No. of Pages: 2

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

Sub.- PSYCHOLOGY Time: 3 Hours
PAPER : DSE - II 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) What is meant by the caste system?
b) What are the concomitants of Poverty?
c) What do you mean by well being?
d) What is ideology?
e) What is corruption?
f) What are the main causes of drug abuse?
g) What is social conflict?
h) What do you mean by love?

Answer any FOUR questions. [12 x 4

2. Define family. Discuss the characteristics of Indian family system.
3. Briefly discuss different theories of poverty.
4. Discuss the role of human behaviour in various health problems.
5. Explain the role of Behaviour sciences in disease prevention and control.

P.T.O.

6. Describe crime and criminal behaviour as a form of antisocial behaviour.

7. Discuss about the nature of violence in families and marriages in India.

8. Describe the role of family and friends in developing healthy and effective social life.

No. of Pages: 2

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

Sub.- ODIA Time: 3 Hours

PAPER : DSE - II 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

୧. ଯେକୌଣସି **୧୦ଟି** ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ ।

କ) କଥିତ ଭାଷାର ସଂଜ୍ଞା ନିରୂପଣ କର ।

ଖ) ଓଡ଼ିଆ ଭାଷାକୁ କେବେ ଶାସ୍ତ୍ରୀୟ ମାନ୍ୟତା ମିଳିଥିଲା ।

ଗ) ଗଠନ ଦୃଷ୍ଟିରୁ ବାକ୍ୟ କେତେ ପ୍ରକାର ଓ କ'ଣ ?

ଘ) ସରଳ ବାକ୍ୟ କାହାକୁ କୁହାଯାଏ ?

ଙ) ଗୋଟିଏ ବିସ୍ମୟ ସୂଚକ ବାକ୍ୟର ଉଦାହରଣ ଦିଅ ।

ଚ) ବାକ୍ୟର ଉଦ୍ଦେଶ୍ୟ ଓ ବିଧେୟ କ'ଣ ?

ଛ) ବାକ୍ୟାଂଶ ଓ ଖଣ୍ଡ ବାକ୍ୟ ମଧ୍ୟରେ ପାର୍ଥକ୍ୟ କ'ଣ ?

ଜ) 'ଓଃ ଏବର୍ଷ କି ଖରା' - ଏ ବାକ୍ୟଟିକୁ ବିବୃତି ସୂଚକ ବାକ୍ୟରେ ରୂପାନ୍ତର କର ।

ଝ) 'ସନ୍ଧ୍ୟା ବେଳେ ମନ୍ଦିରରେ ଘଣ୍ଟ ବାଜେ' - ଏହାକୁ ଜଟିଳ ବାକ୍ୟରେ ରୂପାନ୍ତର କର ।

ଞ) ବ୍ୟକ୍ତି ବାଚକ ସର୍ବନାମର ଗୋଟିଏ ଉଦାହରଣ ଦିଅ ।

ଟ) ନିର୍ଦ୍ଦେଶାତ୍ମକ ସର୍ବନାମର ସଂଜ୍ଞା ଲେଖ ।

ଠ) ଦୁଇଟି ସର୍ବନାମର ଉଦାହରଣ ଦିଅ ।

ପୃଷ୍ଠା ଓଲଟାନ୍ତୁ ।

'ଖ' ବିଭାଗ (୧୨×୫

୨ ମାନକ ଭାଷା ଓ କଥିତ ଭାଷା ମଧ୍ୟରେ ପାର୍ଥକ୍ୟ ଦର୍ଶାଇ ଉଭୟର ଆବଶ୍ୟକତା ସଂପର୍କରେ ଲେଖ ।

ଅଥବା

ଆଞ୍ଚଳିକ ଭାଷାର ସ୍ୱରୂପ ନିର୍ଣ୍ଣୟ କରି ଓଡ଼ିଶାର ବିଭିନ୍ନ ଅଞ୍ଚଳର ଭାଷା ବିନ୍ୟାସ ସଂପର୍କରେ ଲେଖ ।

୩. ଓଡ଼ିଆ ଭାଷାର ସ୍ୱରୂପ ନିର୍ଣ୍ଣୟ କର ।

ଅଥବା

ଓଡ଼ିଆ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ଦର୍ଶାଅ ।

୪. ରୂପ ଓ ଭାବ ଦୃଷ୍ଟିରୁ ବାକ୍ୟ କେତେ ପ୍ରକାର ସଦୃଷ୍ଟାନ୍ତ ବୁଝାଅ ।

ଅଥବା

ବାକ୍ୟର ସଂଜ୍ଞା ନିରୂପଣ କରି ତାହାର ଗଠନ ଶୈଳୀ ବୁଝାଅ ।

୫. ବାକ୍ୟ ରୂପାନ୍ତର କ'ଣ ? ଉଦାହରଣ ସହ ବୁଝାଅ ।

ଅଥବା

ବାକ୍ୟ ରୂପାନ୍ତରର ଆବଶ୍ୟକତା ସମ୍ପର୍କରେ ଲେଖ ।

୬. 'ସର୍ବନାମ'ର ସଂଜ୍ଞା ନିରୂପଣ କରି ପ୍ରକାର ଭେଦ ଉଲ୍ଲେଖ କର ।

ଅଥବା

ସର୍ବନାମ ପଦ ବିଶେଷଣ ପରିବର୍ତ୍ତେ କିପରି ବ୍ୟବହୃତ ହୁଏ ଉଦାହରଣ ଦେଇ ବୁଝାଅ ।

■■■

No. of Pages: 2

GACR

+3, 5th SEMESTER EXAMINATION-2019

(ARTS)

