GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: CHEMISTRY Full Marks: 60

Paper: CORE-XII Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

GROUP-A

[2x6]

1. **Answer any SIX questions.**

   (i) What do you mean by a free particle?

   (ii) What do you mean by operator and operand?

   (iii) Write Schrodinger wave equation

       (a) for a particle which is time independent

       (b) which is time dependent

   (iv) Which of the following are allowed according to selection roles for spectral transition in atomic spectra? $2S \rightarrow 3S, 4P \rightarrow 5F, 1S \rightarrow 2P$

   (v) What are internal conversion and inter system crossing in photochemical process?

   (vi) What are Stokes and Anti stokes lines?

   (vii) Give reasons for directional nature of covalent bond and non-directional nature of ionic bond.

   (viii) Draw molelcullar orbital diagram of LiH molecule.

GROUP-B
Answer any FOUR questions.

2. Write the postulates of quantum mechanics. Derive Schrodinger wave equation.   [4+8]

3. (a) Write Schrodinger wave equation for hydrogen like atom using spherical polar co-ordinates anad also write expressions for radial (r) equation, ϕ-equation and ∂-equation. [8]

(b) Briefly give the concept of degeneracy of a particle in a three dimensional box. [4]

4. (a) Write the similarities and dissimilarities between VBT and MOT. [4]

(b) Explain bonding and antibonding molecular orbitals. [4]

·(c) What are localised and non-localised MOS. [4]

5. (a) Write a note on Franck-Condon principle that explains the vibrational structure of electronic spectra. [8]

(b) Explain siglet and triplex states. [4]

6. (a) Explain rule of mutual exclusion. [4]

(b) Explain anharmonicity and dissociation energy of diatomic molecular vibration. [4+4]

7. (a) Give a qualitative treatment of rotational Raman effect. [6]

(b) Analyse the effect of nuclear spin and temperature on Raman lines. [3+3]

8. Write short notes on [4x3]

(a) Overtones

(b) Chemiluminescence

(c) Photostationary states.

$- x - x - x -$

GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: ZOOLOGY Full Marks: 60
Paper: CORE-XII Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

1. Answer any SIX questions. [2x6]

(i) Write briefly about the role of helicase in DNA replication.

(ii) What is DNA topology?

(iii) Explain degeneracy of genetic code.

(iv) Write two inhibitors of protein synthesis.

(v) Describe briefly about Ribo-switches.

(vi) What is exon shuffling?

(vii) Explain why DNA replication is semi-conservative.

Answer any FOUR questions.

2. Give an account of the role of proteins and enzymes in replication. [12]

3. Explain the mechanism of transcription initation and the role of transcription factors in Eukaryotes. [12]

4. Describe in detail the process of protein synthesis in Prokaryotes. [12]

5. Explain transcriptional regulation with example from Lac operon. [12]

(P.T.O...)

6. Write short notes on any two. [6x2]

   (a) Gene silencing

   (b) Role of activators & repressors in gene regulation.

   (c) RNA interference

7. Write short notes on any two. [6x2]

   (a) Alternative splicing

   (b) Split genes

   (c) RNA editing.

- x - x - x -

GACR
+3, 5th SEMESTER EXAMINATION-2019
(ARTS)

Sub.- HISTORY

PAPER : Core-XII

Time: 3 Hours

Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

1. **Answer any EIGHT of the following.**   [2x 8

   a) Bhrigukachha

   b) Black Hole Tragedy

   c) Mir Kasim

   d) Macaulay

   e) Ryotwari system

   f) Bengal Famine (1769-70)

   g) Trade Monopoly of the East India company.

   h) Ruin of handicraft industries

   i) Kanhu Murmu

   j) "Nil Darpan"

   Answer any FOUR questions.

2. Throw light on the economic condition of India   [16
   in the mid 18th century.

3. Give an account of India's foreign trade   [16
   between 1750 A.D. and 1857 A.D.

P.T.O.

OR

Examine the dynamics of British expansion in Mysore.

4. Discuss the role of army as one of the arms of the colonial state. [16

OR

Trace the growth of modern education in India.

5. Write shot note on:

a) Pastoral economy

b) De-industrialization.

OR

Discuss the features, merits and demerits of the Permanent Land Settlement.

6. Write short notes on:

a) Indigo rebellion (1860)

b) Economic cause of the Great Uprising of 1857.

OR

Write a note on the Santhal Uprising of 1856 - 57

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GACR
+3, 5ᵗʰ SEMESTER EXAMINATION-2019
(ARTS)

Sub.- POLITICAL SCIENCE   Time: 3 Hours

PAPER : Core-XII   Full Marks: 80

The figure in the right hand margin indicate marks.

Question No.1 is compulsory, answer any FOUR from the rest.

