

No. of Pages: 2

GACR

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

**Sub.- EDUCATION
PAPER : DSE - I**

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.
- What is computer Networking ?
 - Write three uses of internet?
 - What is webinars?
 - What is Massive open online course (MOOCs)?
 - Write the three benefits of virtual learning environment?
 - What is e-journal? Write two e-journal name?
 - Write two uses of ICT integration in Classroom.
 - Write two importance of Open Education Resources (OERs).

Section - B

Answer any FOUR questions.

[12 x 4

2. What is ICT? Write the role of ICT for improving access, quality and inclusion in Education? [3 x 9

P.T.O.

3. Describe the role of ICT for open and Distance Learning. [12]
4. What do you mean by competency standard of teachers? How can ICT facilitate for improving competency standard of teachers? [6+6]
5. Discuss the importance of ICT in classroom and write how to design an ICT integrated smart classroom. [6+6]
6. Discuss the use of ICT for school administration. How ICT helps for life long learning. [6+6]
7. Discuss various types of ICT resources used for enhancing education. [12]
8. What is E-learning? Write its importance and medias used in E-Learning? [12]



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

Sub.- POLITICAL SCIENCE
PAPER : DSE - I

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) Define Human Rights.
 - b) What is the second generation of rights?
 - c) Mention the provision of writs incorporated in part third of the Indian constitution.
 - d) What is the provision for freedom of religion, belief and opinion.
 - e) What do you mean by domestic violence?
 - f) What is Nirbhaya Act?
 - g) Define censorship.
 - h) What is meant by POTA Act?
 - i) What is the policy of Apartheid?
 - j) Give difference between caste and class.

P.T.O.

SECTION - B

Answer any FOUR questions.

2. What do you mean by Human Rights? Discuss its features and phases of development.
3. Give a critical estimate of Fundamental Rights enshrined in the Indian constitution.
4. What are the different types of torture prevalent in India?
5. Make a critical estimate of justification of censorship in India.
6. Define terrorism? Critically examine the various Acts made by the Indian Parliament to fight against terrorism.
7. Make a critical note of the socio, economic and political status of Black people in South Africa.
8. Write an essay on aboriginal and land rights in Australia.



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

Sub: MATHEMATICS

Full Marks: 80

Paper: DSE-I

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) Given integers a and b , prove that $a|b$ and $c|d$ then $ac|bd$.
- (b) Write Goldbach conjecture
- (c) If $a \equiv b \pmod{n}$ and $b \equiv c \pmod{n}$ then prove that $a \equiv c \pmod{n}$
- (d) If $5^{38} \equiv \lambda \pmod{n}$ find the value of λ .
- (e) Find $\tau(10)$ and $\delta(10)$ where τ and δ denotes the number of positive divisions and sum of division function respectively.
- (f) Define mobius μ -function.
- (g) If ϕ denotes the Euler's phifunction then find $\phi(16)$.
- (h) If n is an odd integer, verify that $\phi(2n) = \phi(n)$.
- (i) Find the order of 2 modulo 17.
- (j) Define primitive root of integer 'n'.

Answer any FOUR questions.

[8]

2. (a) Prove that given integers a and b , with $b > 0$ there exist unique integers q and r satisfying $a = bq + r$, $0 \leq r < b$.
- (b) Use Euclidean Algorithm to obtain integers x and y satisfying $gcd(24, 138) = 24x + 138y$.

[8]

(P.T.O...)

3. (a) Solve the Linear Diophantine equation [8]
 $172x + 20y = 1000$
- (b) If P is a prime, Prove that $(P-1)! \equiv -1 \pmod{p}$ [8]
4. (a) If F is a multiplicative function and F is defined by [8]

