Code No. 3191 / BL

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, June/July 2019

Subject : Statistics (Statistical Quality Control and Reliability)

Paper – VI (A) (DSE E – I)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Define 'Shewart control chart'.
2 What is np-chart with fixed sample size?
3 How do you construct modified control charts?
4 What are natural tolerance limits and specification limits?
5 Define (a) AQL & (b) LTPD
6 What is single sampling plan?
7 What is a reliability function?
8 Define Parallel structure. Also derive its system reliability.

PART – B (3 x 15 = 45 Marks)
(Essay Answer Type)
Note: Attempt ALL the questions.

9 (a) What are the various control charts for variables? Explain mean, range and standard derivation charts.

OR

(b) What are control charts for attributes? Explain np-chart when sample size is varying interpret the same.

10 (a) Explain(i) the control charts for number of defects per unit and (ii) control charts for number of defects for variable sample size.

OR

(b) Explain the concept of modified control charts.

11 (a) What is double sampling plan for attributes? Also describe the designing of a double sampling plan using Poisson distribution.

OR

(b) Explain K out of N structure of a system with examples. Derive the reliability of a K out of N system.

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Code No. 8184/E

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Mathematics (E: Probability and Statistics)

Paper – V (SEC – 3)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Suppose that the number of typographical errors on a single page of a book has a Poisson distribution with parameter $\lambda=1$. Calculate the probability that there is at least one error on this page.

OR

(b) Find E(X), Var(X), where X is the outcome when we roll a fair die.

2 (a) Suppose that P(X, Y), the joint probability mass function of X on Y, is given by P(1, 1) =0.5 , P(1, 2) = 0.1, P(2, 1) = 0.1, P(2, 2) = 0.3. The evaluate the conditional probability mass function of X given that Y = 1.

OR

(b) Suppose that X and Y are independent continuous random variables having densities f_X and f_Y respectively. Then compute P(X < Y).

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) Evaluate E(X) and Var (X) when a random variable X is normally distributed with parameter μ and σ^2.

OR

(b) The joint density function of X and Y is $f(x,y)=\frac{1}{y}e^{-(y+x/y)}$ where 0 < x, y ∞

Then (i) Show that f(x, y) is a joint density function
(ii) Find Cov (X, Y).

4 (a) If X_1 anbd X_2 are independent binomial random variables with respective parameters (n_1, 0) and n_2, p). Then calculate the conditional probability mass functions of X_1 and X_2 given that $X_1 + X_2 = m$.

OR

(b) Suppose that the joint density of X and Y is given by

$$f(x,y)=\begin{cases}6xy(2-x-y) & where \quad 0<x<1, 0<y<1\\ 0 & otherwise\end{cases}$$

then compute the conditional expectation of X given that Y = y, where 0 < y < 1.

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Code No.8195

FACULTY OF SCIENCE

B.Sc. (CBCS) V - Semester Examination, November/December 2019

Subject: Computer Science (F: Computer Organization)

Paper: V (SEC - 3)

Time: 1½ Hours **Max. Marks: 40**

Part – A (2x5 = 10 Marks)
(Short Answer Type)
Note: Answer ALL the following questions.

1. (a) What is a Latch? Explain the working of Set-Reset Latch with circuit diagram.

   OR

   (b) Explain how to derive D flip flop input equations.

2. (a) What is a sequential circuit? Explain with an example.

   OR

   (b) Construct and explain serial adder circuit with Accumulator.

Part – B (2x15 = 30 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

3. (a) Explain Asynchronous sequential circuits with illustrations.

   OR

   (b) Design and explain 4-bit Binary Counter with JK flip flops with its timing diagram and truth table.

4. (a) Explain the designing of sequential circuit using PLA with circuit diagram, truth table and state table.

   OR

   (b) Describe 2-bit Binary Multiplier with algorithm, logic diagram and example.

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Code No.9002

FACULTY OF SCIENCE

B.A./B.Sc. (CBCS) I - Semester Examination, November/December 2019

Subject: Computer Science/Computer Applications

(AECC – I) (Fundamentals of computer)

Paper: I

Time: 1½ Hours **Max. Marks: 40**

Part – A (4x4 = 16 Marks)
(Short Answer Type)
Note: Answer any FOUR of the following questions.

1. Explain the characteristics of a computer.
2. What is optical device? Explain any two optical devices.
3. Explain about Mini computers and Micro computers.
4. What is Venn diagram? Draw the Venn diagram for absorption law.
5. Represent $Y = \left(\overline{A + B}\right) + C \bullet D + \left(E \bullet \overline{F}\right)$ using logic gates.
6. Explain about Middle ware.

Part – B (2x12 = 24 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

7. What is a computer? Explain about the various generations of computers.

OR

8. What is Memory? Explain primary memory and secondary storage devices.

9. Convert the following numbers
   (i) $(10110101)_2$ ---- $?_{(10)}$.
   (ii) $(AIE2)_{16}$ ----$?_{(10)}$.
   (iii) $(1001\ \ 0010\ \ 1110)_{(2)}$ ---- $?_{(16)}$.
   (iv) $(5476)_{10}$ ---- $?_{(2)}$.

OR

10. What is software? Explain system software and application software with examples.

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Code No.8077

FACULTY OF SCIENCE

B.Sc. (CBCS) III- Semester Examination, November/December 2019

Subject: Computer Science (B: Boolean Algebra)

Paper: III (SEC-1)

Time: 1 ½ Hours **Max. Marks: 40**

Part – A (2x5 = 10 Marks)
Note: Answer ALL the following questions.

1. (a) Write a short note on Digital Systems.

   OR

   (b) Write a short note on Basic Operations of Boolean Algebra.

2. (a) Explain Consensus Theorem.

   OR

   (b) Write a short note on Minterms and Maxterms.

Part – B (2x15 = 30 Marks)
Note: Answer ALL the following questions.

3. (a) Explain Number systems and their conversions in detail with suitable examples.

   OR

   (b) Explain Basic theorems of Boolean Algebra.

4. (a) Explain Algebric Simplification of Switching Expression.

   OR

   (b) Explain design of Binary adders and subtracters.

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Code No. 8071 / E

FACULTY OF SCIENCE

B.Sc. III-Semester (CBCS) Examination, November / December 2019

Subject : Mathematics (Logic and Sets)

Paper – III (SEC-I)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Construct a truth table for the compound statement $(p \wedge q) \rightarrow p$.

OR

(b) Negate and simplify the compound statement $(p \vee q) \rightarrow r$.

2 (a) Let A be any set with n elements. (where $n \geq 0$), then show that A has 2^n subsets.

OR

(b) Let A, B are any two sets then show that

(i) $\overline{A \cup B} = \overline{A} \cap \overline{B}$ (ii) $\overline{A \cap B} = \overline{A} \cup \overline{B}$.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) Show that $(p \rightarrow r) \vee (q \rightarrow r)$ and $(p \vee q) \rightarrow r$ are logically equivalent.

OR

(b) (i) Show that $(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$ is a tautology.

(ii) Using truth table, show that $p \vee (p \wedge q) \equiv p$.

4 (a) (i) Let A, B are any two sets in u then show that

$\overline{A \Delta B} = \overline{A} \Delta B = A \Delta \overline{B}$

(ii) Simplify $(\overline{A} \cup \overline{B}) \cup (A \cap B \cap \overline{C})$

OR

(b) Let X be a random variable with $P(X = x) = \frac{1}{6}$ for x = 1, 2, 3.....6 . Then evaluate

(i) $P(X \geq 3)$ (ii) $P(2 < X \leq 5)$ (iii) $P(X \leq 3)$.

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Code No: 8079

FACULTY OF SCIENCE

B. Sc. (CBCS) III – Semester Examinations, Nov./Dec. 2019

Subject: Microbiology

Paper - III : Haematology (SEC-1)

Time: 1 ½ Hour **Max. Marks: 40**

Note: Answer all questions.

PART – A (2 x 5 = 10 Marks)

1. a) Differential properties of plasma and serum

   OR

   b) Rh Typing

2. a) Blood preservation

   OR

   b) Anemia

PART – B (2 x 15 = 30 Marks)

3. a) Write about the complete blood picture and staining methods

   OR

   b) Explain i. Differential count ii. Anti-coagulants

4. a) Describe the methods of blood handling and blood products

   OR

   b) What is ESR and give information of diseases spread through blood

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Code No. 8200

FACULTY OF SCIENCE

B.Sc. (CBCS) V – Semester Examination, December 2019

Subject: Microbiology (Mushroom cultivation)

Paper: V (SEC-3)

Time:1 ½ Hours **Max. Marks: 40**

NOTE: Answer all questions from Part-A and Part-B.

PART – A (2 x 5 = 10 Marks)

1. a) Global status of mushroom production
   OR
   b) History of mushroom cultivation

2. a) Mushroom Casing
   OR
   b) Spawn production

PART – B (2 x 15 = 30 Marks)

3. a) Write a note on food value of mushroom.
   OR
   b) Explain the importance of mushroom cultivation in India.

4. a) Explain pest and pathogens of mushrooms.
   OR
   b) Explain steps involved in mushroom cultivation.

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Code No.10060

FACULTY OF COMMERCE

B.Com./B.A./B.Sc. V – Semester (CBCS) Examination, November / December 2019

(Common Paper for General / Computers /Computer Applications / Advertising / Foreign Trade and Tax Procedure Courses)

Subject: Introduction to Indian Economy

Paper Code – BC – 502 Generic Elective – I

Time: 1½ Hour **Max.Marks: 40**

PART – A (2x5 = 10 Marks)
[Short Answer Type]

Note: Answer any two of the following questions.

1 Mineral Policy

2 Indian Economy

3 Industrial Policy

4 Liberalization

PART – B (2x15 = 30 Marks)
[Essay Answer Type]

Note: Answer all the questions.

5 a) What is Environmental Degradation? Explain the various effects of Environmental Degradation.

OR

b) Explain the significance of Transport. State the various components of Indian Transportation.

6 a) Define the term Globalization. State the various advantages of Globalization.

OR

b) What do you mean by Unemployment? Explain the various types of Unemployment.

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Code No.8196

FACULTY OF SCIENCE

B.Sc. (CBCS) V - Semester Examination, November/December 2019

Subject: Computer Science (Information Technologies - 1)

Paper: V (GE-1)

Time: 1 ½ Hours **Max. Marks: 40**

Part – A (2x5 = 10 Marks)
Note: Answer ALL the following questions.

1. (a) Define a Computer with its functions? Draw and explain the parts of the computer.

OR

(b) What is a memory card? Write different types of memory cards.

2. (a) Explain different methods for acquiring computer software.

OR

(b) Discuss the evolution of Operating System.

Part – B (2x15 = 30 Marks)
Note: Answer ALL the following questions.

3. (a) Discuss different generations of computers with examples.

OR

(b) What is Hard Disk? Explain the procedure to store and retrieve data from Hard Disk.

4. (a) Explain the following with examples:
(i) System Software (ii) Application Software (iii) Firmware (iv) Middleware.

OR

(b) Define Operating System. Describe the functions of Operating System.

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Code No. 8205/E

FACULTY OF SCIENCE

B.Sc. (CBCS) V – Semester Examination, November / December 2019

SUBJECT : ELECTRONICS
(DSC) Paper - V
(Digital Electronics)

Time : 3 Hours **Max Marks : 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note : All the following FIVE question.

1. Find the decimal equivalent of binary number 1111
2. Explain the working of AND gate with its circuit diagram and truth table.
3. Prove the Boolean identity (A + B) (A + C) = A + BC
4. Explain the operation of a decoder
5. Explain working of R-S flip flop with diagrams and truth table.
6. Explain Ring Counter.
7. Explain the working of synchronous counter.
8. Differentiate between static and dynamic RAM.

