?

13. ਬੋਲੀ ਤੇ ਲਿਪੀ ਦਾ ਕੀ ਸਬੰਧ ਹੈ?

14. ਲਗਾਂ-ਮਾਤਰਾ ਕੀ ਹੁੰਦੀਆਂ ਹਨ?

15. ਮੁਕਤਾ ਕੀ ਹੈ?   15×2=30

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HISTORY OF PUNJAB (1469-1799)–I

(Semester–IV)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *two* questions each from Sections A & B carrying 12 marks each and the entire Section C consisting of 8 short answer type questions carrying 2 marks each and 11 marks for map question.

SECTION—A

I.   Briefly describe the main sources of Early Sikh History.

12

II.   What do you know about the social condition of people during the time of Guru Nanak Dev?   12

III. Discuss the development of Sikhism under Guru Angad Dev.   12

IV.   Examine the features of the New Policy of Guru Hargobind.   12

SECTION—B

V.   Discuss the causes of the Creation of Khalsa.   12

VI.   What do you know about the role of Banda Singh Bahadur in the establishment of Independent Sikh Rule?   12

VII. Discuss the struggle between Sikhs and Mughals during Zakaria Khan. 12

VIII. What do you know about the rise of Sikh Misls? 12

SECTION—C
(Compulsory)

IX. (a) Write brief answers :

1. Who was Behlol Lodhi?

2. Two teachings of Guru Nanak Dev.

3. Masand system.

4. Miri and Piri.

5. Five Kakars.

6. Banda Bahadur's victory on Samana.

7. Bhai Mani Singh.

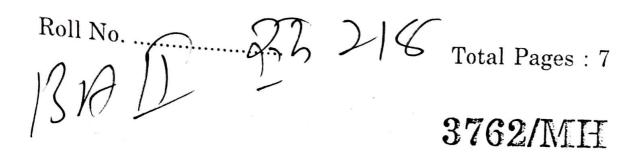8. Bhangi Misl. 8×2=16

(b) Map Question :

Show the places of the battles of Guru Hargobind *or* important places connected with the Sikh Gurus in the map of Punjab and also write explanatory note. 11

(For Blind Students in lieu of Map)

Write short notes on :

1. Alam Khan Lodhi.

2. Foundation of Harimandir Sahib.

3. Guerilla Warfare of Sikhs.

4. Meaning of Misl. 11

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ENVIRONMENTAL AND
ROAD SAFETY AWARENESS

Semester–IV

Time Allowed : 3 Hours]　　　　[Maximum Marks : 70

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 11 marks each and the entire Section C consisting of 13 short answer type questions carrying 2 marks each.

SECTION—A

1. What are the various levels of Biological diversity ? Explain in detail.

2. Explain the composition, structure and importance of Lithosphere.

3. What is Water Pollution ? Explain its causes and effects on Human Life. How can it be controlled ?

4. Define Soil erosion. Explain its causes and various strategies for its prevention.

SECTION—B

5. Explain the role of law in the protection of Environment. What are the issues involved in the enforcement of Environmental legislation.

6. Explain the impact of increasing Human population on Environment and Human health.

7. Describe the Chipko Movement and the environment movement by Bisnois in Rajasthan.

8. Write a note on Traffice lights. Explain the role of First Aid in Road safety.

SECTION—C

9. Write a brief notes on the following :

   (i)   Endemic species.

   (ii)   Biosphere.

   (iii)   Shifting Cultivation.

   (iv)   Land use change.

   (v)   Smog.

   (vi)   Ecosystem.

   (vii)   Kanha National Park.

   (viii) Van Mahotasava.

(ix) Earth Summit.

(x) UNESCO.

(xi) Alternate Energy Sources.

(xii) Pedestrian Signals.

(xiii) Vermicompositing.

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NUMERICAL METHODS–IV(i)

Time : Three Hours]   [Maximum Marks : 36

Note : Attempt *five* questions in all selecting *two* questions each from Section A and Section B while Q. No. IX (Section-C) is compulsory.

SECTION–A

I. (a) Find a real root of the equation $x^2 - 4x - 9 = 0$ by Bisection method correct to three decimal places.

2½

   (b) Find the order of convergence of Newton-Raphson method.