$$F(n) = \sum_{d|n} f(d)$$
 then prove that F is also multiplicative.
- (b) Prove that the Mobius function μ is multiplicative. [8]
5. (a) If n and r are positive integers with $1 \leq r < n$, then the [8]
 Binomial co-efficient $\binom{n}{r} = \frac{n!}{r!(n-r)!}$ is an integer.
- (b) Prove that for given integers a, b, c $\gcd(a, b, c) = 1$ if [8]
 and only if $\gcd(a, b) = 1$ and $\gcd(a, c) = 1$.
6. (a) Prove that if $n \geq 1$ and $\gcd(a, n) = 1$ then [8]
 $a^{\phi(n)} \equiv 1 \pmod{n}$
- (b) Let the integer 'a' have order K modulon then Prove [8]
 that $a^h \equiv 1 \pmod{n}$ if and only if $K|h$.
7. (a) Show that $F_n = 2^{2^n} + 1, n > 1$ is a Prime then 2 is not a [8]
 primitive root of F_n .
- (b) Prove that if the integer a has order K modulo n , then [8]
 $a^i = a^j \pmod{n}$ if and only if $i \equiv j \pmod{K}$.
8. (a) Use Euler's theorem to establish for any integer a , [8]
 $a^{37} \equiv a \pmod{1729}$.
- (b) Find the remainder obtained upon dividing the sum [8]
 $1! + 2! + 3! + \dots + 99! + 100!$ by 12.

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

Sub.- ODIA

Time: 3 Hours

PAPER : DSE - I

Full Marks: 80

ଯେ କୌଣସି ଟି 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) ଗଣମାଧ୍ୟମ କ’ଣ ବୁଝାଏ ।
- ଖ) ଦୁଇଟି ଗଣମାଧ୍ୟମର ଉଦାହରଣ ଦିଅ ।
- ଗ) ବୈଦ୍ୟୁତିକ ଗଣମାଧ୍ୟମ କ’ଣ ?
- ଘ) ସଂକ୍ଷିପ୍ତ ସୂଚନା ବା Intro ର ଭୂମିକା କ’ଣ ?
- ଙ) କୌଣସି ସମ୍ବାଦର ‘ଶିରୋନାମା’ର ଭୂମିକା କ’ଣ ?
- ଚ) ସାମ୍ବାଦିକର ମୁଖ୍ୟ ଧର୍ମ କ’ଣ ?
- ଛ) ସାମ୍ବାଦିକତାର ଛଅ ‘କ’ ନିୟମ କହିଲେ କ’ଣ ବୁଝାଯାଏ ?
- ଜ) ଓଡ଼ିଶାର ଦୁଇଟି ବେତାରକେନ୍ଦ୍ରର ନାମ ଲେଖ ।
- ଝ) ‘ଫିଚର’ର ଲୋକପ୍ରିୟତାର କାରଣ କ’ଣ ?
- ଞ) ‘ଫିଚର’ର ସଂଜ୍ଞା ନିରୂପଣ କର ।
- ଟ) ସମ୍ବାଦ ପ୍ରସାରଣ କରୁଥିବା ଦୁଇଟି ଟି.ଭି. ଚ୍ୟାନେଲର ନାମ ଲେଖ ।
- ଠ) ପ୍ରାକୃତିକ ବିପର୍ଯ୍ୟୟ ବେଳେ ଖବର ପ୍ରସାରଣର ପ୍ରମୁଖ ମାଧ୍ୟମ କ’ଣ ?

‘ଖ’ ବିଭାଗ

୨. ସାମାଜିକ ଜୀବନରେ ଗଣମାଧ୍ୟମର ଭୂମିକା ସମ୍ପର୍କରେ ଉଲ୍ଲେଖ କର ।

ଅଥବା

ଗଣମାଧ୍ୟମର ସ୍ୱରୂପ ଦର୍ଶାଇ ପ୍ରକାରଭେଦ ସମ୍ପର୍କରେ ଲେଖ ।

୩. ସମ୍ବାଦ ପ୍ରସ୍ତୁତି ପାଇଁ ସାମ୍ବାଦିକର ଭୂମିକା ସମ୍ପର୍କରେ ଲେଖ ।

ଅଥବା

ସମ୍ବାଦ ରଚନା ବିଧି ଦର୍ଶାଇ ଛାତ୍ର ଆନ୍ଦୋଳନ ସମ୍ପର୍କରେ ଏକ ସମ୍ବାଦ ପ୍ରସ୍ତୁତ କର ।

୪. ବେତାର ସମ୍ବାଦ ପ୍ରସ୍ତୁତି କଳା ସମ୍ପର୍କରେ ଉଲ୍ଲେଖ କର ।

ଅଥବା

ବେତାର ସମ୍ବାଦର ବିଭିନ୍ନ ଦିଗ ଓ ତାହାର ଭୂମିକା ସମ୍ପର୍କରେ ଲେଖ ।

୫. ଦୂରଦର୍ଶନରେ ପ୍ରସାରିତ ସମ୍ବାଦର ଲୋକପ୍ରିୟତାର କାରଣ କ’ଣ ?