PART – B (45 Marks)
(Essay Answer Type)

Note : All the following three question.

9. a. What is 2's complement of binary number? Explain the subtraction of binary numbers using 2's complement method. 11

OR

b. Draw the circuit diagram of Half adder and Full adder and give their truth tables.

10. a. Write and prove the De-Morgan theorems. 11

OR

b. Draw the circuit diagram of De-multiplexer and discuss its operation with help of truth tables

11. a. Describe the working of Master Slave JK flip flop with neat circuit diagram. 11

OR

b. Explain Universal shift register using IC 7496.

12. a. State the difference between ROM, PROM and EPROM. 12

OR

b. Explain working of ripple counter (IC7493) with truth table and timing diagrams.

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Code No. 8192

FACULTY OF SCIENCE

B.Sc. V – Semester (CBCS) Examination, November / December 2019

Subject: Statistics

Sampling Theory, Time Series, Index Numbers and Demand Analysis

Paper – V

Time: 3 Hours **Max.Marks: 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note: Answer any FIVE of the following questions. Each question carries 3 marks.

1 Write about principles of sampling
2 What is subjective sampling? Explain. Give an example.
3 Define stratified random sampling.
4 Explain about growth curves.
5 What are Index Numbers? State their uses.
6 Define the terms Demand, Supply and Price elasticity of demand.
7 Explain time reversal test.
8 Explain additive model of time series.

PART – B (3x15 = 45 Marks)
(Essay Answer Type)

Note: Answer all the following three questions. Each question carries 15 marks.

9 a) Where sampling and non-sampling errors. Write about sources of the same.

OR

b) In SRSWOR, show that sample mean square is an unbiased estimator for population mean square.

10 a) Define systematic sampling procedure. Prove that

$$v(\bar{y}_{sys}) = \frac{k-1}{nk} S^2_{wst} [1 + (n-1)\ \rho_{wst}]$$

OR

b) Explain link relatives procedure for determination of seasonal indicies.

11 a) Explain Pigou's method for estimating demand function, stating assumptions. Also mention its limitations.

OR

b) Explain base shifting, forward and backward splicing procedures with examples.

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Code No. 8170

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Chemistry

Paper – V (DSC)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any five of the following questions.

1 Cupric sulphate is blue on heating strongly it become colourless why? Explain.
2 What are boranes and carboranes? Give one example each.
3 What is Carbyl Amine reaction? Write its use.
4 How do you prepare diazonium salt? Write its equation.
5 What is half life period? A first order reaction is found to have rate constant K of 7.39×10^{-5} sec^{-1}. Calculate the half life period of the reaction.
6 What are consecutive reactions? Give one example.
7 Explain about batho chromic and hypso chromic shifts.
8 Define phosphorescence and fluorescence. Explain with diagram.

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Explain diagrammatically splitting pattern of d-orbitols in square planar complexes by taking one example. (11)

OR

(b) Explain the determination of magnetism moment (μ) of magnetic by Gouy's method Experimentally?

10 (a) Explain with mechanism of following reactions. (11)
(i) Bromination (ii) Nitration of Aromatic Amines

OR

(b) Explain the electrophilic substitution reactions of Furan, thiophene and pyrrole.

11 (a) What is a rate of reaction? Explain the factors influencing rate of reaction. (11)

OR

(b) How do you determine order of reaction by Ostwald's isolation methods.

12 (a) Explain the following photo chemical laws. (12)
(i) Grothus – Draper law
(ii) Stark Einstein's law of photochemical equivalence

OR

(b) Explain the modes of vibrations in poly atomic molecules by taking H_2O and CO_2 molecules as an example.

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Code No. 4127

FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT, SOCIAL SCIENCE

B.A, B.Com, B.B.A, B.Sc & B.S.W I-Year I-Semester Examination, November / December 2019

SUBJECT : TELUGU (Second Language)

Paper - I TELUGU (Second Language)

Time : 3 Hours **Max Marks : 80**

విభాగము - ఎ (4×5 = 20 మార్కులు)

సూచన : ఈ కింది వాటిలో ఏవైన **నాలుగు** ప్రశ్నలకు సమాధానాలు రాయండి.

1. కరకంఠ ఇంతయు మరువకుము - సందర్భవ్యాఖ్య
2. జీతమీక సుకవి సేవలందు - సందర్భవ్యాఖ్య
3. గురజాడ అప్పారావుగారి గురించి పరిచయం చేయండి.
4. కింది పదాలకు పర్యాయ పదాలు రాయండి.
   అ) వేలుపు ఆ) ధారుణి ఇ) శైలము ఈ) నయనము ఉ) తనయుడు
5. కింది పదాలకు నానార్థాలు రాయండి.
   అ) నరుడు ఆ) ధర ఇ) రాజు ఈ) కృషి ఉ) హరి
6. మదన మంజరి పాత్ర చిత్రణ

విభాగము - బి (4×15 = 60 మార్కులు)

అన్ని ప్రశ్నలకు సమాధానాలు రాయండి

7. కింది పద్యాలలో ఒకదానికి ప్రతిపదార్థ తాత్పర్య సహిత సమగ్ర వ్యాఖ్య రాయండి.

   ఎ) విపరీత ప్రతిభాషలేమిటికి నుర్వీనాథ యీ పుత్ర గా
   త్ర పరిష్వంగ సుఖము సేకొనుము ముక్తాహార కర్పూర సాం
   ద్ర పరాగ ప్రసరంబు జందనము జంద్రజ్యోత్స్న యుం బుత్ర గా
   త్ర పరిష్వంగమునట్లు జీవులకు హృద్యంబౌ కడు శీతమే

   లేదా

   బి) ఆనడబావిదండ గలయం జిగిరించిన దేవదారు శా
   ఖా నికరంబు క్రిందట నొకానొకచో కురువింద తీవ పూ
   బానుపుటింటిలోన వనపాలుర కెవ్వరికిన్నుడుంగగా
   రాని ప్రదేశమందున ధరాధిపుడొంటి సమాధి నిష్మడై

8. ఎ) గొడగూచి ముగ్ధభక్తిని వివరించండి.

   లేదా

   బి) శ్రీశ్రీ జయభేరి కవిత ద్వారా శ్రమ తత్వాన్ని వివరించండి.

9. ఎ) రుద్రమదేవి పాత్ర చిత్రణను విశ్లేషించండి.

   లేదా

   బి) రుద్రమదేవికి వ్యతిరేకంగా శత్రువులు పన్నిన వ్యూహాలు ఏవి? ఎలా భగ్నం చేయబడ్డాయి?

10. ఎ) కింది సంధులను లక్ష్య, లక్షణ సమన్వితంగా నిరూపించండి.
    అ) గుణసంధి ఆ) ఇకారసంధి ఇ) గసడవదవాదేశ సంధి

    లేదా

    బి) కింది సమాసాలను లక్ష్య, లక్షణ సమన్వితంగా నిరూపించండి.

    అ) సప్తమీ ఆ) ద్విగు

    ఇ) ఉపమాన పూర్వపద మరియు ఉత్తరపద కర్మధారయ సమాసాలు

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Code No. 8170

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Chemistry

Paper – V (DSC)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any five of the following questions.

1 Cupric sulphate is blue on heating strongly it become colourless why? Explain.
2 What are boranes and carboranes? Give one example each.
3 What is Carbyl Amine reaction? Write its use.
4 How do you prepare diazonium salt? Write its equation.
5 What is half life period? A first order reaction is found to have rate constant K of 7.39×10^{-5} sec^{-1}. Calculate the half life period of the reaction.
6 What are consecutive reactions? Give one example.
7 Explain about batho chromic and hypso chromic shifts.
8 Define phosphorescence and fluorescence. Explain with diagram.

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Explain diagrammatically splitting pattern of d-orbitols in square planar complexes by taking one example. (11)

OR

(b) Explain the determination of magnetism moment (μ) of magnetic by Gouy's method Experimentally?

10 (a) Explain with mechanism of following reactions. (11)
(i) Bromination (ii) Nitration of Aromatic Amines

OR

(b) Explain the electrophilic substitution reactions of Furan, thiophene and pyrrole.

11 (a) What is a rate of reaction? Explain the factors influencing rate of reaction. (11)

OR

(b) How do you determine order of reaction by Ostwald's isolation methods.

12 (a) Explain the following photo chemical laws. (12)
(i) Grothus – Draper law
(ii) Stark Einstein's law of photochemical equivalence

OR

(b) Explain the modes of vibrations in poly atomic molecules by taking H_2O and CO_2 molecules as an example.

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Code No. 8205/E

FACULTY OF SCIENCE

B.Sc. (CBCS) V – Semester Examination, November / December 2019

SUBJECT : ELECTRONICS
(DSC) Paper - V
(Digital Electronics)

Time : 3 Hours **Max Marks : 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note : All the following FIVE question.

1. Find the decimal equivalent of binary number 1111
2. Explain the working of AND gate with its circuit diagram and truth table.
3. Prove the Boolean identity (A + B) (A + C) = A + BC
4. Explain the operation of a decoder
5. Explain working of R-S flip flop with diagrams and truth table.
6. Explain Ring Counter.
7. Explain the working of synchronous counter.
8. Differentiate between static and dynamic RAM.

PART – B (45 Marks)
(Essay Answer Type)

Note : All the following three question.

9. a. What is 2's complement of binary number? Explain the subtraction of binary numbers using 2's complement method. 11

OR

b. Draw the circuit diagram of Half adder and Full adder and give their truth tables.

10. a. Write and prove the De-Morgan theorems. 11

OR

b. Draw the circuit diagram of De-multiplexer and discuss its operation with help of truth tables

11. a. Describe the working of Master Slave JK flip flop with neat circuit diagram. 11

OR

b. Explain Universal shift register using IC 7496.

12. a. State the difference between ROM, PROM and EPROM. 12

OR

b. Explain working of ripple counter (IC7493) with truth table and timing diagrams.

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Code No. 8192

FACULTY OF SCIENCE

B.Sc. V – Semester (CBCS) Examination, November / December 2019

Subject: Statistics

Sampling Theory, Time Series, Index Numbers and Demand Analysis

Paper – V

Time: 3 Hours **Max.Marks: 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note: Answer any FIVE of the following questions. Each question carries 3 marks.

1 Write about principles of sampling
2 What is subjective sampling? Explain. Give an example.
3 Define stratified random sampling.
4 Explain about growth curves.
5 What are Index Numbers? State their uses.
6 Define the terms Demand, Supply and Price elasticity of demand.
7 Explain time reversal test.
8 Explain additive model of time series.

PART – B (3x15 = 45 Marks)
(Essay Answer Type)

Note: Answer all the following three questions. Each question carries 15 marks.

9 a) Where sampling and non-sampling errors. Write about sources of the same.

OR

b) In SRSWOR, show that sample mean square is an unbiased estimator for population mean square.

10 a) Define systematic sampling procedure. Prove that

$$v(\bar{y}_{sys}) = \frac{k-1}{nk} S^2_{wst} [1 + (n-1)\ \rho_{wst}]$$

OR

b) Explain link relatives procedure for determination of seasonal indicies.

11 a) Explain Pigou's method for estimating demand function, stating assumptions. Also mention its limitations.

OR

b) Explain base shifting, forward and backward splicing procedures with examples.

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Code No. 8171/E

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Chemistry (Instrumental Methods of Analysis)

Paper – VI (A) (DSE E-1)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any five of the following questions.