Sub.- SOCIOLOGY Time: 3 Hours

PAPER : DSE - II Full Marks: 80

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

[2x 8

Section - A

1. Answer any EIGHT of the following.

i) Write two functions of institutions.

ii) What is formal organization?

iii) Give two examples of Affinial Kin.

iv) What is Neo-local family?

v) How is Religion different from Dharma in Hindu society?

vi) What is Animism?

vii) Define gender.

viii) What is Ethinicity?

ix) Give an example of Traditional Authority.

x) What is social power?

P.T.O.

Section - B

[16 x 4

Answer any FOUR questions.

2. Describe the elements of community.
3. Discuss Marxists views on distribution of power.
4. Explain the persistence of gender inequality in our educational system.
5. Examine the changes in family pattern worldwide.
6. Discuss the importance of Kinship.
7. Describe Durkheim's theory of Religion.

No. of Pages: 2

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

Sub.- ENGLISH
PAPER : DSE-II

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

[2x 8

1. Answer any EIGHT of the following.

a) What is the definition of world literatue and what all do come in its scope?

b) What are the contributions of Johann Wolf Gang von Goethe to world literatue?

c) Define absurdity in the context of the novel 'The Outsider'.

d) What is element of modernism in the novel 'Notes from Underground'?

e) Through which characters and in what vein are the treatment of decay and death depicted in the Novel 'The Outsider'?

f) Elaborate the underground man's final act of revenge against Liza.

g) In view of three tales of novella 'In a free state', elaborate the first tale.

P.T.O.

h) How do the behaviour of Achikes at home differ from their behaviour in public?

i) What is the meaning of the first story's title 'one out of many' show in the novella 'In a free state'?

j) Justify the title 'purple Hibislus' given to the novel by Chimamanda Vgozi Adicheie'?

Section - B

[16 x 4

Answer any FOUR questions.

2. Why someone should focus on reading world literature? Discuss.

3. Why is world literature one of the exciting phenomena in literacy studies and which way did David Damrasch contribute to it?

4. The concern with death and its depth of nothingness is the prime concern of Albert Camus in the novel 'The Outsider'.Justify.

5. What does the underground man's complaint reveal about human need and human dignity. Discuss.

6. Evaluate the justice that accorded to Meursault during his trial and his sentencing.

7. a) In 'Notes from Underground' why does Dostoevsky's protagonist call himself the underground man?

   b) Purple Hibiscus is based on religion and brief discuss.

No. of Pages: 2

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

Sub.- PHILOSOPHY Time: 3 Hours
PAPER : DSE-II 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 ideal society according to Gandhi?
b) What is the technique of Ahimsa?
c) What do you mean by dignity of labour?
d) What is philosophy of work?
e) Was Gandhi in favour of Industrilisation?
f) What was the idea of Gandhi for economic development?
g) What is peace according to Gandhi?
h) What is the meaning of education?
i) What is human dignity?
j) What is the aim of education according to Gandhi?

Answer any FOUR questions. [16 x 4

2. Explain and examine Gandhi's concept of politics and its goals.

P.T.O.

3. State and explain need and greed according to Gandhi.
4. Critically estimate Gandhi's criticism of colonialism.
5. Critically estimate Gandhiji's Idea of the ideal state is the idea of the village republic. (Gram Swaraj) .
6. State and explain Gandhiji's Idea of Basic Education.
7. Explain the relation between, formal, non-formal and informal education following Gandhi.
8. Write short notes on any **TWO**:
   a) Social Engineering.
   b) Equality of all human beings
   c) War and freedom.

No. of Pages: 2

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

Sub.- ECONOMICS Time: 3 Hours
PAPER : DSE - II Full Marks: 80

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

Group - A

[2x 8

1. Answer any EIGHT of the following.

a) Write any two disadvantages of Barter system.

b) Define money.

c) What is a socialist economy?

d) How is measure of value function of money explained?

e) What is velocity of circulation of money?

f) Give the meaning of money market.

g) What do you mean by money at call and short notices?

h) Why is central bank called the lender of last resort?

i) What is High-powered money?

P.T.O.

j) Write down the meaning of Stock market. [16 x 4

Answer any FOUR questions.

2. 'The evolution of money is a secular process and shall continue to remain so.'- Explain.