ଅଥବା

ଦୂରଦର୍ଶନରେ ସମ୍ବାଦ ପ୍ରସାରଣ ପାଇଁ କେଉଁ ସାଧନ ଦେଇ ଗତି କରିବାକୁ ପଡ଼େ ଆଲୋଚନା କର ।

୬. ଫିଚର ରଚନା ପ୍ର, ବିଧି ସଂପର୍କରେ ବ୍ୟାଖ୍ୟା କର ।

ଅଥବା

‘ଓଡ଼ିଶାର ନଦୀ’ ଶୀର୍ଷକରେ ଏକ ଫିଚର ପ୍ରସ୍ତୁତ କର ।



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

Sub.- ECONOMICS
PAPER : DSE - I

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 Price elasticity of demand?
 - b) Distinguish between change in demand and change in quantity demanded.
 - c) When will an indifference curve be a straight line?
 - d) What is substitution effect?
 - e) Define Marginal rate of technical substitution.
 - f) What is opportunity cost?
 - g) Mention any two characteristics of Monopolistic competition.
 - h) Define oligopoly.
 - i) What is speculative demand for money?
 - j) Give the meaning of Pareto optimality.

P.T.O.

SECTION - B

[16 x 4

Answer any FOUR questions.

2. Discuss various methods of measurement of Price elasticity of demand.
3. Explain the equilibrium of a consumer using indifference curve analysis.
4. What do you mean by returns to scale? Explain returns to scale using isoquants.
5. Using labelled diagrams, show the relationship among average fixed cost, average variable cost, marginal cost and average total cost in the short run.
6. What is perfect competition? How does a firm and industry attain equilibrium under such a market in the short run.
7. Explain how a monopolist reaches equilibrium in the short and long run.
8. Critically examine Clark's dynamic theory of profit.



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GACR

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

**Sub.- ENGLISH
PAPER : DSE - I**

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]
- i) How was new criticism replaced?
 - ii) Differentiate new criticism from formalism.
 - iii) Define fallacy.
 - iv) Language of paradox.
 - v) What does organic nature of poetry include?
 - vi) What does 'Intentional fallacy include'?
 - vii) Purpose of defamiliarization.
 - viii) What does Jacobson's poetics deal with?
 - ix) Difference
 - x) Mise-en-abyme.
 - xi) Erasure
 - xii) Binary

P.T.O.

Answer any FOUR questions.

[16 x 4

2. What does it mean to theorize? What are the ways and methods of theorizing? Elaborate.
3. Elaborate on the present crisis in literary criticism. How can we overcome the crisis in literary criticism.
4. What is structuralism? Elaborate structuralism with its features.
5. What is post structuralism? Elaborate on it with its main features.
6. What is super structure and how it is related to literature?
7. What is new Historicism? Explain in detail.
8. What is eco-criticism? How is it helpful to environment? How is it resisting patriarchy?



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

Sub.- PHILOSOPHY
PAPER : DSE-I

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) What are mental phenomena?
 - b) Distinguish between mind and soul.
 - c) Which theory of mind-body relation is mechanical?
 - d) What is consciousness?
 - e) Is doubting a mental phenomena?
 - f) What is concept of a person?
 - g) What is epi-phenomenalism?
 - h) What is determinism?
 - i) What is freewill?
 - j) Is soul mechanical?

Answer any FOUR questions. [16 x 4]

2. State and explain the nature of consciousness.
3. Critically explain Identity theory of mind.
4. Discuss materialism in the context of philosophy of mind.