1 What is continuous extraction? Give one example.
2 What is R_f value? What are the factors influencing R_f value?
3 List any five cation anion resins.
4 What is the basic difference between paper and column chromatography?
5 Define transmittance and absorbance.
6 What is difference between colorimetry and spectrophotometry.
7 What is the principle involved in potentiometry?
8 What is over potential?

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) What is the principle involved in solvent extraction? Explain counter current extraction method. (11)

OR

(b) How do you prepare ascending and descending chromatogram in paper chromatography?

10 (a) Explain the packing techniques in column chromatography (wet packing and dry packing) ? (11)

OR

(b) Write Beer Lambert's law and write its limitations.

11 (a) Draw the Block diagram of FT-IR spectrophotometer. (11)

OR

(b) How do you estimate iron in water sample by thio cyanate method?

12 (a) Write short note on : (12)
(i) Normal Hydrogen Electrode
(ii) Quin hydrone Electrode.

OR

(b) Write brief note on :
(i) Micro electrodes
(ii) Polarization

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Code No. 8206

FACULTY OF SCIENCE

B.Sc. (CBCS) V – Semester Examination, November / December 2019

SUBJECT : ELECTRONICS
(DSE E-1) Paper – VI (A)
(8085 Microprocessor and Applications)

Time :3 Hours **Max Marks : 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note : All the following FIVE question

1. What are the internal data operations of 8085 microprocessor?
2. Differentiate between maskable and non-maskable interrupts.
3. Explain the ANA and XRA instructions with example
4. What are nested subroutines?
5. Write an 8085 assembly language program for subtraction.
6. What are the flags effected when the following program is executed

```
MVI A, FFH
ADI 01 H
STA 8085
   HLT
```

7. Explain the features of 8212 (I/O Port)
8. What are the advantages of closed loop method of control process?

PART – B (45 Marks)
(Essay Answer Type)

Note : All the following three question.

9. a. Give the block diagram of 8085 microprocessor and explain its functions. 11

OR

b. What are the timing diagrams? Draw the timing diagram for memory read operation 3+8

10. a. Discuss the classification of an Intel 8085 instructions set. Illustrate your answer with suitable examples 3+8

OR

b. Explain in detail the different types of addressing modes in 8085 microprocessor 11

11. a. Write an algorithm to arrage any ten bytes in ascending order and implement the same using 8085 Assembly language Program 4+7

OR

b. Write an assembly language program to multiply two given Hex numbers. Explain the logic. 11

12. a. Explain the functioning and interfacing of 8255 Programmable Peripheral Interface with block diagram 12

OR

b. Explain the working of any one D/A converter 12

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Code No. 8193

FACULTY OF SCIENCE

B.Sc. V – Semester Examination, November / December 2019

Subject: Statistics

Statistical Quality Control and Reliability

Paper: VI – A (DSE E – 1)

Time: 3 Hours **Max.Marks: 60**

PART – A (5x3 = 15 Marks)
(Short Answer Type)

Note: Answer any FIVE of the following questions. Each question carries 3 marks.

1 Write the uses of statistical quality control.
2 What are the different types of variables? Explain.
3 Write about importance of SQC in industry.
4 List the applications of C-Chart.
5 Define Natural Tolerance Limits and Specification Limits.
6 Explain the terms:
  i) ASN
  ii) ATI
  iii) AOQL
7 Distinguish reliability and quality
8 Write about:
  i) Failure Density
  ii) Hazard Rate
  iii) Modes of Failure.

PART – B (3x15 = 45 Marks)
(Essay Answer Type)

Note: Answer all the following three questions. Each question carries 15 marks.

9 a) Define Statistical Quality Control. Explain the statistical basis for Shewart Control Charts.

OR

b) Explain interpretation of Mean and Standard Deviation Chart.

10 a) Derive modified control limits.

OR

b) Derive control limits for number of defects for 'n' units. Write interpretation of 'C' Chart.

11 a) Explain designing of double sampling plan and construction of its OC curve.

OR

b) Explain series and parallel configuration of a system and derive the reliabilities of the same.

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Code No. 9004/E

FACULTY OF SCIENCE

B.Sc. I-Semester (CBCS) Examination, November / December 2019

Subject : Chemistry

Paper – I

Time : 3 Hours **Max. Marks: 80**

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)
Note : Answer any EIGHT of the following questions.

1 Explain Fajan's rule with examples.
2 Explain the structure of Diborane.
3 Write the differences between Bonding and Anti-Bonding Molecular Orbitals (BMOs and ABMOs).
4 What is Inductive effect?
5 Explain Markonikoff's rule with mechanism.
6 Write a short note on Diels – Alder reaction with example.
7 Derive and explain de-Broglie's wave theorem.
8 Why gases deviates from ideal behaviour ? Explain.
9 Write about Raoults law.
10 Explain common ion effect with example.
11 Write the differences between enantiomers and diastereomers.
12 What is sodium carbonate extract?

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

13 (a) Draw MOED of NO. Explain the magnetic character and Bond order.

OR

(b) What are silicones? Explain the different types of silicones.

14 (a) What is Mesomeric effect? Explain the acidity of Phenol.

OR

(b) Explain Friedel-Crafts Alkylation and Acylation with mechanism and examples.

15 (a) Define surface tension and explain its determination by Stalagmometer.

OR

(b) Explain Joul-Thompson effect and liquification of gases by Linde's process.

16 (a) Explain Bayer-strain theory (BST).

OR

(b) Derive Bragg's equation.

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Code No. 9008

FACULTY OF SCIENCE

B.Sc. I – Semester (CBCS) Examination, November / December 2019

Subject: Statistics

Descriptive Statistics and Probability

Paper – I

Time: 3 Hours **Max.Marks: 80**

PART – A (8x4 = 32 Marks)
(Short Answer Type)

Note: Answer any EIGHT of the following questions.

1 Explain briefly the sources of secondary data.
2 Define Mode. Write its merits and demerits.
3 Write about Quartile Deviation.
4 Give Axiomatic definition of probability.
5 Define independent and complementary events.
6 Three students are selected at random one after another from a class consisting of 12 boys and 8 girls. Find the probability that the three students are selected are girls.
7 Define continuous random variable and probability mass function. Give an example.
8 A random variable X is normally distributed with mean μ and variance σ^2, then find the p.d.f of $Y=e^x$.
9 Define joint distribution function and state its properties.
10 State and prove addition theorem of expectation for two random variables.
11 Define moment generating function. State its properties.
12 Show that m.f.g. is independent of change of origin but not scale.

PART – B (4x12 = 48 Marks)
(Essay Answer Type)

Note: Answer all the following questions.

13 a) Define Non-Central moments and obtain expression for the same in terms of central moments.

OR

b) Write about measures of skewness and derive their limits.

14 a) State and prove Boole's inequalities.

OR

b) State and prove multiplication law of probabilities for 'n' events.

15 a) Explain transformation of one-dimensional random variable. Give an example.

OR

b) Define Bivariate distribution of continuous random variables. State its properties.

16 a) Define Mathematical Expectation. If four coins are tossed, find the expected value of number of heads and its variance.

OR

b) Define Chebyshev's inequalities and write its applications.

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Code No. 8071

FACULTY OF SCIENCE

B.Sc. III – Semester (CBCS) Examination, November / December 2019

Subject: Statistics
Statistical Methods
Paper – III (DSC)

Time: 3 Hours **Max.Marks: 80**

PART – A (5x4 = 20 Marks)
(Short Answer Type)

Note: Answer any FIVE of the following questions.

1 What is scatter diagram? Show different types of correlations using scatter diagram.
2 Explain why two lines of regression exist.
3 Define partial association. Give the formulae for computation of partial association.
4 Define:
a) Attributes
b) Positive Association
c) Negative association
d) Independence of attributes
5 Define: a) Unbiasedness
b) Consistency
Give one example for each.
6 Define sampling distribution and standard error.
7 Write about Interval estimation.
8 Explain estimation by method of moments.

PART – B (4x15 = 60 Marks)
(Essay Answer Type)

Note: Answer all questions.

9 a) Derive the normal equations for fitting of a curve of the form:
i) $Y = ab^x$ ii) $Y = ae^{bx}$

OR

b) Derive the regression equation of X on Y.

10 a) i) Define multiple correlation for three variables and give the formulae for the same.
ii) Calculate $R_{1.23}$, $R_{2.13}$ and $R_{3.12}$ if $\gamma_{12} = 0.6$; $\gamma_{13} = 0.7$; $\gamma_{23} = 0.65$.

OR

b) i) Define consistency of data. Give the conditions for consistency of three attributes.
ii) If (A) = 450, (B) = 650; (AB) = 310, N = 1000. Find whether A and B are independent or associated.

11 a) Define Chi-square Distribution. Derive the relationship between F and Chi-square distributions.

OR

b) Let $x_1, x_2, \ldots, x_n$ be a random sample from normal population with mean μ and variance σ^2. Show that sample mean is an unbiased estimator of population mean and sample variance is not an unbiased estimator of population variance.

12 a) State Neyman Factorization Theorem. Find a sufficient estimator to the parameter λ in Poisson distribution based on a random sample of size 'n' from the same.

OR

b) Explain the method of maximum likelihood estimation. Obtain MLE for θ in exponential distribution based on a random sample $x_1, x_2, \ldots, x_n$ from the same.

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Code No. 8066/E

FACULTY OF SCIENCE

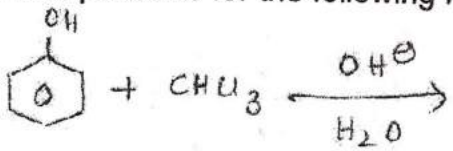
B.Sc. III-Semester (CBCS) Examination, November / December 2019

Subject : Chemistry (DSC)
Paper – III

Time : 3 Hours **Max. Marks: 80**

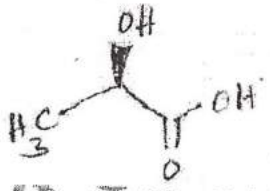
PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

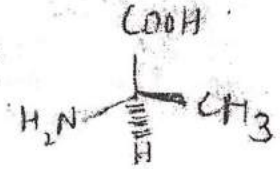
1 What is Lathanide contraction and write its consequences?
2 Write a note on alkali metals in ammonia.
3 Mention the products for the following reactions.

(a) 

(b) 

4 State Williamson's synthesis and give its reaction.
5 Write a short note on triple point of water system.
6 What is Hardy-Schultz law? Explain.
7 What are fullerenes? Give two examples.
8 Write the absolute configuration (R, S – configuration of the following compounds).

(a) 

(b) 

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Explain how lanthanides are separated by solvent extraction method and ion exchange method.

OR

(b) Define symmetry and explain the types of symmetry by taking an example

10 (a) Write the mechanism for (i) Aldol condensation (ii) Cannizaro reaction

OR

(b) Explain the following test :
(i) 2, 4, - DNP test (ii) Tollen's test (iii) Schiff's test

11 (a) State the Gibb's phase rule and explain lead-silver system.

OR

(b) Explain physical adsorption and chemical adsorption and write Freundlich adsorption isotherm equation and its logarithmic form.

12 (a) What are nanomaterials and explain the applications of Nanomaterials.

OR

(b) Draw different conformations of n-butane and explain the order of stability of various conformers.

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Code No. 8165/E

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Physics (Electromagnetism)

Paper – V (DSC)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any five of the following questions.

1 Define Electric Field and Electric flux.
2 What is electric potential ? Explain.
3 What are the applications of Ampere's law?
4 Explain electromagnetic damping.
5 What do you mean by displacement current?
6 What is mutual inductance? In what units it is expressed?
7 Define the polarization of EM waves.
8 Write down the Maxwell's equations in dielectric medium.

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Define Gauss law. Explain the linear, plane and spherical charge distributions.