3

II. (a) Use the method of False position, to find the fourth root of 32 correct to three decimal places.

2½

   (b) Find the smallest root of the following equation :

$$1 - x + \frac{x^2}{(2!)^2} - \frac{x^3}{(3!)^2} + \frac{x^4}{(4!)^2} - \frac{x^5}{(5!)^2} + \ldots = 0.$$

3

III. (a) Apply Gauss Jordan method to solve the following system of equations :

$$x + y + z = 9,$$
$$2x - 3y + 4z = 13,$$
$$3x + 4y + 5z = 40.$$ 2½

(b) Solve

$$27x + 6y - z = 85,$$
$$x + y + 54z = 110,$$
$$6x + 15y + 2z = 72$$

by Gauss Seidel method.   3

IV. (a) Find the order of convergence of Secant method.   2½

(b) Using Triangularization method, solve the following :

$$3x + 2y + 7z = 4,$$
$$2x + 3y + z = 5,$$
$$3x + 4y + z = 7.$$ 3

SECTION-B

V. (a) Using Stirling's formula, find y_{35} given that

$y_{20} = 512$, $y_{30} = 439$, $y_{40} = 346$, $y_{50} = 243$.   2½

(b) Find the number of men getting wages between ₹ 10 and ₹ 15 from the following data :

Wages in ₹ :	0-10	10-20	20-30	30-40
Frequency :	9	30	35	42

3

VI. (a) Given the table

x	310	320	330	340	350	360
$\log x$	2.49136	2.50515	2.51851	2.53148	2.54407	2.55630

Find the value of log 337.5 by Everett's formula.   2½

(b) Find the distance moved by a particle and its acceleration at the end of 4 seconds, if the time vs. velocity data are as follows :

t :	0	1	3	4
v :	21	15	12	10

3

VII. (a) Using Lagrange's formula, express the fraction

$$\frac{3x^2 + x + 1}{(x-1)(x-2)(x-3)}$$ as a sum of partial fractions.

2½

(b) State and prove Bessel's Central difference formula.   3

VIII. (a) Using Newton's Forward interpolation formula, show

that $\sum n^2 = \left[\dfrac{n(n+1)}{2}\right]^3$.   2½

(b) Using Newton's Divided difference interpolation, find the polynomial of the given data :

x :	−1	0	1	3
$f(x)$:	2	1	0	−1

3

SECTION–C

(Compulsory Question)

IX. (a) Show that at $\Delta^n[x]^n = n!$ and $\Delta^{n+1}[x]^n = 0$.

   (b) Prove that $\dfrac{\Delta}{\nabla} - \dfrac{\nabla}{\Delta} = \Delta + \nabla$.

   (c) Show that nth divided difference of a polynomial of the nth degree are constant.

   (d) Solve the following system of equations by Gauss elimination method :

$$2x + y + z = 10,$$
$$3x + 2y + 3z = 18,$$
$$x + 4y + z = 16.$$

   (e) Find the iteration formula for finding $1/N$ for some positive real number N using Newton-Raphson method.

   (f) Using Iteration method, find a root of the equation $x^3 + x^2 - 1 = 0$ correct to four decimal places.

   (g) Express $x^3 - 2x^2 + x - 1 = 0$ into factorial polynomial. Hence show that $\Delta^4 f(x) = 0$. $(2\times7=14)$

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DYNAMICS–VI (iii)

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 36

Note : Attempt *five* questions in all, selecting *two* questions from each Section A and Section B and compulsory question of Section C.

SECTION–A

I. (a) A particle projected vertically upwards takes time t_1 to reach a height h. If t_2 is the time to reach the ground again, prove that $h = \dfrac{1}{2} g t_1 t_2$ and the maximum height attained is $\dfrac{1}{8} g (t_1 = t_2)^2$. Also, show that the velocity of particle at a height $\dfrac{h}{2}$ is $\dfrac{1}{2} g \sqrt{t_1^2 + t_2^2}$.   2.5

(b) A bus is beginning to move with an acceleration of $1/3$ m/sec². A man who is $40/3$ m behind the bus starts running at 3 m/sec to catch the bus. After what time will the man be able to catch the bus? Explain the double answer.   3

II. (a) A body sliding down a smooth inclined plane is observed to cover equal distances, each equal to l, in consecutive intervals of time t_1 and t_2. Show that inclination of the plane is $\sin^{-1}\left[\dfrac{2l\,(t_1 - t_2)}{g t_1 t_2\,(t_1 + t_2)}\right]$. 2.5

(b) A particle free to move along the x-axis is subjected to a force $mF_0 \cos pt$ acting along the x-axis. At $t = 0$, $x = 0$ and $v = 0$. Show that at any time t,

$x = \dfrac{F_0}{p}\,(1 - \cos pt)$. Here m is the mass of the particle.