P.T.O.

5. Critically evaluate is determinism consistent with freewill.
6. Explain and examine interactionism with regard to mind-body relation.
7. What is mind? Discuss problems of other mind.
8. Briefly Answer any **TWO**:
 - a) Problem of freewill.
 - b) Problems of personal Identity.
 - c) Determinism.



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

Sub.- PSYCHOLOGY
PAPER : DSE - I

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.

1. **Answer any SIX of the following.** [2x 6]
- a) What is sampling error?
 - b) State any two ethical problems of interviewing.
 - c) What is confounding variable?
 - d) Define norm.
 - e) Define reliability.
 - f) How do you operationalize a variable?
 - g) What is correlational research?
 - h) What is random error?

Answer any FOUR questions.

[12 x 4]

2. What is psychometric techniques? Explain Minnesota Multiphasic Personality Inventory (MMPI) as an effective techniques of assessing personality.
3. What is sampling? Discuss different types of probability sampling.

P.T.O.

4. What is experimental research? Discuss various aspects of experimental research with its advantages and disadvantages.
5. What is item analysis? Discuss item response theory.
6. What is the purpose of experimental design? Discuss different types of experimental design used in psychological research.
7. Explain interview as techniques of assessing personality.
8. What do you mean by measurement error? Discuss theory of measurement error.



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

Sub: ~~MPC~~ (Programming in C++)
Paper: DSE-I

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.2-8.

1. Answer any SIX questions.**[2x6]**

- Write the symbol and name of the relational operator.
- Define conversion.
- Differentiate between Pre increment and post increment operator with example.
- What is the difference between exit control loop and entry control loop.
- What is an array variable? How does it differ from ordinary variable.
- Suppose the input is 5. The code C++ code

```
lin >> num;  
if (num < 5)  
    cout << num;  
    num = 0;  
else  
    cout << "Num is Zero" << endl;
```

What is the output?

- Write a short note on "IF... ELSE" statement.
- In what ways does a switch statement differ from an if statement.

(P.T.O...)

Answer any FOUR questions.

2. (a) What are different data type? Explain them in short. [6]
(b) Write a program that prints the sum and average of five integers. [6]
3. (a) What is a loop? Discuss various loop statements of C++ with examples. [6]
(b) Write a program to generate series of prime numbers upto a given range. [6]
4. (a) Write a program to compute the sum of the digits of a given integer number. [6]
(b) What do you meany by precedence operator? What is importance? Explain with example. [6]
5. (a) Write a program to find the largest of three numbers using logical operator. [6]
(b) What do you mean by precedence operator? What is its importance? Explain with example. [6]
6. (a) Write a program to find the factorial of a number using function. [6]
(b) Write a program to reverse a number. [6]
7. (a) Why do you need to include a function photo types in a prgram? [6]
(b) Write a program to reverse a number. [6]
8. (a) Define two-dimensional array. Explain how is it initialized. [6]
(b) Write a program to add all elements of a one dimensional array using functions. [6]

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

Sub.- HINDI
PAPER : DSE - I

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 किन्हीं आठ प्रश्नों के अति संक्षिप्त उत्तर दीजिए।
- i) रामकाव्य की परंपरा में तुलसीदास के अलावा और दो कवियों का नाम लिखिए।
 - ii) तुलसी दास की प्रमुख रचनाओं का उल्लेख कीजिए।
 - iii) तुलसी दास को लोकनायक क्यों कहा जाता है?
 - iv) जब से श्रीरामजी विवाह कर के घर आये, तबसे अयोध्या में क्या होने लगे थे?
 - v) वेद-पुराण शिव के बारे में क्या कहते हैं?
 - vi) लौकिक और परमार्थिक ज्ञान की प्राप्ति के लिए मनुष्य को क्या करना चाहिए?
 - vii) राम-नाम का स्मरण करनेसे क्या मिलता है?
 - viii) गुरु के चरणों की रज को मस्तक पर धारण करनेसे क्या फल मिलता है?

P.T.O.