OR

(b) Define an electric potential. Derive an expression for electric potential from electric field for a spherical charge distribution.

10 (a) State and prove Biot-Savart's law. Write the applications of Biot-Savart's law.

OR

(b) Explain the working principle and construction of ballistic galvanometer.

11 (a) Define Len'z law. Explain the four Maxwell equations.

OR

(b) Explain self and mutual induction. Derive the continuity equation.

12 (a) Obtain an expressions for reflection, transmission and Brewster's angle of electromagnetic waves.

OR

(b) Explain linear, circular, elliptical polarization of EM waves. And what are the applications of its ?

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Code No. 8064/E

FACULTY OF SCIENCE

B.Sc. III-Semester (CBCS) Examination, November / December 2019

Subject : Physics (Thermodynamics)

Paper – III (DSC)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 On the basis of kinetic theory of gases, derive an equation for Diffusion coefficient of gases.
2 Calculate the change in entropy when ice changes into steam.
3 What are thermodynamic potentials? Explain.
4 The Vander waal's constants a and b for one mole of a gas are 0.245 atms-litre^2/mole^2 and 2.67x10^{-2} litre/mole. Find the temperature of inversion. (Given R = 8.31 joule/mol-K).
5 Distinguish between classical and quantum statistical mechanics.
6 Distinguish between Fermi-Dirac and Bose-Einstein statistics.
7 Find the wavelength associated with maximum radiation density from a black body maintained at 1000^0 K. (Given b = 2.92x10^{-3}mk)
8 What are different types of Pyrometers? Explain the working principle.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) On the basis of kinetic theory of gases, derive an equation for coefficient of viscosity of gases.

OR

(b) Explain the temperature - entropy diagram. What are its uses? Obtain an equation for the efficiency of a Carnot's engine using T-S diagram?

10 (a) Derive an expression for Joule-Kelvin coefficient for a perfect gas.

OR

(b) Discuss in detail about the method of production of low temperature, using adiabatic demagnetization.

11 (a) Discuss the assumptions of Planck's theory and deduce an expression for Planck's equation for a black body.

OR

(b) Describe the disappearing filament optical pyrometer and explain with a neat diagram to determine the temperature of a hot body.

12 (a) State and explain Fermi-Dirac distribution law and apply it to electron gas to get electron energy distribution n(ε).

OR

(b) What is phase space and explain the Maxwell-Boltzmann statistics and derive the Maxwell - Boltzmann distribution law?

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Code No. 8064/E

FACULTY OF SCIENCE

B.Sc. III-Semester (CBCS) Examination, November / December 2019

Subject : Physics (Thermodynamics)

Paper – III (DSC)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 On the basis of kinetic theory of gases, derive an equation for Diffusion coefficient of gases.
2 Calculate the change in entropy when ice changes into steam.
3 What are thermodynamic potentials? Explain.
4 The Vander waal's constants a and b for one mole of a gas are 0.245 atms-litre^2/mole^2 and 2.67×10^{-2} litre/mole. Find the temperature of inversion. (Given R = 8.31 joule/mol-K).
5 Distinguish between classical and quantum statistical mechanics.
6 Distinguish between Fermi-Dirac and Bose-Einstein statistics.
7 Find the wavelength associated with maximum radiation density from a black body maintained at 1000^0 K. (Given b = 2.92×10^{-3}mk)
8 What are different types of Pyrometers? Explain the working principle.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) On the basis of kinetic theory of gases, derive an equation for coefficient of viscosity of gases.

OR

(b) Explain the temperature - entropy diagram. What are its uses? Obtain an equation for the efficiency of a Carnot's engine using T-S diagram?

10 (a) Derive an expression for Joule-Kelvin coefficient for a perfect gas.

OR

(b) Discuss in detail about the method of production of low temperature, using adiabatic demagnetization.

11 (a) Discuss the assumptions of Planck's theory and deduce an expression for Planck's equation for a black body.

OR

(b) Describe the disappearing filament optical pyrometer and explain with a neat diagram to determine the temperature of a hot body.

12 (a) State and explain Fermi-Dirac distribution law and apply it to electron gas to get electron energy distribution n(ε).

OR

(b) What is phase space and explain the Maxwell-Boltzmann statistics and derive the Maxwell - Boltzmann distribution law?

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Code No. 8166

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Physics (Solid State Physics)

Paper – VI (A) (DSE) (E – I)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)

Note : Answer any five of the following questions.

1 Find the Miller indices of a plane having intercepts of 8a, 4b and 2c on the a, b ,c axes respectively.
2 What do you mean by lattice vibration and phonon?
3 Write a short note on antiferromagnetism.
4 What do you meant by electronic polarisability? Write the expression for the electronic poalrisability.
5 Write a note on extrinsic semi conductors.
6 Obtain an expression for potential energy of dipole in electric field.
7 Explain population inversion.
8 The critical field for Niobium is 1×10^4 A/m at 8K and 2×10^5 A/m at 0 K. Calculate the transition temperature of the element.

PART – B (45 Marks)
(Essay Answer Type)

Note: Answer ALL from the questions.

9 (a) Derive Bragg's Law of diffraction of X-rays by crystals. (11)
(b) Write a note on Brillouin Zone.

OR

(c) Describe Einstein model of lattice heat capacity. Discuss the success and failures of this theory.

10 (a) Describe in detail Langevin's theory of paramagnetism. Obtain expressions for volume and molecular susceptibilities. (11)

OR

(b) State the different contributions to the total polarisability of a dielectric material.
(c) Discuss the Clausius – Mosotti equation for an isotopic dielectric.

11 (a) Using Kronig – Penny model, show that the energy spectrum of an electron consists of a number of allowed energy bands separated by forbidden regions. (11)

OR

(b) Explain Hall effect. Obtain an expression for the Hall coefficient.
(c) Mention the applications of Hall effect.

12 (a) Explain Einstein coefficients for absorption and emission. (12)
(b) Describe the construction and working of He-Ne Laser.

OR

(c) Explain Meissner effect.
(d) What are type-I and type-II superconductors? Distinguish between them.

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Code No. 8073 / E

FACULTY OF SCIENCE

B.Sc. III-Semester (CBCS) Examination, November / December 2019

Subject : Mathematics (Real Analysis)
Paper – III (DSC)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Find $\lim_{n\to\infty} s_n$, where $s_n = \sqrt{n^2+1} - n$.

2 Prove that every convergent sequence is a Cauchy sequence.

3 Find the set of subsequential limits of the sequence $\{a_n\}$ where $a_n = \sin\left(\frac{n\pi}{3}\right)$.

4 Test the convergence of the series $\sum \frac{n}{n^2+3}$.

5 Find the interval of convergence of the series $\sum \frac{x^n}{n^2}$.

6 Define the uniform convergence of a sequence of functions.

7 If f is a bounded function on [a, b], prove that L(f) ≤ U(f) under usual notations.

8 Prove that every continuous function f on [a, b] is integrable.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

9 (a) Prove that :

(i) $\lim_{n\to\infty}\left(n^{\frac{1}{n}}\right) = 1$ (ii) $\lim_{n\to\infty}\left(a^{\frac{1}{n}}\right) = 1$ for a > 0.

OR

(b) Let (s_n) be a sequence in **R**. If lim s_n is defined (as a real number or + ∞ or - ∞), then prove that lim sup s_n = lim s_n = lim inf s_n.

10 (a) If (s_n) converges to a positive real number s and (t_n) is any sequence then prove that lim sup $s_n t_n$ = s. lim sup t_n.

OR

(b) State and prove the comparison test.

11 (a) Show that if the series Σg_n converges uniformly on a set S, then $\lim_{n\to\infty} \sup\{|g_n(x)| : x \in S\} = 0$.

OR

(b) Let $f_n(x) = n^2 x^n (1-x)$ *for* $x \in [0,1]$. Then prove that the sequence does not converge uniformly on [0, 1].

12 (a) Prove that a bonaded function f on [a, b] is integrable if and only if for each ∈ > 0 there exists a partition P of [a, b] such that U(f, p) – L(f, p) < ∈

OR

(b) If f is integralbe on [a, b] , then prove that | f | is integrable on [a, b] and $\left|\int_a^b f\right| \le \int_a^b |f|$.

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Code No.9009

FACULTY OF SCIENCE

B.Sc. (CBCS) I - Semester Examination, November/December 2019

Subject: Computer Science (Programming in C)

Paper: I

Time: 3 Hours **Max. Marks: 80**

Part – A (8x4 = 32 Marks)
(Short Answer Type)
Note: Answer any EIGHT of the following questions.

1. Define Computer. Explain its parts.
2. What is an algorithm? Write an algorithm to find greatest of two numbers.
3. Describe expression evaluation precedence and associativity with an example.
4. Write about escape sequences with its purpose.
5. Write a program to demonstrate conditional operator.
6. Explain the functions from ctype.h.
7. Write a program to implement CALL BY REFERENCE.
8. What is Inline function in C? Write the advantages of Inline functions.
9. Define a pointer. Write the advantages of pointers.
10. What is a structure? How to create a structure?
11. Explain various operations on files.
12. What is a Binary file? Write its advantages.

Part – B (4x12 = 48 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

13. (a) Discuss: (i) Types of computers (ii) C variables and constants.

OR

(b) Describe different data types with examples and programs for each.

14. (a) Explain all iterative statements with programs and illustrations for each.

OR

(b) Define and represent multidimensional Array. Write a program to add two matrices.

15. (a) Explain different storage classes with purpose, scope and program for each.

OR

(b) Explain Direct Memory Access. Describe CALLOC( ) and MALLOC( ) functions with a program.

16. (a) What is a Union? Explain Union declaration and initialization and accessing with examples and programs.

OR

(b) What is a text file? Write a C program to create, write and read data from the file.

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Code No.8078

FACULTY OF SCIENCE

B.Sc. (CBCS) III - Semester Examination, November/December 2019

Subject: Computer Science (Data Structures)
Paper: III (DSC)

Time: 3 Hours **Max. Marks: 80**

Part – A (5x4 = 20 Marks)
(Short Answer Type)
Note: Answer any FIVE of the following questions.

1. Define data structure and describe the types of data structure.
2. What is stack? List out applications of stack.
3. Why linked list is called dynamic data structure? What are the advantages of using linked list over arrays?
4. Describe execution of recursive calls with example.
5. What are the binary tree applications?
6. Define graph and explain graph representation.
7. Write a program for sequential search.
8. What is heap? Explain heap construction process?

Part – B (4x15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

9. (a) (i) What is an array and explain its advantages and disadvantages?
   (ii) Explain memory representation and address calculation of 1-D and d-D arrays.

   OR

   (b) Write a program to implement the stack abstract data type using an array.

10. (a) (i) What is recursion and write an example for recursion?
    (ii) What is queue? And explain about circular queue and double ended queue.

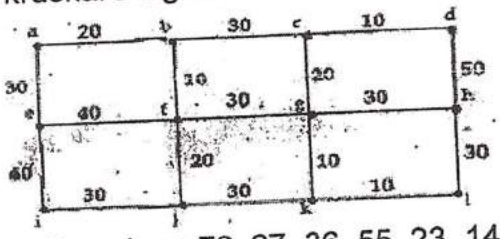
    OR

    (b) Write a program to create a double linked list insert, delete and search for an element operations.

11. (a) (i) Define the binary tree and explain its properties. Explain the binary tree traversal techniques with example.
    (ii) Write a program to travel binary tree in pre-order, post-order and in-order.

    OR

    (b) What is spanning tree and minimum spanning tree? Construct minimum spanning tree using kruskal's algorithm.



12. (a) (i) Sort the given list of numbers 76, 67, 36, 55, 23, 14, 6 using insertion sort.
    (ii) Write a program for sorting the numbers in ascending order using bubble sort.