3. Distinguish between money and near money. State different types of nearmoney and their importance.

4. Explain the views of the classicals and Keynes on changing role of money.

5. What is value of money? How are changes in the value of money measured?

6. Discuss the role of NBFC in the economic development of India.

7. What is credit creation? Discuss the process of multiple credit creation by the commercial banks.

8. Explain the role of SEBI in regulating the capital market of our country.

No. of Pages: 2

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

Sub.- HINDI Time: 3 Hours
PAPER : DSE - II 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 किन्हीं **आठ** प्रश्नों के उत्तर दीजिए।

   i) प्रेमचन्द ने कितने उपन्यासों और कहानियों की रचना की है?

   ii) प्रेमचन्द के स्वतन्त्रता-आन्दोलन-संबन्धी से उपन्यासों के नाम लिखिए।

   iii) प्रेमचन्द के किस उपन्यास को भारतीय कृषक-जीवन का महाकाव्य कहा जाता है? उस उपन्यास का मुख्य पात्र कौन है?

   iv) प्रेमचन्द को प्रथम मौलिक उपन्यासकार क्यों कहा जाता है?

   v) 'निर्मला' उपन्यास में किन-किन समस्याओं को उजागर किया गया है?

   vi) 'बड़े भाई साहब' कहानी के कौन-सी शिक्षा मिलती है?

   vii) 'ठाकुर का कुआँ' कहानी का उद्देश्य क्या है?

   viii) प्रेमचन्द की समस्त कहनियों का संकलन कौन-सी पुस्तक और कितने भागों में संकलित किया गया है?

P.T.O.

ix) राष्ट्रभाषा का आसन क्या है?

x) भारतवर्ष की सभी भाषाओं का किस प्रकार संबंध है?

Section - B

(निम्नलिखित किन्हीं चार प्रश्नों के सविस्तार उत्तर दीजिए)

2. क)प्रेमचन्द के कथासाहित्य पर भारतीय स्वतन्त्रता आन्दोलन के मदं [16x4]

ख) 'प्रेमचन्द का समग्र साहित्य भारतीय कृषक जीवन से ओतप्रोत है'– प्रमाणित कीजिए।

ग) 'निर्मला एक समस्यामूलक उपन्यास है'– इस उक्ति की सार्थकता पर प्रकाश कीजिए।

घ) कहानी-कला की दृष्टि से 'कफन' कहानी की समीक्षा कीजिए।

ङ) राष्ट्रभाषा हिन्दी की समस्याओं के समाधान के लिए प्रेमचन्द ने कौन सी विचार प्रस्तुत किये है?

च) कहानीकार के रूप मे प्रेमचन्द पर प्रकाश डालिए।

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No. of Pages: 2

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

Sub.- POLITICAL SCIENCE Time: 3 Hours
PAPER : DSE - II 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 NITI Aayog?

b) Mention two main objectives of planning.

c) What is Globalization?

d) Mention two main effects of liberalization.

e) What is mixed sector?

f) What is ceiling on Land holding?

g) What do you mean by New Middle class?

h) Define social movement.

i) Mention the name of four Dalit-Social reformers of India.

j) What is Civil Right movement?

P.T.O.

SECTION - B

[16 x 4

Answer any FOUR questions.

2. Make a critical estimate of structure and functions of NITI Aayog of India.

3. Examine India's stand on mixed economy in the era of liberization.

4. What is privatisation? Explain the impact of privatisation on Indian economy.

5. Briefly explain the Land Reform measures introduced in India.

6. Discuss the causes and consequences of agrarian crisis since 1990.

7. Examine the rise of peasant movement in India.

8. Write an essay on Civil Right Movement.

No. of Pages: 2

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

Sub.- EDUCATION
PAPER : DSE - II

Time: 3 Hours
Full Marks: 60

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

Section - A

[6 x 2

1. Answer any SIX of the following.
   a) What do you mean by exceptional children?
   b) What is special education?
   c) Write three characteristics of creative children?
   d) What is children with learning disability?
   e) Write one objective of National Policy on Education (1986) with reference to 'Education of special children'.
   f) When was the Indian Education Commission held and who was the chairperson of that commission?
   g) What is mainstreaming?
   h) Write two methods of identification of Educable mentally retarded children?

P.T.O.

Section - B

[12 x 4

Answer any FOUR questions.

2. Discuss the historical development of special education in India. [12

3. Discuss the view of UN conventions on Human Right with specific reference to special children. [3+9

4. What is concept of exceptional children ? Write its types and problems. [3+9

5. Write the concept of Gifted Children? How to identity the Gifted Children and what are the educational provisions for them. [3+9

6. Write the concept of educable mentally retarded. Write the characteristics and the role of teacher for educable mentally retarded. [2 +10

7. Write the concept of children with learning disability. Write the characteristics, types and role of teacher. [2 +10

8. Discuss the pogrammes to be undertaken for special children as envisaged by the programme of Action (1992). [12

No. of Pages: 2

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

Sub: PHYSICS Full Marks: 80

Paper: DSE-II 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

[2x8]

1. Answer any EIGHT questions.

(a) What are generalised coordinates?

(b) Write the rules for framing Lagrange's equation.