- ix) देवी पार्वती कौन से ताप रूपी अन्धकार का नाश करती हैं?
x) तुलसी दास के द्वारा अपने काव्यों में प्रयुक्त से प्रमुख भाषाओं का उल्लेख कीजिए।

Section - B

(निम्नलिखित किन्हीं चार प्रश्नों के सविस्तार उत्तर दीजिए)

[16x4]

2. क) 'हिन्दी राम-भक्ति धारा में' अनेक कवि हुए, किन्तु राम-भक्ति धारा का साहित्यिक महत्त्व अकेले तुलसी दास के कारण है'— इस उक्ति की सार्थकता प्रतिपादित कीजिए।
- ख) रामचरितमानस के 'अयोध्या काण्ड' की कथावस्तु की दृष्टि से समीक्षा कीजिए।
- ग) "राम-प्रेम के बिना सब व्यर्थ है"— इस उक्ति की सार्थकता दोहावली के पठित दोहों के आधार पर प्रमाणित कीजिए।
- घ) तुलसी दास ने 'विनय पत्रिका' में श्रीरामचन्द्रजी के स्नेह और शील का जो वर्णन किया है, पठित पदों के आधार पर उसकी आलोचना कीजिए।
- ङ) तुलसी दास की प्रमुख रचनाओं के आधार पर उनकी नारी सम्बन्धी विचारों की वर्णना कीजिए।
- च) तुलसी दास और उनके युग की विभिन्न परिस्थितियों की आलोचना कीजिए।
- छ) श्रीराम और कैकेयी के संवादों पर प्रकाश डालते हुए समीक्षा कीजिए।

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GACR

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

**Sub.- SOCIOLOGY
PAPER : DSE - I**

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
- i) Who are Dominant castes?
 - ii) What was the approach of Ghurye towards sociological studies?
 - iii) What is sanskritization?
 - iv) Which sociologist has elaborated internal structure of Indian village?
 - v) Mention some of the major contributions of M.N. Srinivas.
 - vi) What are the topics of special interest for M.S.A. Rao?
 - vii) Who has written the book 'Kinship organisation in India'?
 - viii) What is peasant society?
 - ix) Mention any two features of Indian village.
 - x) Write the bases of social stratification according to Andre Beteille.

P.T.O.

- xi) How did prof. G.S. Ghurye explain Rural-Urban community?
- xii) What difference do you find in the writings of R.K. Mukherjee and D.P. Mukherjee?
- xiii) Mention some of the major contribution of G.S. Ghurye to the sociological literature.
- xiv) Who authored 'Modernization of Indian Tradition a systematic of social change'.
- xv) What is caste?

Answer any FOUR questions.

[16 x 4

- 2. Explain R.K. Mukherjee's concept of social ecology.
- 3. Elaborate D.P. Mukherjee's ideas on cultural diversities.
- 4. Delineate G.S. Ghurye's characteristics of caste system.
- 5. Explain how M.N. Srinivas used the concept of sanskritization to explain social mobility in Indian society.
- 6. Describe M.S.A. Rao's views on social movement.
- 7. How S.C. Dube has linked modernization with developement?
- 8. Highlight Andre Beteille concept of Folk culture.



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

Sub: BOTANY

Full Marks: 60

Paper: DSE-I

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 FACS?
- (b) What is cryofixation?
- (c) Density gradient.
- (d) What is marker enzyme?
- (e) GLC
- (f) Standard deviation
- (g) What is X-ray crystallography?
- (h) What is mode?

SECTION - B

Answer any FOUR questions.

2. Discuss the principles and applications of confocal microscopy. [12]
3. Discuss the principles and applications of scanning electron microscopy. [12]
4. Discuss the principles and applications of ultracentrifugation. [12]
5. What is spectrophotometry? Discuss its principles and applications in biological research. [12]

(P.T.O...)

[2]

6. Describe the principles and applications of mass spectrometry. [12]
7. What is Chi-square test? Describe the Chi-square test for goodness of fit giving suitable examples. [12]
8. Write short notes on [6x2]
- (a) X-ray diffraction.
- (b) Measures of dispersion.