    OR

    (b) Explain the merge sort technique and write a program for sorting the numbers in ascending order using merge sort.

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Code No.8078

FACULTY OF SCIENCE

B.Sc. (CBCS) III - Semester Examination, November/December 2019

Subject: Computer Science (Data Structures)
Paper: III (DSC)

Time: 3 Hours **Max. Marks: 80**

Part – A (5x4 = 20 Marks)
(Short Answer Type)
Note: Answer any FIVE of the following questions.

1. Define data structure and describe the types of data structure.
2. What is stack? List out applications of stack.
3. Why linked list is called dynamic data structure? What are the advantages of using linked list over arrays?
4. Describe execution of recursive calls with example.
5. What are the binary tree applications?
6. Define graph and explain graph representation.
7. Write a program for sequential search.
8. What is heap? Explain heap construction process?

Part – B (4x15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL the following questions.

9. (a) (i) What is an array and explain its advantages and disadvantages?
   (ii) Explain memory representation and address calculation of 1-D and d-D arrays.

   OR

   (b) Write a program to implement the stack abstract data type using an array.

10. (a) (i) What is recursion and write an example for recursion?
    (ii) What is queue? And explain about circular queue and double ended queue.

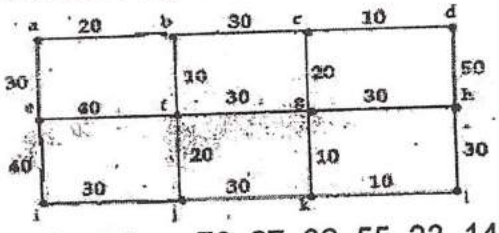
    OR

    (b) Write a program to create a double linked list insert, delete and search for an element operations.

11. (a) (i) Define the binary tree and explain its properties. Explain the binary tree traversal techniques with example.
    (ii) Write a program to travel binary tree in pre-order, post-order and in-order.

    OR

    (b) What is spanning tree and minimum spanning tree? Construct minimum spanning tree using kruskal's algorithm.



12. (a) (i) Sort the given list of numbers 76, 67, 36, 55, 23, 14, 6 using insertion sort.
    (ii) Write a program for sorting the numbers in ascending order using bubble sort.

    OR

    (b) Explain the merge sort technique and write a program for sorting the numbers in ascending order using merge sort.

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Code No. 3010

FACULTY OF SCIENCE

B.Sc. I – Semester (CBCS) Examination, May / June 2019

Subject : ELECTRONICS (Circuit Analysis)

Paper – I

Time : 3 hours **Max. Marks : 80**

Part – A (5 X 4 = 20 Marks)

(Short Answer Type)

Note : Answer any Five of the following questions.

1 Explain what is phase difference between two alternating quantities and thus explain lead and lag in phase.
2 Distinguish between a constant voltage source and a constant current source.
3 State the Norton's theorem.
4 A battery of 1.5 volts is connected in series with resistance of 20Ω and 30Ω. Find out the equivalent voltage across the points of 30Ω resistance and the equivalent resistance in the circuit.
5 What is a filter? Mention the different types of filters.
6 Draw a circuit diagram of a differentiator with input and output waveforms.
7 A series LCR circuit has Q = 120 at resonance, a capacitor with C = 200 PF is connected in series with an inductor with L = 150 μH. Calculate its bandwidth.
8 What are the different parts of electron gun in a CRT?

Part – B (4 X 15 = 60 Marks)

(Essay Answer Type)

Note : Answer all from the following questions.

9 a) What is j operator? Obtain the expression for complex impedance and admittance for a circuit containing resistor, inductor and capacitor.

OR

b) State and explain the Kirchhoff's laws with an example for each. Explain their application to the network containing single dc source by loop current method.

10 a) State and prove the maximum power transfer theorem.

OR

b) State and prove the superposition theorem for a general network.

11 a) Explain the transient response of an RL circuit with step input and thus obtain the expression for the time constant.

OR

b) What is a high pass filter? Derive the expression for cutoff frequency for high pass filter with neat diagrams and give its uses.

12 a) Define half power points, bandwidth and resonance frequency of a series LCR circuit and find the relation between Q, bandwidth and resonance frequency.

OR

b) Define magnetic deflection sensitivity in a CRO and derive its expression.

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Code No. 3195 / BL

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, June / July 2019

Subject : Computer Science (F : Computer Organization)

Paper – V (SEC – 3)

Time : 1½ Hours **Max. Marks: 40**

Note: Answer all questions from Part – A and Part-B.
Each question carries 5 marks in Part – A and 15 marks in Part – B.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Explain edge triggered D flip flop with neat diagrams.

OR

(b) Discuss 4-bit Register with circuit diagram.

2 (a) Explain Excess – 3 code converter with circuit diagram and truth table.

OR

(b) Draw and explain Binary Subtractor.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) Explain SR and JK flip flops in detail with Truth Tables and Circuit Diagrams.

OR

(b) Describe the construction of 4-Binary Counter with timing diagram, circuit diagram and truth table.

4 (a) What is binary multiplier? Explain its design and working.

OR

(b) Explain the design and implementation of 4-bit serial Adder with Accumulator.

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Code No. 3326

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Computer Science : (H : Information Security)

Paper – VII (SEC – 4)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Explain about information assurance.

OR

(b) Explain about security threats to E-Commerce.

2 (a) Explain about smart cards.

OR

(b) Explain about objectives and scope of the IT Act, 2000.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) Define data security. Explain about uses of cyber security.

OR

(b) Explain in detail about application security and counter measures.

4 (a) Explain about Information security Governance and Risk management.

OR

(b) Explain overview of Intellectual Property Related legislation in India.

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1059-17-468-026

Code No. 3125

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Computer Applications

Paper – IV : (SEC – 2 (D : Digital Logic)

Time : 11/2 Hours **Max. Marks: 40**

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1. a) Define Implicant, Prime Implicant and Essential Implicant. Give the Implicant, Prime implicant and Essential Implicant of 4 – variable Boolean function.

$$f(A,B,C,D)= \Sigma m (0, 2, 4, 5, 6, 7, 8, m 10, 13, 15)$$

OR

b) Draw the NAND – NAND and NOR – NOR implementations of the following Boolean functions.

$$f(A,B,C) = \Sigma m (1, 3, 5, 6)$$

2. a) Explain the Hazards occurring in combinational Logic Circuits in detail.

OR

b) Draw the 4:1 Multiplexer using logic gates and explain how it is simulated and tested.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)
Note: Answer ALL the questions.

3. (a) Discuss the rules of Karnaugh Map to simplify the 4 – variable Boolean function and draw the logic diagram using logic gates.

$$f(A,B,C,D)=\Sigma m (1, 3, 4, 5, 8, 9, 10, 11, 12, 13)$$

OR

(b) Discuss the conversion of alternative Gate implementations for NAND – NAND and NOR – NOR implementation in detail with suitable example.

4. (a) Explain the concept constructing of Logic Circuits with limited Gate Fan – In, Gate Delays with trimming diagrams in detail with suitable example.

OR

(b) Explain Three – State buffers with suitable circuit and Explain 4:1 Multiplexer with neat logic diagram.

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1059164671O1

Code No. 3182/E/BL

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – V : (E : Probability and Statistics) **(SEC – 3)**

Time : 1½ Hours **Max. Marks: 40**

Note: Answer all questions from Part – A and Part-B.
Each question carries 5 marks in Part – A and 15 marks in Part – B.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) If a random variable x is uniformly distributed over (0, 10) then find the probability that (i) $x < 3$ (ii) $1 < x < 6$.

OR

(b) Find E(X) where X is the outcome when a fair die is rolled.

2 (a) If X_1 and X_2 are independent binomial random variables with respective parameters (n_1, p) and (n_2, p). Evaluate the conditional probability mass function of X_1 given that $X_1 + X_2 = m$.

OR

(b) Suppose X and Y are random variables and the joint density of X and Y is given by

$$f(x,y) = \begin{cases} 6xy(2-x-y) & if \quad 0<x<1, \quad 0<y<1 \\ 0 & otherwise \end{cases}$$

Determine $f_{X/Y}(x/y)$

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) Calculate E(x) when x is binomially distributed with parameters n and p.

OR

(b) Prove that the mean and the variance of the Poisson distribution are equal.

4 (a) The joint density of X and Y is given by

$$f(x,y) = \begin{cases} \frac{1}{2} y e^{-xy} & if \quad 0<x<\infty, \quad 0<y<2 \\ 0 & otherwise \end{cases}$$

Find $E\left[e^{\frac{X}{2}} \mid Y=1\right]$

OR

(b) The joint density of X and Y is given by

$$f(x,y) = \begin{cases} \frac{e^{-y}}{y} & if \quad 0<x<y, \quad 0<y<\infty \end{cases}$$

Find $E\left[X^2 \mid Y=y\right]$

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1059-17-467-092

Code No. 3119/E

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – IV (SE – 2) : (Transportation and Game Theory)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)

(Short Answer Type)

1 (a) Write the mathematical formulation of Transportation problem.

OR

(b) What is an assignment problem? Explain with a suitable example.

2 (a) What is a game in game theory? What are the properties of a game?

OR

(b) Explain Maxi-Min and Mini-Max principal used in Game theory.

PART – B (2 x 15 = 30 Marks)

(Essay Answer Type)

3 (a) Solve the following transportation problem using Modi method.

	D_1	D_2	D_3	Availability
O_1	2	4	1	40
O_2	6	3	2	50
O_3	4	5	6	20
O_4	3	2	1	30
O_5	5	2	5	10
Demand	50	60	40	150

OR

(b) Find the minimax cost solution for the following 5 x 5 assignment problem.

	1	2	3	4	5
1	−2	−4	−8	−6	−1
2	0	−9	−5	−5	−4
3	−3	−8	−9	−2	−6
4	−4	−3	−1	0	−3
5	−9	−5	−8	−9	−5

4 (a) Solve the following 2 x 5 game graphically

	B_1	B_2	B_3	B_4	B_5
A_1	-2	-5	0	-3	1
A_2	5	3	-2	0	-4

OR

(b) Solve the following 3 x 3 game by linear programming.

Player - B

$$\text{Player - A} \begin{bmatrix} 1 & -1 & -1 \\ -1 & -1 & 3 \\ -1 & 2 & -1 \end{bmatrix}$$

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1059-17-468-026

Code No. 3113/E

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Physics

Paper – IV : (Optics) (DSC)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Explain the conditions for sustainable interference of light.
2 The diameter of a one of the dark ring in the Newton's rings experiment is 6mm. Find the diameter of same ring when the experiment is conducted in the liquid of refractive index is 1.5.
3 Define zone plate and explain the construction of a zone plate.
4 Find the possible order of diffraction with a grating of element 0.12×10^{-5}m and wavelength is 6000Å.
5 Define polarized light, plane, circularly and elliptically polarized light.
6 Find the thickness of a birefringent crystal, which introduces a phase difference of 60^{o} between e and 0-rays (μ_e=1.553, μ_o=1.544 and λ=5400 Å).
7 The combination of two thin lenses separated by a distance is used to satisfy the chromatic aberration and minimum spherical aberration. This combination has focal length 50 cm. Then find the focal length of lenses.
8 What is an aberration? Mention different types of aberrations.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Explain the action of a biprism and describe how wavelength of a given light is determined by using biprism experiment.

OR

(b) Describe the working of a Michelson interferometer and obtain an expression to determine the difference of two neighbouring wavelengths.

10 (a) Explain the Fraunchofer diffraction at single slit and derive an equation for the intensity diffraction pattern.