F_0 and p are constants. 3

III. (a) A particle moves with S.H.M. in a straight line. In the first second after starting from rest it travels a distance a and in the next second it travels a distance b. Prove that the amplitude of the motion is $\dfrac{2a^2}{3a - b}$. 2.5

(b) A light elastic string whose modulus of elasticity is λ is stretched to double its length and is tied to two fixed points distant $2a$ apart. A particle of mass m, tied to its middle point is displaced along the line of the string through a distance equal to half its distance from the fixed point and released. Prove that the time of complete oscillation is $\pi\sqrt{\dfrac{am}{\lambda}}$ and maximum velocity acquired is $\sqrt{\dfrac{a\lambda}{m}}$. 3

IV. (a) A particle moves along x-axis such that its acceleration is $-\dfrac{k^2}{x^3}$ $(x > 0)$ where x is the coordinate of the particle at any time t. If R is the coordinate of the particle initially, determine x as a function of time, given that $x \to \infty$, the velocity tends to zero. 2.5

(b) A body is projected up a smooth inclined plane of length 20 meters and inclination 30° with a velocity just sufficient for it to reach the top. Divide the whole length into three parts, so that each part is covered in the same time. 3

SECTION-B

V. (a) A projectile has initially a velocity whose horizontal and vertical components are u and v respectively. If R is the range and h, the greatest height attained, show that

$$\dfrac{4h}{R} = \dfrac{v}{u} \quad \text{and} \quad \dfrac{8h}{g} = \left(\dfrac{R}{u}\right)^2.$$ 2.5

(b) A particle is projected under gravity with velocity $\sqrt{3ga}$ from a point at a height h above a level plane. Show that the angle of projection for a maximum range on the plane is given by $\tan^2 \alpha = \dfrac{a}{a + h}$. 3

VI. (a) A spider hangs from the ceiling of a room by thread of elasticity equal to its weight. Show that it can climb to the ceiling with an expenditure of work equal to only three quarters to what would be required if the thread were inelastic. 2.5

(b) An engine exerting its maximum power draws a train up a slope of 1 in n with constant speed v, the frictional resistance to the motion being $\frac{1}{m}$th of the weight of m the train. Prove that the greatest speed with which the engine can draw the train along a level track against the same resistance is $v\left(1 + \frac{m}{n}\right)$. 3

VII. (a) A body of mass $(m_1 + m_2)$ is split into two parts of masses m_1 and m_2 by an internal explosion which generates kinetic energy E. Show that, if after explosion, the parts move in the same line as before, their relative speed is $\sqrt{\frac{2E(m_1 + m_2)}{m_1 m_2}}$. 2.5

(b) ABC is a right angled triangle right angled at C. A particle starts from A and moves along AC with uniform velocity u. Another particle Q starts from C at the same instant and moves along CB with velocity v. Show that the shortest distance between P and Q will be $\frac{v.AC}{\sqrt{u^2 + v^2}}$ after a time $\frac{u.AC}{\sqrt{u^2 + v^2}}$. 3

VIII. (a) A ball of mass 5 gm falls from a height of 10 meters and rebounds to a height 6.4 meters. Find the impulse and the average force between the ball and the ground, if the impact takes place for $\frac{1}{50}$ seconds. 2.5

(b) Show that the loss of K.E. due to direct impact of two smooth spheres of masses m_1 and m_2 and having velocities v_1 and v_2 directed towards each other is given by $\frac{m_1 m_2 (1 - e^2)}{2(m_1 + m_2)}(v_1 - v_2)^2$, 'e' being the coefficient of restitution between the spheres. 3

SECTION–C

(Compulsory Question)

IX. (a) A body travels a distance s in t seconds. It starts from rest and ends at rest. In the first part of the journey it moves with constant acceleration f and in the second part with constant retardation r. Show that
$$t = \sqrt{2s\left(\frac{1}{f} + \frac{1}{r}\right)}.$$

(b) If t_1 and t_2 are the two times of flight with which a given range R on a horizontal plane can be reached by a particle projected with velocity u, prove that t_1 and t_2 satisfy the equation $g^2 t^4 - 4u2t^2 + 4R^2 = 0$.

Prove also that $t_1^2 + t_2^2 = \frac{4u^2}{g^2}$.

(c) A particle of mass m falls from rest at a height 'h' above the ground. Show that the sum of kinetic and potential energies is constant throughout.

(d) A pendulum which beats seconds at the surface of the earth is carried to the top of a mountain 5 km high, how many seconds will it lose or gain per day? What correction in its present length be made so that it may keep the correct time at the top of the mountain?

(e) A mass m_1 hanging at the end of a string draws a mass m_2 along the surface of a smooth table. If the mass on the table is doubled, the tension of the string increases by one half. Find the ratio of m_1 and m_2.

(f) A bullet of mass 5 gm is fired into a target with velocity 625 m/sec. The mass of the target is 7.5 kg and is free to move. Find the loss of kinetic energy by impact.

(g) A pendulum which beats seconds at the surface of the earth is carried to the top of a mountain 5 km high, how many seconds will it lose or gain per day? What correction in its present length be made so that it may keep the correct time at the top of the mountain?