- x - x - x -

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

Sub: ZOOLOGY

Full Marks: 60

Paper: DSE-I

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 bit questions given below within [2x6]
2-3 sentences for each.**

- (a) What is instinct? Give an example of instinct behavior.
- (b) Give an example of imprinting.
- (c) What the waggle dance signify?
- (d) What is sexual dimorphism?
- (e) Give two advantages of biological clocks.
- (f) Write two important characteristics of reflexes.
- (g) Define operant conditioning.
- (h) Comment on Jet log.

**Answer any FOUR questions with suitable diagram
wherever necessary.**

2. Describe behaviour as a basis of evolution [12]

OR

Write notes on the following. [6x2]

- (a) Niko Tinbergen
- (b) Code breakers

**3. What is learning? Describe diferent types of learning [12]
in animals.**

OR

[2]

Write notes on the following. [6x2]

(a) Klinefelter Syndrome

(b) Reflex Path

4. State and discuss Hamilton's rule and inclusive fitness with suitable examples. [12]

OR

Write notes on the following. [6x2]

(a) Reciprocal altruism

(b) Learning ability in honey bee.

5. Give an account of consequences of mate choice for female fitness. [12]

OR

Write notes on the following. [6x2]

(a) Infanticide

(b) Courtship behaviour

6. What is circadian rhythm? Explain it with suitable examples. [12]

OR

Write notes on the following. [6x2]

(a) Biological Clocks

(b) Lunar rhythm

7. Describe society organization in Honey bee. [12]

OR

Write notes on the following. [6x2]

(a) Foraging

(b) Waggle dance

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

Sub: ETC

Full Marks: 80

Paper: DSE-I

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 makes 8051 an 8-bit microcontroller?
- (b) Enlist the various flags in the PSW register.
- (c) What is the address stored in stack pointer and program counter after 8051 is reset?
- (d) Compare between JNB and JNZ.
- (e) Which portpins are used for accessing external interrupts?
- (f) Define embedded system.
- (g) Which port of 8051 does not exhibit dual function?
- (h) If 8051 based system is controlled by crystal frequency 12mhz then what is the period of clock pulse given to timer unit?
- (i) What is the difference between call and jump instruction?
- (j) How many different output voltages can a 12-bit DAC produce.

Answer any FOUR questions.

2. (a) Draw the pin diagram of 8051 micro-controller. [8]
Explain its various features.
- (b) How many ports are there in 8051 micro-controller, [8]
explain them.

(P.T.O...)

3. (a) What are interrupts? Describe the interrupts of 8051. [8]
(b) What is the format of PSW in 8051? [8]
4. (a) What do you mean by the term addressing modes? Explain different addressing modes supported by 8051. [8]
(b) Explain the difference between long jump (LJMP) and absolute jump (SJMP)? [8]
5. (a) What is stack? Explain with PUSH and POP operation. [8]
(b) Write a program to measure the width of a pulse appearing at the pin INT 0 (zero) [8]
6. With a neat circuit representation, illustrate interfacing a typical 8-bit DAC to 8051 architecture based processor. Using DAC write a program in 8051 assembly to generator a triangular wave. [16]
7. (a) Write about the design steps involved in using micro-controller for stepper meter. [8]
(b) What is serial data transfer? Describe 8051 connections to Rs 232. [8]
8. (a) Compare the CPU architectures CISC and RISC. [8]
(b) Interface 8051 to stepper motor. Write an ALP to rotate the motor +4 steps and then - 6steps. [8]

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

Sub: Comp. Science

Full Marks: 60

Paper: DSE-I

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) Mention three major goals of computer security.
- (b) How a digital signature is different from hand written signature.
- (c) Who issues digital certificates?
- (d) What is meant by authentication?
- (e) Outline basic purpose of firewall.
- (f) What is meant by confusion?
- (g) Specify the causes of Trapdoor presence in a production program.
- (h) Mention the effective key length of DES algorithm.

Answer any FOUR questions.

2. (a) Explain caesar cipher encryption and decryption with an example. Mention its limitations. [6]
- (b) Discuss any two modes of operation of DES algorithm. [6]
- 3 (a) Discuss any two properties of an ordinary operating system. [6]
- (b) Explain direct mode of inference attack in a data base. [6]
- 4 (a) Explain the activities of various types of computer criminals. [6]

(P.T.O...)