(c) Explain physical significance of Hamiltonian

(d) Explain cyclic coordinates.

(e) Explain generating functions.

(f) Explain Minkowski space.

(g) Explain four vectors.

(h) Explain Metric Tenson.

(i) State conservation of four momentum.

(j) Explain space-time diagrams.

GROUP -B

Answer any FOUR questions. [16x4]

2. Explain Lagrangian of a system. Then derive an expression for Euler-Lagrange equation.

3. Explain central force and centrall force field. Obtain the differential equation of the orbit of the particle moving in a central force field.

4. Derive an expression for diffeential equation of orbital motion of charged particles in external electric and magnetic fields.

(P.T.O...)

5. State and prove the principple of least action.

6. State postulates of special theory of relativity. Then derive expressions for Lorentz Transformation equations.

7. Explain Doppler effect. Discuss the phenomenon of Doppler effect on the basis of four vector. Also discuss about Red shift and blue shift.

8. Describe relativistic kinematics in details. Then give its application to two body decay of an unstable particle.

- x - x - x -

No. of Pages: 2

GACR

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

Sub: Comp. Science Full Marks: 60

Paper: DSE-II 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 is an Opcode?

(b) How microprocessor differentiate between data and instruction?

(c) Mention the need of varioous addressing modes.

(d) Why interrupts are necessary.

(e) Mention the major parts of a micro computer.

(f) What is meant by wait state?

(g) How many operations are there in the instruction set of 8085.

(h) How jump is different from call.

Answer any FOUR questions.

2. (a) Explain the pin diagram of 8085. [6]

(b) Write an assembly language program to add two 8-bits number. [6]

3. (a) What is meant by programmable peripheral device? Discuss architecture of 8255 A with a neat diagraam. [6]

(b) Differentiate between memory interfacing and I/O interfacing. [6]

4. (a) Describe any five addressing modes of 8086. [6]

(P.T.O...)

(b) describe architecture of 8086 with a neat diagram. [6]

5. (a) Explain the difference between CISC and RISC architecture. [6]

(b) Discuss the architecture of 8051 micro controller. [6]

6. (a) Define a microcontroller. Explain any one application of microcontroller. [6]

(b) Compare microcontroller and microprocessor. [6]

7. (a) Explain von-newman architecture. [6]

(b) List the four categories of 8085 instructions that manipulate date. Give examples. [6]

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

(a) PIC

(b) Interrupt Service Routine

(c) Addressing modes

(d) Assembler directive

- x - x - x -

No. of Pages: 2

GACR

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

Sub: BOTANY Full Marks: 60

Paper: DSE-II 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 a variable?

(b) Sampling methods.

(c) Geometric mean.

(d) What is regression?

(e) Degree of freedom

(f) What is quantile deviation?

(g) Null hypothesis.

(h) Fitting prediction

SECTION - B
Answer any FOUR questions.

2. What is Biostatistics? Discus the statistical methods and basic principles of biostatistics. [12]

3. What is Dispersion? Describe the measures of dispersion and its merit and demerits. [12]

4. What is primary and secondary data collection? Discuss its types and methods of data collection. [12]

5. What is regression? Describe the simple regression equation with suitable examples. [12]

(P.T.O...)

6. Describe the chisquare test with suitable examples and its significance. [12]

7. Write short notes on: [6x2]

   (a) Mode

   (b) Types of correlation

8. Write short notes on: [6x2]

   (a) Student test

   (b) Co-efficient of variation.

- x - x - x -

No. of Pages: 2

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

Sub: ZOOLOGY Full Marks: 60

Paper: DSE-II 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) What is Newton's Live?

(ii) Write the pests of silkworm.

(iii) Write two exotic breed of cow.

(iv) Mention any two fishery biproducts.

(v) Mention any two disease of poultry and their management.

(vi) Mention any two apiculture institute of India.

(vii) Name any two ornamental or aquarium fish.

(viii) What is the importance of induced breeding of fish?

Answer any FOUR questions.

2. (i) Bee Pasturage [12]

(ii) American & European foulbrood & their management.

(iii) Honey extraction techniques

3. Mention the different types of silk & silkworms in India. Give an account on rearing of *Bombyx mori*. [12]

4. (i) Explain the preparation and management of aquarium. [12]

(ii) Mention different fish diseases and their management. [12]

(P.T.O...)

5. (i) Pearl Culture [12]

   (ii) Culture of air-breathing fishes.

6. What is polutry farming. Describe their commercial importance and management. [12]

7. (i) Mention different silkworm diseaases & their management. [12]

   (ii) Crab Culture.

- x - x - x -

No. of Pages: 2

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

Sub: STATISTICS Full Marks: 60
Paper: DSE-II 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

1. Answer any SIX questions. [2x6]

(a) Write the uses of Mayer Index.

(b) Write two methods of measures of errors in age data.

(c) Mention how age data are represented graphically?

(d) Write any two merits of optimum population theory over Malthusian principle of population theory.

(e) Write any two differences between Malthusian principle and Neo-Malthusian principle.

(f) State the basic assumption that Myer's blended index is developed.