SECTION - A

1.   **Answer any EIGHT of the following.**   [2x 8

   a)   Mention two cardinal principles of Brahmanic tradition.

   b)   Define religious syncretism.

   c)   What is Varnashram Dharma?

   d)   What is full name of Vedavyasa?

   e)   What is the seven elements of a state according to Koutilya?

   f)   What is Agganna Sutta?

   g)   Who was Jiauddin Barani.

   h)   What are the literary works of Abul Fazal.

   i)   Who was Kabir?

   j)   What do you mean by Dandaniti of Kautilya?

SECTION - B

[16 x 4

Answer any FOUR questions.

2. Write an essay on Brahmanic tradition of pre-colonial India.

3. Write a critical note on Rajadharma as depicted in Shantiparva.

4. Give a critical estimate of Manu's theory of social order.

5. Briefly discuss Kautilya's view on the relationship between Ethics and politics.

6. Examine Buddha's political ideas as described in Agganna Sutta

7. Discuss the contribution of Abul Fazal to the Indian Political thought.

8. Write short notes on .

    a) Ideal polity of Barani.

    b) Political ideas of Kabir.

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GACR

+3, 5th SEMESTER EXAMINATION-2019 (ARTS)

Sub.- ECONOMICS Time: 3 Hours
PAPER : Core-XII Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

1. **Answer any EIGHT of the following within two sentences each.**

    [2x 8

    a) What is Vicious circle of poverty?

    b) Distinguish between economic growth and economic development.

    c) Who is called an entrepreneur, according to Schumpeter?

    d) What is take-of stage?

    e) Write the meaning of Human capital.

    f) What is an Institution?

    g) Define poverty.

    h) What is Lorez curve?

    i) Give the meaning of Public goods.

    j) What do you mean by Government failure? [16 x 4

Answer any FOUR questions.

2. Define Economic development. Discuss the

P.T.O.

indicators of Economic development.

3. Critically examine Marxian theory of capitalist development.

4. Explain Harrod-Domar model of steady economic growth.

5. Discuss Lucas endogenous growth model.

6. Explain different measures for poverty measurement.

7. How does corruption retard economic development? Suggest measures to tackle the problem of corruption.

8. Examine the importance of Public goods in the economic development of a country. Should these goods be under the ownership and control of the state?

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GACR
+3, 5ᵗʰ SEMESTER EXAMINATION-2019
(ARTS)

Sub.- ODIA
PAPER : Core - XII

Time: 3 Hours
Full Marks: 80

ଯେ କୌଣସି ୫ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ । ପ୍ରଥମ ପ୍ରଶ୍ନର ଉତ୍ତର ଅନିବାର୍ଯ୍ୟ ।

The figure in the right hand margin indicate marks.

'କ' ବିଭାଗ

(୨×୧୦

ଯେକୌଣସି **୧୦ଟି** ପ୍ରଶ୍ନର ଉତ୍ତର ଗୋଟିଏ ବା ଦୁଇଟି ବାକ୍ୟରେ ଦିଅ ।

୧. କ) ପ୍ରଥମ ଆଦିବାସୀ ଜୀବନ ଭିତ୍ତିକ ଉପନ୍ୟାସ କ'ଣ ? ଏହାର ସ୍ରଷ୍ଟା କିଏ ?

ଖ) ମୁଖ୍ୟଚରିତ୍ର ଓ ଗୌଣ ଚରିତ୍ର ମଧ୍ୟରେ ପ୍ରଭେଦ କ'ଣ ?

ଗ) କ୍ଷୁଦ୍ରଗଳ୍ପର ସଂଜ୍ଞା ନିରୂପଣ କର ।

ଘ) କାନ୍ହୁଚରଣ ମହାନ୍ତିଙ୍କ ଦୁଇଟି ଉପନ୍ୟାସର ନା ଲେଖ ।

ଙ) ନିଧ୍ୟ ଦାସର ପରିଚୟ କ'ଣ ?

ଚ) ଦେବକୀ ଗଉଡୁଣୀ କେଉଁ କେଉଁ ନାମରେ ପରିଚିତ ଥିଲା ?

ଛ) ମଦନ ସେଠୀ କେଉଁ ଲୀଳାରେ କି ଭୂମିକାରେ ଅଭିନୟ କରିଥିଲା ?

ଜ) କୃଷ୍ଣସାର ଛଳନାରେ ହସି କ'ଣ କହିଛି ?

୫) 'ହୋଲି' ଗଳ୍ପ ମାଧ୍ୟମରେ ଲେଖକ କ'ଣ କହିବାକୁ ଚାହିଁଛନ୍ତି ?

ଞ) ଗୋପାଳକୁ ଇଂରାଜୀ ପଢ଼ାଇବା ପାଇଁ ହରିସିଂ କାହିଁକି ଇଚ୍ଛା କଲେ ?