[2]

- (b) Define digital signature. Briefly discuss properties of Digital signatures. [6]
5. (a) Explain Salami attack with an example. [6]
- (b) How a passive attack is different from active attack? Give two examples from each category of attack. [6]
6. (a) Discuss the factors responsible for making a network vulnerable. [6]
- (b) Discuss working of packet filtering firewall. [6]
7. (a) Outline issues addressed in a security plan. [6]
- (b) Explain copyright and patent with examples. [6]
8. Short notes on (Any TWO) [6x2]
- (a) Digital signature
- (b) Key Exchange
- (c) Block Cipher
- (d) Steganography

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**+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)****Sub: CHEMISTRY**

Full Marks: 80

Paper: DSE-I

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 EIGHT questions.**

[2x8]

- (a) Explain the terms polymers and monomer.
- (b) Write the monomers Nylon-6,6 polymer.
- (c) What is meant by degree of polymerization?
- (d) How is PVC prepared?
- (e) What is glass transition temperature?
- (f) What is Teflon? Give its two uses.
- (g) Define Z-average molecular weight. Give mathematical expression for it.
- (h) What is conducting polymers? Give one example.
- (i) Define thermosetting polymers. Give two examples of it.

GROUP-B**Answer any FOUR questions.**

2. (a) What are bifunctional and polyfunctional polymers? Explain them with suitable examples. [10]
- (b) Classify polymers on the basis of mechanism of polymerization. [6]
3. (a) Describe the mechanism and kinetics of radical chain growth polymerization. [8]

(P.T.O...)

[2]

- (b) Write a note on coordination polymerization. [8]
4. (a) Describe the nature of polymers. Explain relationship between the structure and properties of polymers. [8]
- (b) Describe briefly the determination of molecular weight of polymers by osmotic pressure method. [8]
5. Write notes on:
- (a) Flory-Huggins theory [6]
- (b) Criteria for polymer solubility [5]
- (c) Upper and Lower critical solution temperatures. [5]
6. (a) What are copolymers? Discuss the mechanism and kinetics of copolymerization. [2+8]
- (b) Write notes on Molecular weight distribution. [6]
7. (a) Describe briefly the preparation, structure and properties of polyolefins and polyvinyl acetate. [12]
- (b) Write notes on polyamides. [4]
8. Write notes on: [5+6+5]
- (a) Acrylic polymers
- (b) Silicone polymers
- (c) Phenol-formaldehyde resin

- x - x - x -

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

Sub: STATISTICS

Full Marks: 60

Paper: DSE-I

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) Explain the purpose of time series.
- (b) Give the merits of simple average method.
- (c) Explain the advantages of ratio to trend method.
- (d) Cyclic movement in a time series occur due to ____.
- (e) The equation, $Y = \alpha.\beta^x$ represents _____ of curve.
- (f) Explain any two disadvantages of the moving average method.
- (g) How can the irregular influences be measured?
- (h) Simple average method is used to calculate _____.

SECTION-B

Answer any FOUR questions.

- 2. (a) Briefly explain the component of time series analysis. [6]
- (b) Explain how the principles of least squares” is used to estimate trend in a time series. [6]
- 3. Describe the nature of the components of a time series. Explain the additive and multiplicative models of a time series stating clearly the assumption and discuss their relative merits. [12]

(P.T.O...)

[2]

4. Write short notes on: [12]
- (a) Modified exponential curve
 - (b) Logistic curve
 - (c) Gompertz curve
5. Derive Spencer's 21 point formula [12]
6. Write short notes on Harmonic analysis. [12]
7. What are business cycle? Explain with suitable examples the difference between them and seasonal variations in a time series. Discuss the different methods of determining seasonal fluctuations on a time series. [12]

- x - x - x -

**+3, 5th SEMESTER EXAMINATION-2019
(SCIENCE)****Sub: PHYSICS**

Full Marks: 80

Paper: DSE-I

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) Explain parity.
- (b) What do you mean by nuclear separation energy?
- (c) Explain Fermi theory of β -decay.
- (d) Explain Q-value of nuclear reaction.
- (e) Discuss about the basic features of semi conductor detector.
- (f) Write basic difference between Ionisation chamber and G.M. counter.
- (g) Write about different types of particle interaction.
- (h) What is linear acclerator?
- (i) Write basic properties of Bosons.
- (j) What is Bohr magneton?