(g) Mention the nature of informatioin collected in NFH survey.

(h) What do you mean by demographic transaction?

(i) In what respect population census of 2001 is different from population census of 2011.

GROUP-B

Answer any FOUR questions. [12x4]

2. Explain any two of the following examples.

(a) Doubling time for a population

(b) Lorenz curve and Gini concentration ratio

(P.T.O...)

(c) Rate of population change

(d) Measures of population change and distribution

3. (a) Analyse age distribution by index of relalative difference and index of dissimilarities.

(b) Describe the analysis of age data using measures of central tendency.

OR

(c) Illustrate how you express the process of graphic representation of age data by time series charts for each age group.

(d) Write down some of the measures of aging of popultaion.

4. Describe how you access errors in age data through Whipple's index of concentration.

OR

Illustrate United Nation;s secretariate method to access the errors in age data.

5. What is Marxian theory of population? Discuss its basic tenets and criticism.

OR

State the Neo-Malthusian theory of population. Elaborately differentiate between Malthusian view and Neo-Malthusian view on population.

6. Write down some of the salient features of 2011 Census.

OR

What is NFHs? Discuss. Write down some of important collections of NFHS II and NFHS III.

- x - x - x -

No. of Pages: 2

GACR

+3, 5th SEMESTER EXAMINATION-2019

(SCIENCE)

Sub: ETC Full Marks: 80

Paper: DSE-II 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 EIGHT questions. [2x8]

(a) Find the power of the given signal

$$x(n)=\begin{cases}3(-1)\,n, & n\geq 0\\ 0 & n<0\end{cases}$$

(b) Distinguish between discrete and digital signals.

(c) State the properties of DFT.

(d) What are casual and non casual signals.

(e) What is the difference between energy and power signal?

(f) Why the ROC of 2-transform cannot contain any pole?

(g) Give the computational efficiency of FFT over DFT.

(h) What is circular convolution?

(i) Differentiate between FIR and IIR filters.

(j) What is the "twiddle factor" of DFT and show how it is cyclic?

Answer any FOUR questions.

2. (a) State and prove the convolution property of Z-transform. [8]

(P.T.O...)

(b) Obtain inverse of Z-transform if [8]

[8]

$$x(z) = \frac{1}{1-1.5z^{-1}+0.5z^{-2}} \text{ when}$$

(i) ROC : $|z| > 1$

(ii) ROC: $|Z| < 0.5$

3. (a) Determine the casual signal $x(n)$ if the z-transform $x(z)$ is given by $x(z) = \frac{2-1.5z^{-1}}{1-1.5z^{-1}+0.5z^{-1}}$ [8]

(b) Explain the rational of z-transforms. [8]

4. (a) How do you find the impulse response of a signal? [8]

(b) What are the applications of linear convolution? [8]

5. (a) Exlain the properties of laplace transformation. [8]

(b) Differentiate between periodic and a periodic signals. [8]

6. (a) What is warping effect? Explain briefly design of IIR filter. [8]

(b) What are the different types of structure for realization of IIR systems? Explain them. [8]

7. (a) Compare IIR and FIR filters.

(b) What is a linear time invariant system? Explain its properties. [8]

8. (a) What is Radix & FFT? Write the difference between DFT and FFT. [8]

(b) With the help of N=8, explain radix-2 decimation in frequency (DIF) FFT algorithm for computation of DFT. [8]

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No. of Pages: 3

GACR

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

Sub.- HISTORY Time: 3 Hours
PAPER : DSE- II 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) Akbarnama
b) Jamma Kamal
c) Amil
d) Mughalbandi
e) Dalbehera
f) Meriah
g) Utkal Dipika
h) Sambalpur Hitaishini.
i) Inchudi
j) Pabitra Mohan Pradhan and Talcher Prajamandal Movement.

Answer any FOUR questions.

2. Discuss the main features of the Maratha administration. [16

OR

[16

P.T.O.

Write shot note on:

a) British conquest of Odisha

b) Causes of the Paik rebellion

3. Analyse the causes of the Famine of 1866. [16

OR

Write shot note on:

a) Dora Visoyi

b) Infanticide

4. Examine the role of Surendra Sai in the resistance movement.

OR

Highlight the major social reform in Odisha during the 19th century.

5. Describe the factors for the growth of Odia nationalism

OR

Write short note on:

a) Iram

b) Utkal Sammilani

6. Discuss the contribution of Sabuja Sahitya to modern Odia Literature

OR

Write short notes on:

a) Satyavadi Vana Vidyalaya

b) Navayuga

7. Write a note on the merger of princely states in Odisha.

OR

Write short notes on:

a) Rise of the Democracy in Odisha

b) Political parties in Odisha in the post independent period.

8. Discuss the causes of poverty in Odisha in the post independent period.

OR

Analyse the steps taken for the development of Odisha after 1947.

No. of Pages: 3

GACR

+3, 5th SEMESTER EXAMINATION-2019

(SCIENCE)

Sub: MATHEMATICS Full Marks: 80

Paper: DSE-II 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) Convert the statement "The home team wins whenever it is raining" to conditional and find the converse, inverse and contra positive.