ଟ) ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟଙ୍କ ଅନ୍ୟ ଦୁଇଟି ଗଳ୍ପର ନାମ ଲେଖ ।

ଠ) ଅନ୍ଧାରୁଆ ତା' ଜୀବନରେ କ'ଣ ଭୁଲ୍ କରିଥିଲା ?

ପୃଷ୍ଠା ଓଲଟାନ୍ତୁ ।

'ଖ' ବିଭାଗ

(୧୨×୫

ଦୀର୍ଘ ଉତ୍ତର ମୂଳକ ପ୍ରଶ୍ନ ।

୨   ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ସ୍ୱରୂପ ନିର୍ଣ୍ଣୟ କରି ଆଦିପର୍ବର ଗଳ୍ପ ବୈଶିଷ୍ୟ
ଦର୍ଶାଅ ।

ଅଥବା

ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଉପନ୍ୟାସର ସ୍ୱାତନ୍ତ୍ର୍ୟ ବିଚାର କର ।

୩.   'ଶାସ୍ତି' ଉପନ୍ୟାସର ନାମକରଣର ସାର୍ଥକତା ବିଚାର କର ।

ଅଥବା

ଧୋବୀ ଚରିତ୍ରର ଚିତ୍ରଣ କର ।

୪.   ରାଜନୈତିକ ଉପନ୍ୟାସ ଭାବରେ 'ଅନ୍ଧ ଦିଗନ୍ତ'ର ମୂଲ୍ୟାଙ୍କନ କର ।

ଅଥବା

ସୁରେନ୍ଦ୍ର ମହାନ୍ତିଙ୍କ ରଚନା ଶୈଳୀ 'ଅନ୍ଧ ଦିଗନ୍ତ'କୁ କାଳଜୟୀ
କରିଛି– ଉକ୍ତିର ଯଥାର୍ଥତା ଦର୍ଶାଅ ।

୫.   'ନୀଳ ମାଷ୍ଟରାଣୀ' ଗଳ୍ପରୁ ଲେଖକଙ୍କ ଆଭିମୁଖ୍ୟ ସଂପର୍କରେ ଲେଖ ।

ଅଥବା

ପତିତ ଗଳ୍ପରୁ ଲକ୍ଷ୍ମୀର ମନସ୍ତତ୍ତ୍ୱ ସଂପର୍କରେ ଆକଳନ କର ।

୬.   'ଝଡ଼ର ଇଗଲ୍ ଓ ଧରଣୀର କୃଷ୍ଣସାର' – ଗଳ୍ପର ସାରମର୍ମ ଉଲ୍ଲେଖ
କର ।

ଅଥବା

ପିତା–ପୁତ୍ର ସଂପର୍କ 'ଡାକ ମୁନ୍ସୀ' ଗଳ୍ପରେ କିଭଳି ପ୍ରତିଫଳିତ
ହୋଇଛି ଆଲୋଚନା କର ।

GACR

+3, 5th SEMESTER EXAMINATION-2019 (COMMERCE)

Sub: Principle of Marketing   Full Marks: 80

Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-8.

1. Answer any EIGHT in brief.   [2x8]

(a) State the features of marketing.

(b) What is consumer behaviour?

(c) What is market segmentation?

(d) What is product width?

(e) What is Skimming price

(f) What do you mean by discount?

(g) What do you mean by channels of distributions?

(h) What is retailing?

(i) What is e-retailing?

(j) What is Rural market?

Answer any FOUR questions.

2. What is marketing Environment? Explain its main dimensions.   [16]

3. What is meant by product life cycle? Explain its stages with examples.   [16]

4. Differentiate between

(a) Advertising & Sales Promotion   [8]

(b) Publicity & Public Relations.   [8]

(P.T.O...)

5. Retailing scenario in India is undergoing continuous changes". Discuss.   [16]

6. "Rural markets are tomorrow's markets in India." Do you think so? What are its implications for the marketers.   [16]

7. What do you mean by social marketing. Discuss its relevance in modern marketing.   [16]

8. Write notes on   [4x4]

   (a) Tele-marketing

   (b) Store & Non-store based retailing

   (c) Promotion Mix

   (d) Branding & leveling.

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GACR
+3, 5ᵗʰ SEMESTER EXAMINATION-2019 (ARTS)

Sub.- EDUCATION   Time: 3 Hours
PAPER : Core-XII   Full Marks: 60

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

[6 x 2

1.   Answer any SIX of the following.

   a)   What do you mean by comparative education?

   b)   Write two first pioneers of comparative education?

   c)   Write the education evaluation system of U.K.

   d)   How the economic factor is responsible for education of India and USA?

   e)   Write the structure of education system of China.

   f)   Who is the administrative head of UK education system?

   g)   Who is the administrative head of America education system?

   h)   What is the task of Juxtaposition?