GROUP -B**Answer any FOUR questions.**

[16x4]

2. Explain the concept of nuclear magnetic dipole moment in detail. Also explain nuclear magneton.
3. What is the evidence for the shell structure of the nuclei? Stating the main assumptions explain the shell model of the nucleus.

(P.T.O...)

4. (a) What is β -decay? Discuss the energy spectrum curve from β -decay of a radioactive nuclide.
(b) Show that the law of conservation of energy and momentum are not obeyed in β -decay.
5. With neat diagram describe the principle, construction, working and theory of CYCLOTRON. Also write its limitations.
6. With neat diagram describe the principle, construction and working of Geiger - Muller counter. Also discuss about dead time, recovery time and quenching of a G.M. counter.
7. (a) What are strange, particles? Explain the concept of strangeness and principle of associated production.
(b) Discuss the conservation of different quantum numbers associated with elementary particles.
8. Define Q-value of a nuclear reaction. Derive an expression for it. Then discuss about its physical significance and positive and negative sign.

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

Sub: Financial Markets, Institutions & Services Full Marks: 80
Paper: DSE-I 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) What is flow of matrix?
- (b) What is commercial paper?
- (c) What is zero interest coupon bond?
- (d) What do you mean by debt market?
- (e) Define insurance.
- (f) What do you understand by merchant banking?
- (g) What is underwriting?
- (h) What is letter of credit?
- (i) What is Credit rating?
- (j) Define leasing.

Answer any FOUR questions.

2. Discuss the role & functions of a financial market. [16]
3. What is capital market? Discuss its objectives & importance. [16]
4. What do you mean by debt market? Discuss its main features. [16]
5. What are the features of contract of insurance? Discuss various types of contract of insurance? [16]

[2]

6. Write notes on
- (a) Development Financial institutions [8]
 - (b) Merchant banking in India [8]
7. What do you understand by the term financial services? [16]
Explain the characteristics of such services.
8. Explain the following terms. [4x4]
- (a) Bank Guarantee
 - (b) Counseling
 - (c) Direct leasing
 - (d) Types of factoring

- x - x - x -

No. of Pages: 3

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

Sub.- HISTORY
PAPER : DSE - I

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) Karuvaki
 - b) Mahameghavahana
 - c) Prithvi Mahadevi
 - d) Karnadeva
 - e) Kapilabda
 - f) "Parasuram Vijaya"
 - g) Navamuni Cave
 - h) Lalitagiri
 - i) Kalinga Jina
 - j) Tri-Ratha Temple

Answer any FOUR questions.

2. **Discuss the achievements of Kharvela.** [16]

OR

Write short notes on: [16]

- a) Causes of the Kalinga war

P.T.O.

- b) Sub-regional kingdom of the Vighrahas
3. Write a note on the political history of the Bhama-Karas.

OR

Write short notes on:

- a) Dharmaraja II
- b) Yayati II
4. Examine the role of Chodaganga Deva for the creation of regional kingdom in Odisha.

OR

Describe the achievements of Prataprudra Dev.

5. Trace the development of Buddhism in Odisha.

OR

Write short notes on:

- a) Lakulisa - Pasupata sect of Saivism
- b) Vaishnavism during the Imperial Ganga period.
6. Write short notes on the development of Jainism in Odisha.

OR

Trace the development of Saivism during the Somavamshi period.

7. Throw light on the Buddhist art in Ratnagiri and Udayagiri .

OR

- a) Parasurameswara Temple
- b) Torana of the Mukteswar Temple

8. Write a note on the architectural features of the Lingaraj temple.

OR

Write short notes on:

- a) Sun images of the Konark temple.
- b) Nata-Mandapa of the Konark temple.