(b) Find the least number of persons born in the same month out of 100 persons.

(c) Determine whether the sequence $\{an\}$ where $a_n=z^n$ is a solution of the recurrence relation $a_n=2a_{n-1}-a_{n-2}$.

(d) How many ways are there to assign five different jobs to four different employees if every employee to assigned at least one job.

(e) Show that the inclusion relation '$\subseteq$' is a partial ordering on the power set of a set 'S'.

(f) Is there a greatest element and least element in the poset $(z^+,1)$.

(g) Translate the logical equivalence $(T \wedge T)V \sim F \equiv T$ into an identity in Boolean algebra.

(h) How many different Boolean functions of degree n are there?

(i) Define a connected graph and a stronly connected graph.

(j) Distinguish between and Euler circuit and an Euler Path.

(P.T.O...)

Answer any FOUR questions.

2. (a) Prove that $(p \rightarrow r) \vee (q \rightarrow r) \equiv (p \wedge q) \rightarrow r$. [8]

   (b) Use quantifier to express the statement that "There does not exist a woman who has taken a flight on every airline in the world". [8]

3. (a) Use mathematical induction to prove that a–b is afactor of $a^n - b^n$ for n a positive integer. [8]

   (b) Prove that every sequence of n^2+1 distinct real numbers contains a subsequence of length n+1 that is either strictly increasing or strictly decreasing. [8]

4. (a) Find the solution of the recurrence relation [8]

   $a_n = -3a_{n-1} - 3a_{n-2} - a_{n-3}$.

   (b) Use generating function to solve the recurrence relation $a_n = 7a_{n-1}$ with the initial condition $a_0=5$. [8]

5. (a) Draw the Hasse diagram for the "greater than or equal to" relation on {0,1,2,3,4,5}. [8]

   (b) Define a Lattices. Find the greatest lower bound and least upper bound of the sets {3,9,12} and {1,2,4,5,10}, if they exist in the poset $(z^+,1)$ [8]

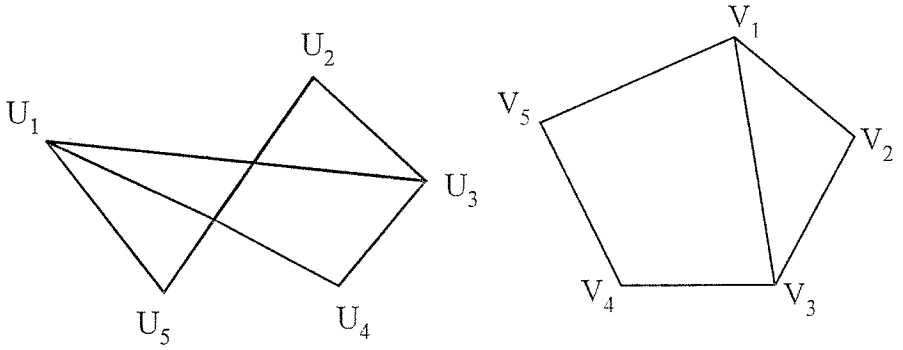
6. (a) Find the sum of products expansion for the function $F(x,y,z) = (x+y)\bar{z}$. [8]

   (b) Show that $x\bar{y} + y\bar{z} + x\bar{z} = \bar{x}y + \bar{y}z + x\bar{z}$ and also prove $x+xy=x$ using Boolean identities. [8]

7. (a) Prove that a simple graph is bipartite if and only if it is possible to assign one of two different color to each vertices of the graph so that no two adjacent vertices assigned the same colour. [8]

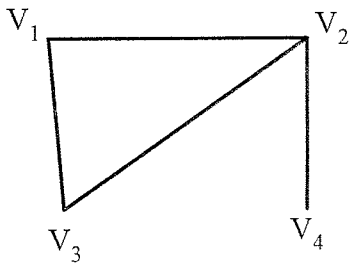
   (b) Prove that there is a simple path between every pair of distinct vertices of a connected undirected graph. [8]

8. (a) Prove that the following graphs given below are Isomorphic. [8]

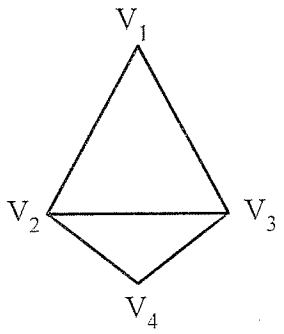


   (b) Find the Chromatic number of the following graphs. [8]

(i)



(ii)



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No. of Pages: 3

GACR

+3, 5th SEMESTER EXAMINATION-2019

(SCIENCE)

Sub: CHEMISTRY Full Marks: 80

Paper: DSE-II 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 EIGHT questions. [2x8]

(a) What are ionic liquids in green chemistry? Mention two properties of such liquids.

(b) What are the goals of green chemistry?

(c) What is meant by solventless process?

(d) Mention one use of diphenyl carbonate in green synthesis?