Answer any FOUR questions.

2.   Discuss the meaning definition and scope of comparative education.   [12

3.   Explain about the different approaches of comparative education?   [12

P.T.O.

4. How the geographic and linguistic factors determine the educational system of country? [12

5. What are the purpose of comparative education? [12

6. Write short notes on the following. [6+6

   a) Structure and evaluation system of U.S.A.

   b) Structure and evaluation system of Japan.

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GACR

+3, 5ᵗʰ SEMESTER EXAMINATION-2019
(ARTS)

Sub.- ENGLISH
PAPER : Core- XII

Time: 3 Hours
Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

Section - A

1.   **Answer any EIGHT of the following.**   [2x 8

   a)   What is Rig Veda? Write a short note on it.

   b)   Briefly describe Sivasankalpa Sukta's role in human life.

   c)   How did Yudhisthira loose all his and his brother's belongings in the game of dicing

   d)   Describe briefly the sequel to dicing .

   e)   Who were cursed by Durvasav and why?

   f)   What kind of book is Viswanath Kaviraj's Sahitya Darpan?

   g)   Compare the definition of poetry by Sahitya Darpan and Wordsworth.

   h)   What do chapter I & II of Sahitya Darpan deal with ?

   i)   What do you know about the followings:

      i)   Nitisatakam's verse No. 03.

P.T.O.

ii) Kanwa's pieces of advise to Sakuntala while leaving for in-laws house.

j) i) Purusa

ii) Rasa

Section - B

[16 x 4

Answer any FOUR questions.

2. Elucidate on the relevance of Shivasankalpa Sukta, Yajur veda. What kind teaching do we get out of it?

3. Sanjnanasukta is unity in diversity. Justify.

4. Separation is always melancholic. Discuss in the context of the play 'Abhijnana Sakuntalam'.

5. Discuss the role of Manthara in Rama's exile.

6. Mrccha katika by Sudraka is a drama of romance. Discuss in the context of act-I of the play.

7. a) Good is defeated against the evil forces of the palace. Elucidate in the context of of the Ramayan.

   b) What are the different temptations of Karna and how did he overcome them?

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GACR

+3, 5ᵗʰ SEMESTER EXAMINATION-2019 (ARTS)

Sub.- SOCIOLOGY   Time: 3 Hours

PAPER : C-XII   Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

1.   **Answer any EIGHT of the following.**

 i)   What is social movement?   [2x 8

 ii) What is SNDP?

 iii) Write any two doctrines of Brahmo Samaj.

 iv) What is counter movement?

 v)   Mention any two aims of Tebhaga movement.

 vi) What is ideology?

 vii) What is Sudhi movement?

 viii) Write any two causes of Bardoli movement.

 ix) What is product rent?

 x)   Name the leaders of Mahar movement in Maharastra.

 xi) Mention any two Dalit community of Tamilnadu.

 xii) What is Kalaram Satyagraha?

xiii) Mention any two major women's movements in North-East states.

xiv) What is Sahada Movement?

xv) What is Total Revolution movement?

Answer any FOUR questions. [16 x 4

2. Describe the nature of social movement.

3. The Arya Samaj movement was the reaction of western influences. Justify.

4. Analyse the causes and consequences of the Champaran Satyagrah.

5. Examine the Non-Brahmin movement in Tamilnadu.

6. Discuss the factors encouraged women movements in post-independence period.

7. Explain Leadership as a base of social movement.

8. Describe the causes and consequences of Kheda peasant struggle.

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GACR
+3, 5th SEMESTER EXAMINATION-2019 (ARTS)

Sub.- PSYCHOLOGY　　　　　　　Time: 3 Hours

PAPER : Core - XII　　　　　　　Full Marks: 60

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

1.　　**Answer any SIX of the following.**　　　[2x 6

　　a)　State WHO's definition on health.

　　b)　What is bio medical model?

　　c)　Define life style.

　　d)　What is diabetes?

　　e)　Define wellness.

　　f)　What is compliance behaviour?

　　g)　State American cancer society's definition on risk factor.

　　h)　What is fight or flight syndrome?

Answer any FOUR questions.　　　[12 x 4

2.　　What is stress? Briefly discuss the causes of stress.

3.　　What is malnutrition? Discuss the symptoms of malnutrition in children.

4.　　Briefly analyze cognitive models of health.

P.T.O.