(2×7=14)

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POLITICAL SCIENCE

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 70

Note :   Attempt *two* questions each from Sections A & B carrying
10½ marks each and the entire Section C consisting of
14 short answer type questions carrying 2 marks
each. Answer these questions in 50 words, i.e. 7-10
lines.

SECTION—A

I.   "The Prime Minister is the pivot of the whole system of
government." Discuss.

II.   How is Chief Minister appointed? Explain his powers and
position.

III. What do you know about the provision of the Independent Judiciary in India?

IV. What is meant by Judiciary Activism? Discuss its main devices.

SECTION—B

V. Explain the emerging trends in Indian Political System.

VI. How does the caste factor influence the Indian Political System?

VII. Discuss the various electoral reforms made by Election Commission of India.

VIII. Discuss the emerging trends in Indian Politics.

SECTION—C

(Compulsory)

IX. Write brief answers in about 50 words, i.e. 7-10 lines :

1. What is the Cabinet form of Government?

2. What are differences between Cabinet and Council of Ministers?

3. Describe the composition of Supreme Court.

4. What is the Public Interest Litigation (PIL)?

5. What do you mean by Judicial Review?

6. What do you mean by lack of inner democracy?

7. Write the name of any four National Political Parties and their Presidents.

8. How the caste factor affect the voting behaviour in India?

9. How the factor of religion affects the Indian Politics?

10. Write the name of Prime Minister with shortest tenure.

11. Write down any four objectives of Shiromani Akali Dal.

12. Write a short note on the formation of DMK Party.

13. Write any four factors against reservation.

14. Write down four major drawbacks of casteism.

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EVOLUTION OF WARFARE IN INDIA

(Semester–IV)

Time : Three Hours]   [Maximum Marks : 64

Note :   Attempt *two* questions each from Sections A & B carrying 10 marks each and the entire Section C consisting of 12 short answer type questions carrying 2 marks each.

SECTION—A

I.   Discuss the organisation and composition of Alexander and Porus forces in the Battle of Hydaspes.

II.   Write a brief note on Kautilya philosophy of war.

III.   Give in brief the battle description of the second battle of Tarain 1192 A.D.

IV.   Which principles of war were used in the first battle of Panipat ?

SECTION—B

V.   Analyse the battle of Talikota.

VI.   Write a detailed note on Shivaji "Man of forts" and discuss military organisation of Marathas under Shivaji.

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VII. Write down in detail on the organisation of Sikh army under Maharaja Ranjit Singh.

VIII. What were the reasons of Sikhs' fall in battle of Chillianwala?

SECTION—C
(Compulsory)

IX. Write brief answers :

1. Which principles of War Alexander used in the battle of Hydaspes?

2. What were the causes of defeat of the Rajputs?

3. Discuss in brief fighting techniques of Marathas under Shivaji.

4. Explain the following :

   (a) Topkhana Aspi.

   (b) Topkhana Jinsi.

5. Write any two leadership qualities of Maharaja Ranjit Singh.

6. Explain any two war techniques of Rajputs.

7. Write any two names of Spies written by Kautilya.

8. In which year battle of Talikota was fought ?

9. When, where and with whom the battle of Assaye was fought?

10. Why the Chillianwala battle is so famous?

11. Explain the different types of forts given by Kautilya.

12. Write any two Sikh Misls.

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MACRO ECONOMICS AND INTERNATIONAL ECONOMICS

Semester–IV

Time Allowed : 3 Hours]   [Maximum Marks : 75

Note : The candidates are required to attempt **two** questions each from Sections A and B carrying 12 marks each and the entire Section C consisting of 9 short answer type questions carrying 3 marks each.

SECTION—A

1. Write a critical note on Liquidity Preference Theory.

2. Write notes on :

   (a) Objectives of Monetary Policy

   (b) Instruments of Fiscal Policy.

3. Critically examine Cambridge Theory of Money.

4. How the cost push and demand pull factors affect inflation?

SECTION—B

5. Explain J.S. Mill Theory of Reciprocal demand in detail.

6. How the Indian trade is growing with SAARC?

7. Write a detailed note on the objectives and achievements of IMF.

8. How rate of exchange can be determined as per Purchasing power Parity Theory?

SECTION—C

9. Write brief answers :

   1. Define trade cycle.

   2. What do you mean by creditorship securities?

   3. What are the main primary functions of bank?

4. Explain value of money.

5. If demand deposits decreases what will be impact on money multiplier?

6. Define factor intensity.

7. What determines terms of trade?

8. What may cause disequilibrium of BoP?

9. What are the objectives of formation of World Bank?