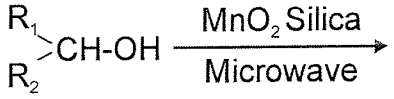
(e) What are protecting groups? Give examples.

(f) What is the product of Fries rearrangement?

(g) What happens when benzamide is hydrolysed in water assisted by microwave?

(h) What is bio-disel?

(i) Predict the product of following reaction



(j) What are biomimetric reagents?

Answer any FOUR questions.

2. (a) What are the different limitations in the pursuit of the goals of green chemistry? [8]

(b) How can you prevent waste generation or by-product formation by applying green chemistry principle? [8]

(P.T.O...)

3 (a) Define % atom economy. Calculate the % atom economy of the following reaction. [2+6]

$$CH_3-CH_2-CH_2-CH_2-Cl+KOH \rightarrow$$
$$CH_3-CH_2-CH_2=CH_2+KCl+H_2O$$

(b) Why PEG is considered as a green solvent? Give one example of a reaaction where PEG is used as the solvent. [6+2]

4. (a) Explain why catalytic agents are superior than stoichiometric reagents? [8]

(b) Explain with examples how designing greener processes prevent chemical accidents. [8]

5. (a) Describe green synthesis for the following [4+4]

(i) Catechol

(ii) benzyl bromide

(b) Describe following microwave assisted reactions in water. [4+4]

(i) Hofmann Elimination

(ii) Hydrolysis of methylbenzoate

6. Describe the following microwave assisted solid state reactions: [4x4]

(a) Saponification of esters

(b) Synthesis of anhydride from dicarboxylic acid.

(c) Deacetylation

(d) Synthesis of nitride from aldehyde.

7. (a) Explain the role of tellurium in green synthesis of organic compounds. [8]

(b) Write a short note on "Combinatorial green chemistry" [8]

8. What is Clayan? Explain how it is used as a non-metallic oxidative reagent for different reactions. [4+12]

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No. of Pages: 3

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

Sub: MTC (Mathematics) Full Marks: 80

Paper: DSE-II 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) Write the 0 Proposition. "You drive over 65 miles per hour, but you do not get a speeding ticket" in symbolic form.

(b) Write Generalized pigeonhole principle.

(c) In the recurrence relation $a_n = 3a_{n-1} + 4z_{n-2} + 5a_{n-3}$ homogeneous and also find the degree.

(d) Write the generating function for the sequence 1,1,1,1,1,1?

(e) Show that the "greater than or equal" relation is a partial ordering on the set of integers.

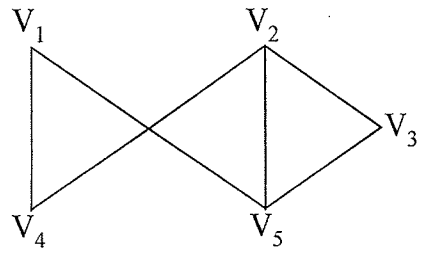
(f) Find the values of the BooLean variable x that satisfy the equation $x.\bar{x} = 1$

(g) Show that $(1.1) + (\overline{0.1} + 0) = 1$.

(h) How many edges are there in a graph with 10 vertices each of degree six?

(i) Define a bipartite graph.

(j) Find the incidence matrix of the given graph.



(P.T.O...)

Answer any FOUR questions.

2. (a) Show that $(p \to q) \vee (p \to r)$ and $p \to (q \vee r)$ are logically equivalent. [8]

   (b) Prove that the relation R on a set A is transitive if and only if $R^n \leq R$ for n= 1,2,3... [8]

3. (a) Use mathematical induction to prove that [8]

$$1.2+2.3+...+n(n+1) = \frac{n(n+1)(n+2)}{3}$$

   (b) Show that among any (n+1) positive integers not exceeding 2n there must be an integer that divides one of the other integer. [8]

4. (a) Find the solution to the recurrence relation [8]

   $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}$

   (b) Using generating, find the solution of $a_k = 3a_{k-1}$ for k=1,2,3... and initial condition $a_0=2$. [8]

5. (a) How many solution does $x_1 + x_2 + x_3 = 11$ have, where x_1, x_2 and x_3 are non-negative integers with $x_1 \leq 3, x_2 \leq 4$ and $x_3 \leq 6$. [8]

   (b) Find an explicit formula for Fibonacci numbers. [8]

6. (a) Draw the Hasse diagram for the partial ordering $\{(A,B) | A \leq B\}$ on the power set P(S) where S = {a, b, c}. [8]

   (b) Find the duals of the folloowing posets [8]