5. What is Alzheimer disease? Discuss its symptoms with reference to elderly people.

6. Discuss the role of Yoga and exercise in promoting good health.

7. How do people understand and communicate their health needs?

8. Briefly discuss behavioural and psychological correlations of illness.

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GACR
+3, 5th SEMESTER EXAMINATION-2019
(ARTS)

Sub.- PHILOSOPHY   Time: 3 Hours
PAPER : Core - XII   Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

1.   **Answer any EIGHT of the following.**   [2x 8

   a)   What is political philosophy?

   b)   What is feminism?

   c)   What is humanism?

   d)   Write two sentences about "Religion is the opium of the masses."

   e)   Write two sentences about Atheism as one of the characteristics of secularism.

   f)   What is secularism according to Nehru?

   g)   What do you mean by Human Rights?

   h)   "You educate a man, you educate a man, you educate a woman, you educate a generation." Who said this and why?

   i)   What is political ideology?

   j)   What is Sarvodaya?

                                        P.T.O.

Answer any FOUR questions.   [16 x 4

2.   Critically evaluate organic view regarding the relation between individual and society.

3.   What is justice? Explain various conceptions of it.

4.   What is equality? State and explain major types of equality.

5.   Briefly answer to the questions.

   a)   Idealistic society

   b)   Distinguish between social science and philosophy of social science.

6.   What do you mean by Human Rights? State and explain the features of Human Rights.

7. a)   Negative concept of liberty

    b)   Lesbian Feminism

8.   Write short notes:

   a)   Distinguish between Anarchism and Sarvodaya

   b)   Bhoodan movement.

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GACR
+3, 5ᵗʰ SEMESTER EXAMINATION-2019 (SCIENCE)

Sub: PHYSICS
Paper: CORE-XII

Full Marks: 60
Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

GROUP - A
[2x6]

1. Answer any SIX questions.

(a) What are Miller indices? Give their importance.

(b) Discuss Brillouin zones.

(c) Compare the assumptions of Einstein and Debye theories

(d) Expllain *L*attice vibration and phonons.

(e) What are domains? Explain

(f) Explain dielectric polarization and how it is related to electric field.

(g) Assuming there are 5×10^{28} atoms/m^3 in copper, find the hall coefficient.

(h) Distinguish between spontaneous emission and stimulated emission.

GROUP -B
Answer any FOUR questions.
[12x4]

2. (a) Define reciprocal lattice and give its graphical representatioon. Explain atomic and geometrical factors.

   (b) Derive Bragg's law of crystal diffraction $2d \sin \theta = n\lambda$ and give its significance.

(P.T.O...)

3   State and explain Dulong and Petit's law for the specific heat of a solid. Discuss the agreement of the result with that of the experiment.

4.   Discuss Weiss theory of ferromagnetism. Explain why ferromagnets lose their spontaneous magnetisation above curie temperature?

5.   Discuss Kronig Penny model. Using the model show that the energy spectrum of electron consists of a number allowed energy bands separated by forbidden regions.

6.   Derive London's equation and discuss how its solution leads to Meissner effect.

7.   What are Einstein's coefficients A and B? Derive Einstein's relation between them.

8.   What is a phonon? Derive the vibrational modes of a diatomic linear lattice. Name the different branches of the dispersion relation curve.

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GACR
+3, 5th SEMESTER EXAMINATION-2019
(ARTS)

Sub.- HINDI
PAPER : C-XII

Time: 3 Hours
Full Marks: 80

The figure in the right hand margin indicate marks.
Question No.1 is compulsory, answer any FOUR from the rest.

Section - A
[2x8]

1. निम्नलिखित वस्तुनिष्ठ प्रश्नों मे से किन्हीं **आठ** प्रश्नों के उत्तर दीजिए।

    i)   काव्य का प्रयोजन क्या है ?

    ii)   व्यंजना शब्द शक्ति कहने मे क्या समझते हैं ?

    iii) शृंगार रस का उदाहरण प्रस्तुत कीजिए।

    iv)   रस संप्रदाय का प्रतिष्ठाता कौन हैं। उनके किस भाषा मे रस संप्रदाय के सिद्धांतों का बर्णन मिलता है ?

    v)   रीति के कितने भेद हैं ? नाम लिखिए।

    vi)   अलंकार के कितने भेद हैं ? नाम लिखिए।

    vii) उपमा अलंकार का लक्षण प्रस्तुत करते हुए उदाहरण दीजिए।

    viii) दोहा और चौपाई मे क्या अंतर है ?

    ix)   वक्रोक्ति अलंकार का लक्षण सोदाहरण प्रस्तुत कीजिए।

    x)   छन्द कितने प्रकार के हैं ? उनके नाम लिखिए।

P.T.O.