OR

(b) Discuss Freshel diffraction at straight edge and discuss the condition for maxima and minima intensity.

11 (a) Explain various methods to produce the plane polarized light.

OR

(b) What is a waveplate? Mention the types of waveplates and explain the working of waveplates.

12 (a) Define chromatic aberration and obtain the expression for chromatic aberration for an object at infinity distance.

OR

(b) Classify the optical fibers based on the refractive indices of core and cladding. Explain the advantages of optical fibers in communications.

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1059-18-474-[redacted]

Code No. 3036/E

FACULTY OF SCIENCE

B.Sc. II-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – II : (Differential Equations)

Time : 3 Hours Max. Marks: 80

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Solve $(1 + e^{x/y})\,dx + e^{x/y}(1 - x/y)\,dy = 0$

2 Solve $x^2p^2 + xyp - 6y^2 = 0$

3 Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = 0$ with y = 0, x = 0 and $\frac{dy}{dx} = 0$.

4 Solve $(D^4 - 1)y = \sin x$.

5 Solve $(D^2 - 3D + 2)\,y = \text{sine}^{-x}$ using variation of parameters.

6 Solve $x^2y'' - xy' + y = 0$ given $y_1 = x$ as a solution.

7 Form a partial differential Equation from $z = f(x^2 + y^2)$ eliminating arbitrary function f.

8 Solve $(y - z)\,p + (x - y)q = z - x$.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Show that the necessary and sufficient condition for the differential equation Mdx + Ndy = 0 to be exact is that $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$

OR

(b) Solve $y + px = x^4p^2$

10 (a) Solve $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = x\cos x$

OR

(b) Solve $(D^2 - 2D + 1)\,y = e^x x^2$.

11 (a) Solve $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} - 3y = x^2\log x$

OR

(b) Use method of undetermined coefficients to solve $(D^2 - 3D + 2)y = 2x^2 + 3e^{2x}$.

12 (a) Solve $(x^2 - y^2 - z^2)p + 2xyq = 2xz$.

OR

(b) Integrate and hence obtain a solution of $\frac{\partial^3 z}{\partial x^2 \partial y} + 18xy^2 + \sin(2x - y) = 0$

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Code No. 3318/E

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – VIII (B) (DSE E-2) : (Vector Calculus)

1059-16-474-088

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 If $\vec{F} = (y, x, z)$ and C is the curve given by $x = \cos\theta, \quad \sin\theta, \quad z = 0, \ (0 \le \theta \le 2\pi)$ then evaluate $\int_C \vec{F} \cdot d\vec{r}$

2 Define conservative vector field with example.

3 Show that $\int_0^a \int_0^{b(1-x/a)} \int_0^{c(1-x/a-y/b)} dz\, dy\, dx = \frac{abc}{6}$.

4 Find the angle between the surfaces of the sphere $x^2 + y^2 + z^2 = 2$ and the cylinder $x^2 + y^2 = 1$ at a point where they intersect.

5 If $\vec{f} = grad\,(x^3 + y^3 + z^3 - 3xyz)$ find curl $\vec{f}$.

6 Find unit normal to the surface $y = x + z^3$ at the point (1, 2, 1).

7 Give the physical interpretation of curl.

8 Show that culr (grad ϕ)= $\vec{0}$ if ϕ is a scalar field.

PART – B (3 x 15 = 45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Evaluate the surface integral of u=(y , x^2 , z^2) over the surface S where S is the triangular surface on x = 0 with $y \ge 0$, $z \ge 0$, $y + z \le 1$, with the normal $\vec{n}$ directed in the positive direction of x – axis.

OR

(b) Evaluate the line integral $\int_C \vec{F} \times d\vec{r}$ where is the vector field (y, x, 0) and C is the curve y = sin x, z = 0 between x = 0 and x = π.

10 (a) A cube has a variable density given by p = 1 + x + y + z. What is the total mass of the cube?

OR

(b) Find the volume integral of the scalar field $\phi = x^2 + y^2 + z^2$ over the region V specified by $0 \le x \le 1$, $1 \le y \le 2$, $0 \le z \le 3$.

11 (a) Show that

$$\vec{u} = (y^2 z, -z^2 \sin y + 2xyz, \quad 2z\cos y + y^2 x)$$

is irrotational. Find the corresponding potential function.

OR

(b) Find the gradient and Laplacian of $\phi = \sin(K_x)\sin(\ell y)\exp(\sqrt{K^2 + \ell^2}\, Z)$.

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Code No. 3337

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Electronics

Paper – VIII-A : 8051 Microcontroller and Applications (DSE E-1)

1059-16-494-088

Time : 3 Hours

Max. Marks: 60

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 What are SFR registers?
2 Give the data directives used in 8051 µC.
3 Differentiate between short jump and long jump instructions.
4 Explain how stack is implemented in 8051 µC?
5 Write an ALP to divide any two given numbers.
6 What will be the continuous output at port-0 after the execution of the following program

```
MOV A, #55H
BACK: MOV PI, A
ACALL DELAY
CPL A
SJMP BACK
```

7 Give the structure of SCON register.
8 Draw the matrix of a key board.

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL the questions.

9 (a) Explain the architecture of Intel 8051 Microcontroller with block diagram. 11M

OR

(b) Explain the port organization of 8051 µC, in detail. 11M

10 (a) List and explain the various addressing modes used in 8051 µC, with suitable examples. 8M
What are the addressing modes used in the following instructions 3M
i) MOV A, #42 ii) MOV A, R5 iii) MOV A, @R0

OR

(b) List and explain the various type of instructions, used in 8051 µC with suitable examples. 11M

11 (a) Write an assembly language program to find out the largest number among the given I10 numbers. 11M

OR

(b) Give TMOD and TCON registers. Assume that XTAL = 11.0592 MHz. What value do we need to load in the timer's register if we want to have a time delay of 5 ms. 4+4+3M

12 (a) Give different types of serial communication. What are RS232 standards. 6+6M

OR

(b) Explain the interfacing of ADC 0804 to 8051 µC.

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1059-17-474-051

Code No. 3129

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Electronics

Paper – IV : Linear integrated Circuits and Basics of Communication (DSC)

Time : 3 Hours | Max. Marks: 80

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Give Ideal characteristics and OP-Amplifer.
2 Explain how voltage regulation can be achieved using OP-Amp?
3 Explain different types of modulation methods.
4 Write about PAM & PCM.
5 Describe how an Op-Amp can be used as Inverting Amplifier?
6 Draw the circuit of Astable multi vibrator using IC-555.
7 Discuss the need for modulation and define Modulation Index.
8 Discuss the operation of FM discriminator.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL the questions.

9 (a) Explain the working of OP-Amp as (i) Comparator, (ii) Differentiator and (iii) Integrator

OR

(b) Draw the circuit diagram of Summing amplifier using OP-Amp and explain its working, drive an expression for its output voltage.

10 (a) Explain the working of Wien Bridge Oscillator with circuit diagram and obtain an expression for its frequency.

OR

(b) Describe analog computation circuit using OP-Amp to Solve Simple Second order differential equation with an example.

11 (a) Define amplitude Modulation and obtain an expression for Amplitude modulated wave.

OR

(b) What is dc modulation? Explain the working of Diode detector for AM waves.

12 (a) Draw the block diagram of FM receiver. How does it differ from AM receiver.

OR

(b) Explain frequency modulation (FM) and give the analysis of FM modulated wave.

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Code No. 3336

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Electronics

1059-16-474-088

Paper – VII (DSC) : (Digital Communication)

Max. Marks: 60

Time : 3 Hours

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Differentiate between random signals and noise.
2 State and explain sampling theorem.
3 Define Amplitude modulation. Discuss about modulation Index.
4 What is PPM? Explain briefly.
5 What is meant by parity? Discuss X-OR gate as parity checker.
6 Explain Manchester coding.
7 Explain briefly about paging system.
8 Explain the need of SIM card in cell phones.

PART – B (45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Define Fourier transform. Discuss in detail all the properties of Fourier transforms.

OR

(b) Distinguish between fourier transform and complex fourier transform.

10 (a) Describe any one method of A/D conversion. Define resolution and accuracy.

OR

(b) Discuss about ASK and FSK communication systems.

11 (a) What is cyclic redundant check (CRC)? Explain Hamming distance and Hamming codes.

OR

(b) Discuss about cyclic codes and Walsh codes.

12 (a) Discuss in detail about cellular telephone communication system. Discuss the need for Towers.

OR

(b) What is Global positioning system? What are its advantages and disadvantages? Discuss.

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1059-17-467-092

CODE No. 16703

Faculties of Arts, Commerce, Science, Management & Social Science
B.A, B.Com, B.B.A, B.Sc & B.S.W
II Year IV Semester (CBCS) Examination May-June, 2019
Sub: Sanskrit
Paper- IV

Time : 3 Hours. **Max. Marks : 80**

'अ' विभाग: PART 'A'

पञ्च प्रश्ना: समाधेया: । सर्वे समानाङ्का: । (5x4=20)

1. ससन्दर्भं व्याख्यात –
   मधुप एव विजनानाति पुष्पस्थं मकरन्दम् ।
2. दण्डिमहाकवे: परिचयं लिखत ।
3. ससन्दर्भं व्याख्यात –
   स्वयं च जीव शरदो यावदिच्छसि ।
4. 'अर्थान्तरन्यास' अलङ्कारस्य लक्ष्यलक्षणसमन्वयं लिखत ।
5. कृदन्तरूपाणि प्रत्यभिजानीत – दृष्ट्वा, पठित: ।
6. श्लाकममुं भाषान्तरीकुरुत –
   उत्पत्ति परिपूताया: किमस्या: पावनान्तरै: ।
   तीर्थोदकं च वह्निश्च नान्यत: शुद्धिमर्हुत: ।।
7. कवे: भवभूते: परिचयं लिखत ।
8. 'निदर्शना' – अलङ्कारस्य लक्ष्यलक्षणसमन्वयं लिखत ।

'आ' विभाग: PART 'B'

सर्वे प्रश्ना: समाधेया: । सर्वे समानाङ्का: । (5x12=60)

9. **द्वयो:** श्लोकयो: प्रतिपदार्थं तात्पर्यं च लिखत ।

   (अ) लौकिकानां हि साधूनामर्थं वागनुवर्तते ।
   ऋषीणां पुनराद्यानां वाचमर्थोऽनुधावति ।।

Contd.....2

(आ) सम्बन्धिनो वसिष्ठादीनेष तातस्तवार्चति ।
गौतमश्च शतानन्दो जनकानां पुरोहित: ।।

(इ) इङ्गुदीपादप: सोऽयं श्रृङ्गवेरपुरे पुरा ।
निषादपतिना यत्र स्निग्धेनाासीत्समागम: ।।

(ई) स्मरसि सुतनु ! तस्मिन्पर्वते लक्ष्मणेन
प्रतिविहितसपर्यासुस्थयोस्तान्यहुनि ।
स्मरसि सरसनीरां तत्र गोदावरीं वा
स्मरसि च तदुपान्तेष्वावयोर्वर्तनानि ।।

10. निबन्धमेकं लिखत –
राजवाहनं प्रति विश्रुतेनोक्तां स्वीयां कथां लिखत ।

अथवा

ध्रुवोपाख्यानस्य कथां विशदयत ।

11. निबन्धमेकं लिखत –
प्रजापति: देव-मनुष्य-असुरान् किमुपादिशत् ? तस्य प्राधान्यं किम् ?
विवृणुत ।

अथवा

नचिकेतोपाख्यानं विवृणुत ।

12. **द्वौ** शास्त्रकारयो: कव्यो: वा परिचयं लिखत ।
1. आर्यभट: 2. कणाद: 3. शंङ्कराचार्य: 4. भास:

13. षट् कृदन्तरूपाणि प्रत्यभिजानीत –

1. ज्ञात्वा	2. उपकृत्य	3. पठितुम्	4. नमन्ती
5. दीयमान:	6. जेतव्य:	7. उक्तवान्	8. पीतम्
9. गत्वा	10. कर्तुम		

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1059174457010

Code No. 16647

FACULTIES OF ARTS , COMMERCE , SCIENCE , MANAGEMENT & SOCIAL SCIENCE

B.A./B.Com./BBA/BSc/BSW II-Year IV-Semester (CBCS) Examination,
May / June 2019

Subject: General English

Paper – IV

Time : 3 Hours | Max. Marks : 80

PART – A (5x4=20 Marks)

Note: Answer any FIVE of the following questions in about 100 words each.