   (i) $(\{0,1,2\} \leq)$ (ii) $(Z, \geq)$

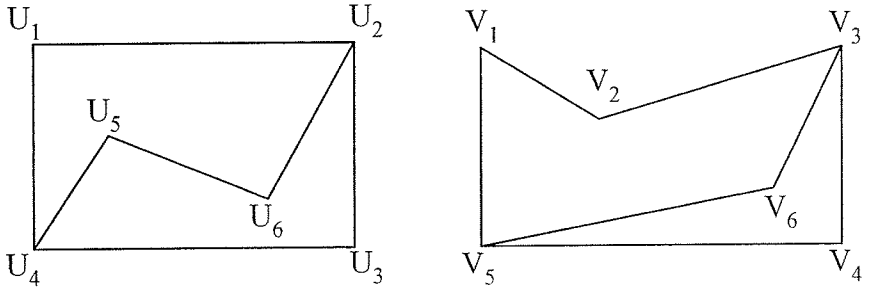
   (iii) $(P(z), \geq)$ (iv) $Z^+, 1)$

7. (a) Define a Lattice. Give an example of a poset with five elements that is a lattice and a poset with five elements which is not a Lattice. [8]

   (b) Let G = (V,E) be a graph with directed edges. Then prove that $\sum_{v \in v} \deg^{-e}(v) = \sum_{v \in v} \deg+(v) r = |E|$ [8]

8. (a) Find the values of m and n of the complete biparatite graph km, n have an (i) Euler circuit. (ii) the Euler path. [8]

   (b) Determine whether the graphs G and H given below are isomorphic. [8]



G

- x - x - x -

Additional information:

1. Depreciation @ 25% was charged on the opening value of plant and machinery.
2. During the year one old machine costing Rs. 50,000 (WDV Rs. 20,000) was sold for Rs. 35,000.
3. Rs. 50,000 was paid towards incometax during the year.
4. Building under construction was not subject to any depreciation.
5. Proposed dividend for previous year was Rs. 1,00,000 and for current year Rs. 2,00,000.

-x-x-x-

No. of Pages: 4

GACR

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

Sub: Financial Statement Full Marks: 80

Paper: DSE-II 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. [2x8]

(a) What is meant by statement of retained earnings?

(b) What is meant by "true and fair view" in relation to financial statement?

(c) What is vertical analysis?

(d) What do you mean by common-size statement?

(e) What are the key questions in assessing liquidity?

(f) How interest converage ratio is calculated?

(g) Describe stand and deviation.

(h) What is bivariate analysis?

(i) Name the six capitals used in integrated reporting frame work?

(j) What is the difference between traditional report and integrated report?

Answer any FOUR questions.

2. "Accounting ratios are mere guides and complete reliance on them in decision making is suicidal". Elucidate. [16]

3. Who are the users of financial statements? Discuss how financial statements are useful them? [16]

4. Comparative statement of profit and loss of Sinu Ltd for the year ended as at 31st March, 2017 and 2018. Complete the missing figure. [16]

Paraticulars	Note No.	31.03.17	31.03.18	Absolute change (increase/ decrease)	Percentage change (increase/ decrease)
i. Revenue from operations (Net sales)		4,20,000	8,00,000	?	90.48
ii. Expenses					
(a) purchases of stock in trade		2,50,000	?	2,00,000	80.00
(b) Change in invertories of stock in trade		50,000	50,000	—	—
(c) Other expenses		30,000	40,000	10,000	33.33
Total Expenses		3,30,000	5,40,000	2,10,000	63.64
iii. Profit before Tax (i-ii)		90,000	2,60,000	1,70,000	188.89
iv. Less income tax		27,000	78,000	?	188.89
v. Profit after Tax (iii-iv)		63,000	1,82,000	?	188.89

5. What is the difference between univariate and multivariate analysis? Also discuss the uses and limitations of multivariate analysis. [16]

6. Calculate the following ratios from the informations given below. [16]

(i) Current Ratio (ii) Quick or liquid ratio

(iii) Inventory turnover (iv) Arrange collection period

(v) Proprietors funds to liabilities

BALANCE SHEET

Liabilities	Amount	Assets	Amount
Share Capital	2,00,000	Good will	1,20,000
Reseves and surplus	58,000	Plant & machinery	1,50,000
Debentures	1,00,000	Stock	80,000
Creditors	40,000	Debtors	45,000
Bills payable	20,000	Cash	17,000
Other current liabilities	2,000	Misc.current assets	8,000
	4,20,000		**4,20,000**

Credit sales for the year = Rs. 4,00,000

Gross profit = Rs. 1,60,000

7. What do you mean by non-statutory reports? Discuss briefly different types of non-statutory reports prepared by Indian corporators. [16]

8. From the following details relalting to the accounts of Sourav Ltd. Prepare cash flow statement. [16]

Equity and liabilities	31.03.17	31.03.16	Assets	31.03.17	31.03.16
Equity share capital	10,00,000	8,00,000	Plant & Machinary	7,00,000	5,00,000
Reserves	2,00,000	1,50,000	Land & Building	6,00,000	4,00,000
Statements of profit and loss	1,00,000	60,000	Investments	1,00,000	—
Debentures	2,00,000	—	Sundry Debtors	3,00,000	6,00,000
Provision for Taxation	1,00,000	70,000	Stock	4,00,000	2,00,000
Sundry Creditors	7,00,000	8,20,000	Cash	2,00,000	2,00,000
	23,00,000	19,00,000		23,00,000	19,00,000

(P.T.O...)