Section - B

[16x4]

(निम्नलिखित किन्हीं चार प्रश्नों के सविस्तार उत्तर दीजिए)

2. क) काव्य के विभिन्न लक्षणों के सन्दर्भ मे भारतीय आचार्यों के मतों की समीक्षा कीजिए।

ख) भारतीय काव्यशास्त्र मे वर्णित रस की परिभाषा देते हुए इसके स्वरूप पर प्रकाश डालिए।

ग) रीति सिद्वान्त के स्वरूप पर प्रकाश डालते हुए उसके भेदों की चर्चा कीजिए।

घ) अलंकार किसे कहते हैं? इसके भेदों को सोदाहरण प्रस्तुत कीजिए।

ड) छन्द का लक्षण प्रस्तुत करके सोदाहरण प्रमुख छन्दों का विवेचन कीजिए।

च) शब्द शक्ति का अर्थ समझाते हुए काव्य मे इसकी महत्ता पर प्रकाश डालिए।

GACR
+3, 5th SEMESTER EXAMINATION-2019 (SCIENCE)

Sub: Comp. Science   Full Marks: 60
Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

1. Answer any SIX questions.   [2x6]

   (a) What are the attributes of good software?

   (b) Difference between black box testing and white box testing.

   (c) What is validation?

   (d) Differentiate between functional & non-functional requirements.

   (e) Define top down approach to software design.

   (f) How can we derive the size of software product?

   (g) What is SRS?

   (h) What is difference between flow chart and structure chart?

Answer any FOUR questions.

2. (a) Why is it important to study software engineering for a computer science student?   [6]

   (b) Briefly describe Agile software development.   [6]

3 (a) What do you mean by software process models?   [6]

   (b) What is Domain Analysis in context of software reuse?   [6]

4. (a) Explain with neat sketch diagram of requirements engineering process.   [6]

(P.T.O...)

(b) Briefly describe requirements management planning. [6]

5. (a) Draw a diagram showing a conceptual view and process view of the architectures of passengers at a Railway Station. [6]

(b) Discuss in details Branch coverage and path coverage. [6]

6. (a) What is Boundary Value Analysis & Equivalence partitioning with examples. [6]

(b) What are the advantages & disadvantages of OOD. [6]

7. (a) What is the socio-technical system characterstics of system reliability. Discuss system reliability and influences on reliability. [6]

(b) What is the Risk driven requirments in software engineering? Explain safety specifications and security specification. [6]

8. Write short notes. (any *Three*). [6x2]

   (a) Waterfall model

   (b) UML

   (c) Cohesion and coupling

   (d) Plan-Driven Development

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GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: ETC   Full Marks: 60
Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

1. Answer any SIX questions.   [2x6]

(a) Define modulation index of an AM signal.

(b) Write the expression for AM wave

(c) Define angle modulation

(d) Distinguish between narrow band FM and wideband FM.

(e) What is meant by frequency spectrum?

(f) Give a formula for SVR.

(g) State application of different AM system.

(h) Explain bandwidth of a signal.

Answer any FOUR questions.

2. (a) Draw the block diagram of an electronic communication system. Explain the basic components in the communication process.   [6]

(b) Explain the basic differences between digital and analog communication.   [6]

3. (a) What is principle of amplitude modulation? Derive expression for the AM wave and draw its spectrum.   [6]

(b) Describe the frequency analysis of Angle modulated waves. Explain their Bandwidth requirements.   [6]

4. (a) Discuss filter method of generation of SSBSC. [6]

(b) Define multiplexing. Explain frequency division multiplexing. [6]

5. (a) Discuss indirect method of FM generation. [6]

(b) Define detection. Draw a circuit diagram of a slope detector. [6]

6. (a) Explain working of FM-transmiter with a diagram. [6]

(b) Define noise. Explain internal and external noise. [6]

7. (a) Explain parameters of Receiver. [6]

(b) Give a comparision among AM, FM and PM. [6]

8. Short notes on (any TWO) [6x2]

(a) Signal to Noise Ratio

(b) Friss formula

(c) Balanced sloppe dectector

(d) AM transmiter.

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GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: STATISTICS   Full Marks: 60

Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

1. Answer any SIX questions.   [2x6]

(a) The value of vital index grater than one is indicative of _____ .

(b) A life tabale contains _____ columns in all.

(c) How can one calculate C.D.R?

(d) What are the measures of mortality to express death rate?

(e) What is total marital fertility rate and how can it be calculated?

(f) Name different measures of population growth.

(g) What is replacement index and what purpose does it serve.

(h) Establish relationship between central mortality rate and force of mortality.

Answer any FOUR questions.

2. What is vital statistics? Discuss their nature and methods of collection of vital statistics.   [12]

3. (a) What are the different methods of collection of vital statistics.   [6]

(b) What is the approach behind census enumeration method for registration of vital statistics?   [6]

(P.T.O...)