1 Fill in the blanks with one of the options provided:
   a) The violent child was taken to a _____ (Fill in the blank with correct alternative Councillor / Counsellor).
   b) I have very _____left in my bank account (Fill in the blank by choosing 'few / little). _____
   c) The case needs _____ investigation (farther / further).
   d) The hotel does not have _____parking (valet / wallet)

2 Answer as directed:
   a) The meeting is preponed. (Make the sentence more acceptable)
   b) You have a headache. (Frame a question for statement)
   c) She goes to college everyday_____(Add a question tag to the statement)
   d) She does not believe in allopathy. (choose the meaning of the underlined word 'English medicine / herbal medicine).

3 Answer as directed:
   a) What do you call a person who is unaffected by joy or grief. (stoic/agnostic)
   b) What do you call someone who pays excessive attention to details (fastidious/ambitious)
   c) Do you know a place _____ we can get good pastries? (Choose 'which' 'where 'whose').
   d) I can never forget that day, I got my first salary. (Combine the sentences using : whose, who, where, when).

4 Choose the answer:
   a) A central character who everyone trusts and confides in (stereotype/confidante)
   b) A dramatized film based on real events is called _____(docudrama/constume drama)
   c) A work that imitates or makes fun of an original is called (polemical/parody)
   d) A character who represents a type (stereotype/confidante).

5 Use appropriate conditional and write the sentences:
   a) You waste / time / you will not get it back.
   b) _____ he (fail) the exam. he would have lost the promotion.
   c) _____ he (careful), he _____(avoid accident)

6 Answer the following as directed:
   a) No noise !! (Rewrite the sentence in formal English)
   b) May I request your presence this evening? (Rewrite the sentence in informal English)
   c) Does every body have his book ? (Rewrite the sentence with gender neutral words / phase)
   d) As a teacher he face excessive excessive paperwork daily (Rewrite the sentence with gender-neutral words / phrase)

7 Correct the following sentences:
   a) She told me the interesting story.
   b) They will return in this month.
   c) I saw him in yellow car
   d) He lives in Delhi for five years

8 Correct the underlined mistakes in the following sentence.
   a) She returned the book back.
   b) There were a less students in the class.
   c) I went to the market to buy little sugar.
   d) I wonder who book this is.

PART – B (5x12=60 Marks)

Note: Answer the following questions in 200-250 words each.

9 (a) According to Roald Dahl, television has done more harm to a child than good. Discuss.

OR

(b) What is the central idea of the poem 'The Flower'?

10 (a) Write about Rowling's life before and after graduation.

OR

(b) Contrast the status of Mehmood in the past with that in the present in 'The Kitemaker'.

11 (a) Write a review of a film you have enjoyed watching.

OR

(b) Write a review of a novel you read.

12 (a) Describe the Champak trees and their effect on the people and the place.

OR

(b) What according to Hitchings is the current status of English as a global language?

13 (a) a well-established private company is looking out for Finance Manager with good knowledge of Accountancy, Tally, Law, and basic computer knowledge. Send your resume to Director, Holistic Health Care Ranigunj, Secunderabad.

OR

(b) ABC Consultants is looking out for a HR manager. An MBA with a minimum experience of 5 years is preferable. Send your Resume to General Manager, ABC Consultants, Road No. 10, Banjara Hills.

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035.

Code No. 3186/E/BL

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, June / July 2019

Subject : Mathematics

Paper – VI (A) : Solid Geometry (DSE E - 1)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Find the equation of the sphere through the four points
(0, 0, 0), (-a, b, c), (a, -b, c), (a, b, - c)

2 Find the equation of the tangent plane to the sphere
$3(x^2 + y^2 + z^2)-2x - 3y - 4z - 22 = 0$

3 Find the equation of the cone whose vertex is at the origin and which passes through the curve by the equations
$ax^2 + by^2 + cz^2 = 1$, $\ell x + my + nz = p$.

4 Show that the general equation of a cone which touches the three coordinate planes is $\sqrt{fx} \pm \sqrt{gy} \pm \sqrt{hz} = 0$
Where f, g, h are parameters.

5 Find the equations to the tangent planes to $7x^2 - 3y^2 - z^2 + 21 = 0$ which passes through the line $7x - 6y + 9 = 0$, $z = 3$.

6 Find the pole of the plane $\ell x + my + nz = p$ with respect to the quadratic $ax^2 + by^2 + cz^2 = 1$.

7 Find the sphere having the circle $x^2 + y^2 + z^2 + 10y - 4z - 8 = 0$, $x + y + z = 3$ as the great circle.

8 Find the equation to the cone which passes through the three coordinate axes as well as the two lines.
$\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$, $\frac{x}{31} = \frac{y}{-1} = \frac{z}{1}$

PART – B (3 x 15 = 45 Marks)
(Essay Answer Type)
Note: Answer ALL the questions.

9 (a) Find the equation of the sphere that passes through the two points
(0, 3, 0), (-2, -1, -4) and cuts orthogonally the two spheres
$x^2 + y^2 + z^2 + x - 3z - 2 = 0$, $2(x^2 + y^2 + z^2) + x + 3y + 4 = 0$

OR

(b) Find the equations to the two spheres of the co-axial system
$x^2 + y^2 + z^2 - 5 + \lambda (2x + y + 3z - 3) = 0$
Which touch the plane $3x + 4y = 15$

..2

10 (a) Find the angle between the lines of intersection of
$10x + 7y - 6z = 0$ and $20x^2 + 7y^2 - 108z^2 = 0$

OR

(b) Prove that the tangent planes to the cone $x^2 - y^2 + 2z^2 - 3yz + 4zx - 5xy = 0$ are perpendicular to the generators of the cone
$17x^2 + 8y^2 + 29z^2 + 28yz - 46zx - 16xy = 0$

11 (a) Show that the enveloping cylinders of the ellipsoid $ax^2 + by^2 + cz^2 = 1$ with generators perpendicular to z-axis meet the plane $z = 0$ in parabolas.

OR

(b) Find the locus of points from which three mutually perpendicular tangent lines can be drawn to the conicoid $ax^2 + by^2 + cz^2 = 1$

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1059-17-468-026.

Code No. 3121/E

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – IV (DSC) : (Algebra)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)

(Short Answer Type)

Note : Answer any FIVE of the following questions.

1 Prove that the set

$$GL(2, \mathbf{R}) = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} \middle/ a, b, c, d \in \mathbf{R}, ad - bc \neq 0 \right\}$$

Is a non abelian group with respect to matrix multiplication.

2 Let G be a group and H be a nonempty subset of G.
If $ab \in H \ \forall\ a, b \in H$ and $a^{-1} \in H \ \forall\ a \in H$ then prove that H is a subgroup of G.

3 State and prove Lagrange's theorem.

4 A subgroup H of G is normal in G if and only if $x H x^{-1} \subseteq H \ \forall\ x \in H$.

5 Prove that the characteristic of an integral domain is either zero or prime.

6 Let R[x] denotes the set of all polynomials with real coefficients and let A denote the subset of all polynomials with constant term 0 then prove that A is an ideal of R [x] and $A = \langle x \rangle$.

7 Let ϕ be a ring homomorphism from a ring R to a ring S then Ker $\varphi = \{r \in R / \varphi(r) = 0\}$ is an ideal of R.

8 If D is an integral domain then prove that D[x] is an integral domain.

PART – B (4 x 15 = 60 Marks)

(Essay Answer Type)

Note: Answer ALL from the questions.

9 (a) Every subgroup of a cyclic group is cyclic more over if $|\langle a \rangle| = n$ then the order of any subgroup of $\langle a \rangle$ is a divisor of n and for each positive divisor k of n, the group $\langle a \rangle$ has exactly one subgroup of order K namely $\langle a \rangle$.

OR

(b) Define Alternating group of degree n . Also prove that A_n has order $\frac{n!}{2}$ if $n > 1$.

10 (a) Prove that the group of rotations of a cube is isomorphic to S_4.

OR

(b) Let G be a group and let Z(G) be the centre of G. If $\frac{G}{Z(G)}$ is cyclic then G is abelian.

..2

11 (a) Prove that $Z_3[i] = \{a + ib / a, b \in Z_3\}$ is a field of order 9.

OR

(b) Let R be a commutative ring with unity and let A be an ideal of R then $\frac{R}{A}$ is an integral domain if and only if A is prime ideal.

12 (a) If R is a ring with unity and the characteristics of R is n > 0 then prove that R contains a subring isomorphic to Z_n. If the characteristic of R is 0 then R contains a subring isomorphic to Z.

OR

(b) Let $S = \left\{ \begin{pmatrix} a & b \\ -b & a \end{pmatrix} / a, b \in R \right\}$ then show that $\phi : C \to S$ given by

$\phi(a + (b) = \begin{bmatrix} a & b \\ -b & a \end{bmatrix}$ is a ring isomorphism.

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Code No. 3316/E

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – VII (DSC) : Numerical Analysis 1059-16-474-088

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Explain Bisection Technique to find the root of given equation $f(x) = 0$.

2 Determine the number of iterations necessary to solve $f(x) = x^3 + 4x^2 - 10 = 0$ with accuracy using $a_1 = 1$ and $b_1 = 2$.

3 Construct the divided difference table for the following data.

x	1	1.3	1.6	1.9	2.2
f(x)	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

4 Write Algorithm for Neville's method.

5 Use the forward difference formula to approximate the derivative of $f(x) = \log x$ at $x_0 = 1.8$ using $h = 0.1$ and $h = 0.01$ determine bounds for the approximation errors.

6 Derive Simpson's $1/3^{rd}$ rule.

7 Explain the secant method and its geometrical interpretation.

8 Let $P_3(x)$ be the interpolating polynomial for the data (0, 0), (0.5, y), (1,3) and (2, 2). The coefficient of x^3 in $p_3(x)$ is 6, find 'y'.

PART – B (3 x 15 = 45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) (i) Explain about Newton's method and its geometrical interpolation.
(ii) Find the approximation to within 10^{-4} to all the real zeros of the polynomials $f(x) = x^3 - 2x^2 - 5$ using Newton's method.

OR

(b) Explain False position method and use it to find a solution to $x = \cos x$ with $p_0 = 0.5$ and $p_1 = \pi/4$.

10 (a) (i) Use the nodes x_o=2 ; x_1 = 2.75 and x_2 = 4 to find the second Lagrange interpolating polynomial for f(x) = $\frac{1}{x}$. Use the polynomial to approximate $f\left(-\frac{1}{3}\right)$.