4. (a) Explain why the mortality situations of two places should not be compared on the basis of CDR. Describe the construction of standardised death rate and indicate why they are considered to be better for the said comparision. [6]

5. Explain the structure of a complete life table. How does an abridged life table differ from a complete life table? Describe some methods of construction an abridged life table. [6]

6. What do you mean by fertility of a population? Define CBR, GFR and TFR. Discuss their relative merits and demerits as measures of fertility. [6]

7. (a) What is the approach of Reed-Merrel towards constructing the abridge life table. [6]

(b) Using usual rotation, prove that $M_{x+\frac{1}{2}} = mx$ [6]

$- x - x - x -$

GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: BOTANY　　　　　　　　　Full Marks: 60

Paper: CORE-XII　　　　　　　Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-7.

SECTION - A　　　　　　　　　　[2x6]

1. Answer any SIX questions.

(a) What is water potential?

(b) Deficiency symptoms of K.

(c) Phloem loading

(d) What is antiport?

(e) What is <u>Avena</u> test?

(f) Vernallization

(g) What is HIR?

(h) Symplastic movement

SECTION - B
Answer any FOUR questions.

2. What is ascent of sap? Describe the mechanism of ascent of sap in plants.　　[12]

3. Describe the role and eficiency symptoms of macronutrients in plants.　　[12]

4. Discuss the active and passive absorption of nutrients in plants.　　[12]

5. Describe the Discovery, chemical nature, bioassay and physiological roles of cytokinin.　　[12]

(P.T.O...)

6. What is photoperiodism? Describe the different types [12] of photoperiodism in plants with suitable examples.

7. Write short notes on [6x2]

   (a) Brassinosteroids

   (b) Structure and function of phytochrome.

8. Write short notes on [6x2]

   (a) Components of water potential

   (b) Proton AT pase pump.

- x - x - x -

(b) If the joint density of X and Y is given by [8]

$$f(x,y) = \begin{cases} \frac{2}{7}(x+2y), 0 < x < 1 \\ \qquad\qquad , 0 < y < 2 \\ 0 \quad elsewhere \end{cases}$$ find the expected

value of $g(x,y) = X \mid Y^3$.

8. (a) If state i is recurrent and state i communicates with state j, then prove that j is recurrent. [8]

(b) If 10 fair dice are rolled use central limit theorem to find the approximate probabilities that the sum obtained between 30 and 40 both inclusive. [8]

$- x - x - x -$

GACR
+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: MTC (Mathematics)   Full Marks: 80
Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-8.

GROUP - A

1. **Answer any EIGHT questions.** [2x8]

(a) Find the probability of getting four sixes and then another number in five random rolls of a balanced die.

(b) Check whether the function given by $fx = \dfrac{x+2}{2.5}$,

$x = 1,2,3,4,5$ can serve as the probability distribution of a discrete random variable.

(c) Define marginal distribution of X.

(d) Define a Binomial random variable.

(e) Prove that Cov (x, y) = Cov (y, x) for discrete random variables x & y.

(f) If a is a constant $M_{ax}(t) = M_x (bt)$.

(g) If a is a constant E (ax) = aE (x)

(h) If X has the probability density

$$f(x) = \begin{cases} K.e^{-3x}, x > 0 \\ 0 \quad , elsewhere \end{cases}$$

find K, P $(0.5 \le x \le 1)$

(i) State strong law of large numbers

(j) Write hebyshevs inequality.

(P.T.O...)

GROUP -B
Answer any FOUR questions.

2. (a) If A, B and C are any three events in a sample space S, then P $(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C) + P(A \cap B \cap C)$ [8]

(b) If the probability density of X is given by [8]

$$f(x) = \begin{cases} 2(1-x), & 0 < x < 1 \\ 0, & elsewhere \end{cases}$$

show that $E(X^r) = \dfrac{2}{(r+1)(r+2)}$ and use it to evaluate $E[(2x+1)^2]$

3. (a) Find the moment generating function of the random variable whose probability density is given by [8]

$$f(x) = \begin{cases} e^{-x}, & x > 0 \\ 0, & elsewhere \ 0 \end{cases}$$ and use it to find an expression for Mr^1.

(b) Find the joint probability distribution of X and Y is given by [8]

		-1	0	1	
	-1	1/6	1/3	1/6	2/3
y	0	0	0	0	0
	1	1/6	0	1/6	1/3
		1/3	1/3	1/3	

Show that the two random variable are not independent but their covariance is zero.

4. (a) If X has the discrete uniform distribution $f(x) = \dfrac{1}{k}$ for x=1,2... k show that its mean is $\dfrac{k+1}{2}$ and variance is $\delta^2 = \dfrac{k^2-1}{12}$. [8]

(b) Show that the moment generating function of the Binomial distribution is $M_x(t) = [1+\theta(e^t-1)]^n$. [8]

5 (a) Show that moment generating function of the poission distribution is given by $M_x(t) = e^{\lambda}(e^t-1)$. [8]

(b) Show that the mean and variance of the possion distribution are $M = \lambda$ and $\delta = \lambda$. [8]

6. (a) Given the two random variables X and Y that have the joint density $f(x,y) = \begin{cases} xe^{-x(1+y)}, & x > 0 \ \& \ y > 0 \\ 0, & elsewhere \end{cases}$ [8]

Find the regression equation of X on Y.

(b) Find the covariance of the random variables whose joint probability density is given by [8]

$$f(x,y) = \begin{cases} 2f_x & x > 0, y > 0, x + y < 1 \\ 0 & elsewhere \end{cases}$$

7. (a) Show that $\delta_{xy} = M^1_{1,1} \ M_x M_y$ [8]

GACR

+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)

Sub: MATHEMATICS   Full Marks: 80

Paper: CORE-XII   Time: 3 Hours

Answer the questions as per instruction.
The figure in the right hand margin indicate marks.
Question No. 1 is mandatory. Answer any 4 question from Q.2-8.

1. **Answer any EIGHT questions.**   [2x8]

   (a) If A and B are two events of the sample space S and A<B, then prove that P(A) ≤ P(B)

   (b) Find the value of 'C' so that the function $f(x) = C \binom{5}{x}$ for $x = 0, 1, 2, 3, 4, 5$ can serve as the probability distribution of a random variable.

   (c) Define conditional distribution of X given Y=y.

   (d) A continuous random variable X has probability density

   $$f(x) = \begin{cases} \dfrac{4}{\pi(1+x^2)} & for\ 0 < x < 1 \\ 0 & elsewhere \end{cases}$$ find the expected value of this random variable.

   (e) Find the probability of getting five heads and seven tails in 12 flips of a balanced coin.

   (f) Write the mean and variance of the uniform distribution.

   (g) If X has the probability density

   $$f(x) = \begin{cases} e^x, & x > 0 \\ 0 & elsewhere \end{cases}$$ find the expected value of

   $$g(x) = \frac{3x}{e^4}.$$

(P.T.O...)

(h) Define regression equation of X on Y.

(i) Let X denotes the number of points rolled with a balanced die, find the variance of X.

(j) State weak law of large numbers.

Answer any FOUR questions.

2. (a) State and prove Bayes' theorem. [8]

(b) Find the probability distribution function of the total number of heads obtained in four tosses of a balanced coin. [8]

3. (a) The probability density function of the random variable X is given by $f(x) = \begin{cases} \dfrac{c}{\sqrt{x}}, 0 < x < 4 \\ 0, \text{ elsewhere} \end{cases}$. [8]

Find the value of 'C' and find P(X<1/4) and P(X>1).

(b) A lot of 12 television sets includes 2 with white cords. If 3 of the sets are chosen at random for shipment to a hotel how many sets with white cords can the shipper expect to send to the hotel. [8]

4. (a) Prove that the mean and variance of binomial distribution are $\mu = n\theta$ and $\delta^2 = n\theta(1-\theta)$ [8]

(b) Given that 'X' has the probability distribution $f(x) = \dfrac{1}{8}\binom{3}{x}$ for x=0,1,2 and 3. Find the moment generating function of this random variable and use it to determine μ_1^1. [8]

5. (a) Use normal approximation to the binomial distribution to determine the probability of getting 6 heads and 10 tails in 16 flips of a balanced coin. [8]

(b) If the joint probability density of X and Y is given by [8]

$$f(x,y) = \begin{cases} \dfrac{2}{3}(x+2y) \, for \, 0 < x < 1, 0 < y < 1 \\ 0 \text{ ,elsewhere} \end{cases}$$. Find the

conditional mean and the conditional variance of X given $Y = \dfrac{1}{2}$.

6. (a) Prove that the mean and variance of a gamma distribution are $\mu = \alpha\beta$ and $\delta^2 = \alpha\beta^2$. [8]

(b) Prove that moment generating function of the normal distribution is given by $M_x(t) = e^{mt + \delta^2 t^2}$. [8]

7. (a) Given two random variable X and Y that have the joint density $f(x,y) = \begin{cases} x.e^{-x(1+y)} \, for \, x > 0 \, \& \, y > 0 \\ 0 \text{ ,elsewhere} \end{cases}$ [8]

Find the generation equation of Y on X.

(b) If X and Y are independent, then prove that [8]

E(X Y) = E(X) E(Y) and $\delta^2 = 0$.

8. (a) Consider a Markov chain with states 1, 2, 3, 4, 5 then compute P $(X_4=2, X_3 \le 2, X_2 \le 2, X_1 \le 2|X_0=1)$ [8]

(b) If Var(x) = 0, then prove that $p(x = E[x])=1$ [8]

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