(ii) Use Newton forward difference formula to construct interpolating polynomials of degree one, two and three for the following data and find the value of $f\left(-\frac{1}{3}\right)$

f (-0.75) = -0.07181250 ; f(-0.5)=-0.02475000
f (-0.25) = 0.33493750 ; f(0) = 1.1010000

OR

(b) Obtain Hermite interpolation polynomials and using it find an approximation of f(1.5) for the given data f(1.3)=0.6200860 ; f(1.6) = 0.4554022 ; f(1.9) = 0.2818186 and f'(1.3) = -0.5220232 f'(1.6) = -0.5698959 ; f'(1.9)=-0.5811571

11 (a) Use the most accurate three point formulae to determine each missing entry in the following table:

x	f(x)	f'(x)
8.1	16.94410	-
8.3	17.56492	-
8.5	18.19256	-
8.7	18.82091	-

OR

(b) Explain Romberg integration. Use Romberg integration to compute $R_{3,3}$ for the integral $\int_0^1 x^2 e^{-x} dx$.

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1059-17-979-03

Code No. 3121/E

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – IV (DSC) : (Algebra)

Time : 3 Hours

Max. Marks: 80

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)

Note : Answer any FIVE of the following questions.

1 Prove that the set

$$GL(2, R) = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} \Big/ a, b, c, d \in R, ad - bc \neq 0 \right\}$$

Is a non abelian group with respect to matrix multiplication.

2 Let G be a group and H be a nonempty subset of G.
If $ab \in H \ \forall\, a, b \in H$ and $a^{-1} \in H \ \forall\ a \in H$ then prove that H is a subgroup of G.

3 State and prove Lagrange's theorem.

4 A subgroup H of G is normal in G if and only if $x H x^{-1} \subseteq H \ \forall\, x \in H$.

5 Prove that the characteristic of an integral domain is either zero or prime.

6 Let R[x] denotes the set of all polynomials with real coefficients and let A denote the subset of all polynomials with constant term 0 then prove that A is an ideal of R [x] and $A = \langle x \rangle$.

7 Let ϕ be a ring homomorphism from a ring R to a ring S then $\text{Ker } \varphi = \{r \in R / \varphi(r) = 0\}$ is an ideal of R.

8 If D is an integral domain then prove that D[x] is an integral domain.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)

Note: Answer ALL from the questions.

9 (a) Every subgroup of a cyclic group is cyclic more over if $|\langle a \rangle| = n$ then the order of any subgroup of $\langle a \rangle$ is a divisor of n and for each positive divisor k of n, the group $\langle a \rangle$ has exactly one subgroup of order K namely $\langle a \rangle$.

OR

(b) Define Alternating group of degree n . Also prove that A_n has order $\frac{n!}{2}$ if $n > 1$.

10 (a) Prove that the group of rotations of a cube is isomorphic to S_4.

OR

(b) Let G be a group and let Z(G) be the centre of G. If $\frac{G}{Z(G)}$ is cyclic then G is abelian.

..2

11 (a) Prove that $Z_3[i] = \{a + ib / a, b \in Z_3\}$ is a field of order 9.

OR

(b) Let R be a commutative ring with unity and let A be an ideal of R then $\frac{R}{A}$ is an integral domain if and only if A is prime ideal.

12 (a) If R is a ring with unity and the characteristics of R is n > 0 then prove that R contains a subring isomorphic to Z_n. If the characteristic of R is 0 then R contains a subring isomorphic to Z.

OR

(b) Let $S = \left\{ \begin{pmatrix} a & b \\ -b & a \end{pmatrix} / a, b \in R \right\}$ then show that $\phi : \mathbb{C} \to S$ given by

$\phi(a + (b) = \begin{bmatrix} a & b \\ -b & a \end{bmatrix}$ is a ring isomorphism.

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Code No: 4004 / E/ BL

FACULTY OF SCIENCE

B.Sc. III - Year (Backlog) Examination, March / April 2019

Subject: Physics

Paper – IV : Modern Physics

Time : 3 Hours **Max. Marks : 100**

SECTION – A (4x15=60 Marks)

Note: Answer all questions.

1 (a) Explain the principle and working of Stern and Gerlach experiment. Obtain an expression for the displacement of the atom along the field direction. (10+5)

OR

(b) What is Raman effect? Describe the experimental set up to study the Raman effect and give the quantum mechanical explanation of Raman effect. (3+7+5)

2 (a) Describe Davisson and Germer experiment for studying electron diffraction. Write the results of the experiment? (10+5)

OR

(b) Derive time independent Schrodinger equation and apply it to a particle in a one dimensional box. (7+8)

3 (a) Explain the principle and working of Geiger-Müller counter. What are the advantages and disadvantages of GM counter? (10+5)

OR

(b) What is the range of α-particle? Discuss the Gamow's theory of α-Decay. (3+12)

4 (a) Explain the crystal structures of SC, BCC and FCC with examples. (5+5+5)

OR

(b) Define lattice energy of ionic crystals. Deduce an expression for the lattice energy of ionic crystals. (3+12)

SECTION – B (4x5=20 Marks)

Note : Answer any four questions.

5 What is Zeeman effect? Explain.
6 What is photoelectric effect and explain Einstein's photoelectric equation?
7 State and explain Heisenberg's uncertainty principle for position and momentum.
8 Explain physical interpretation of wave function.
9 What are the characteristics of nuclear forces?
10 What is Geiger-Nuttal law?
11 Obtain Bragg's law for X-ray diffraction in crystals.
12 What are type-I and type-II super conductors?

SECTION – C (4x5=20 Marks)

Note : (i) Answer any four questions.

(ii) Use the following data wherever necessary in solving problems.

Plank's constant h = 6.64 x 10^{-34} Joule-second.

Charge of electron e = 1.63 x 10^{-19} coulomb

Rest mass of electron m_0=9.1 x 10^{-31} kg

Velocity of light C = 3x10^8 m/s

13 A sample of certain element is placed in a magnetic field of flux density 0.3 weber/m^2. How far apart are the Zeeman components of a spectral line of wavelength 4000 A°?

14 If the force constant K of the bond of Co is 200 N/m and the reduced mass of Co molecule is 1.2×10^{-26} kg. Calculate the frequency of vibration of Co molecule.

15 If the uncertainty in position of an electron is 1.1×10^{-10}m. calculate the uncertainty in its momentum ($h=6.6 \times 10^{-34}$ J-sec).

16 The threshold frequency for photoelectric emission in a metal is 1.1×10^{15} sec^{-1}. Find the maximum energy of photoelectrons when light of frequency 1.5×10^{15} sec^{-1} fall on it.

17 If the mass defect in a nuclear reaction is 0.0015×10^{-27} kg. Find the energy released in MeV.

18 The radius of Ho^{165} is 7.731 fermi. Deduce the radius of He^{4}.

19 Draw the following planes (100), (010), (001), (110) and (111).

20 Calculate the longest wavelength that can be analyzed by crystal spacing d=1.6 A°.

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1059-16-469-101

Code No. 3314/E

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – VII (SEC – 4) : (H : Graph Theory)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Define bipartite graph and give an example.

OR

(b) Define sub-graph of a graph and give an example.

2 (a) Draw the graph with adjacency matrix

$$A=\begin{bmatrix} 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

OR

(b) Give an example to show that an Eulerian graph need not be Hamiltonian.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) (i) Does there exists a graph with the degree sequence

7, 6, 5, 4, 3, 3, 3, 1, 1, . Justify your answer.

(ii) Define complete graph. Draw the complete graph with 5 vertices.

OR

CODE NO: 4131

FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT AND SOCIAL SCIENCE
B.A./B.Com./B.B.A./B.Sc. and B.S.W. I –Year I-Semester (CBCS) Examination, November / December 2019

Subject: Hindi (Second Language)
Paper : I

Time : 3 Hours **Max. Marks: 80**

खण्ड - क (लघु प्रश्नोत्तर)

I . किन्हीं चार प्रश्नों के उत्तर संक्षेप में लिखिए । **(4x5=20)**

1. चरित्र संगठन पाठ में चरित्र के क्या गुण बताये गये हैं?
2. राष्ट्र के स्वरूप के अंग क्या हैं? उन पर अपने विचार व्यक्त कीजिए ।
3. सद्‌गति कहानी के उद्देश्य पर प्रकाश डालिए ।
4. सच का सौदा कहानी में सच की जीत किस तरह बताई गई ।
5. वचन कितने प्रकार के होते हैं उदाहरण सहित लिखिए ।
6. हिन्दी में लिंग के कितने भेद हैं उदाहरण देकर बताइए ।

खण्ड - ख

II . निम्नलिखित प्रश्नों के उत्तर विस्तार में लिखिए । **(4x15=60)**

7. (अ) किन्हीं दो गद्यांशों की संदर्भ सहित व्याख्या कीजिए । **(2x7½=15)**

(क) हम नहीं जानते हम स्वयं दूसरों की सहकारिता से कितना लाभ उठाते हैं । स्वयं अपनी सहकारिता से दूसरों को वंचित रखना कृतध्नता है ।

(ख) मैंने यह तय माना कि और पैसा होता और सामान आता । वह सामान . ज़रूरत की तरफ देखकर नहीं आया अपनी 'पर्चेजिंग पावर' के अनुपात में आया है ।

(ग) संस्कृति का स्वभाव है कि आदान – प्रदान से बढ़ती है । जो जाति केवल देना ही जनती है, लेना कुछ नहीं, उस की संस्कृति का एक दिन दिवाला निकल जाता है ।

(घ) आज भी जब कोई रंगीन कपड़ों के प्रति विरक्ति के संबंध में कौतुक भरा प्रश्न कर बैठता है, तो वह अतीत फिर वर्तमान होने लगता है ।

8. (क) भाभी पाठ का सारांश लिखिए । (1x15=15)

अथवा

(ख) बाज़ार दर्शन निबंध का सार अपने शब्दों मे लिखिए ।

9. (क) प्रायश्चित कहानी क उद्देश्य का वर्णन कीजिए । (1x15=15)

अथवा

(ख) चीफ की दावत कहानी का सारांश लिखिए । (1x10=10)

(ग) निम्नलिखित में से किसी एक पात्र का चरित्र – चित्रण कीजिए । (1x5=5)

1. छोटा जादूगर 2. सर्वदयाल 3. रामू की बहू

10. (क) निम्नलिखित वाक्यों में से किन्हीं चार वाक्यों को निर्देशानुसार बदल कर लिखिए । (4x1=4)

1. छात्र मैदान में खेल रहा है । (वचन बदलिए)
2. मोहन अभी घर आया । (भविष्यत्काल में लिखिए)
3. वह एक विदुषी है । (लिंग बदलिए)
4. अध्यापिका पाठ पढ़ाया । ('ने' का प्रयोग कीजिए)
5. माँ ने रोटी बनाई । (वाच्य बदलिए)
6. पिताजी दफ़्तर जातें हैं । (वाच्य बदलिए)

(ख) किन्हीं तीन वाक्यों को शुद्ध कर के लिखिए । (3x1=3)

1. माधव आम खाया ।
2. गंगा बड़ा नदी है ।
3. रमा कविता लिखा ।
4. वह मुझ को विश्वास नहींकरता ।
5. तुम हिन्दी सीखना चाहिए ।

(ग) किन्हीं तीन शब्दों का वाक्यों में प्रयोग कीजिए । (3x1=3)

1. चरित्र 2. लालच 3. मामूली 4. स्मृति 5. अवकाश 6. धन

(घ) किन्हीं पाँच शब्दों का हिन्दी / अंग्रज़ी में अनुवाद कीजिए । (5x1=5)

1. College 2. Order 3. Director 4. Manager
5. निर्वाचन 6. सचिव 7. मंत्री 8. स्वीकृति

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Code No. 4139

Faculties of Arts, Commerce, Science & Management

B.A., B.Com., B.B.A., B.Sc. & BSW

I Year I Semester Examination Nov., Dec. – 2019

Subject : Sanskrit (Second Language)

Paper – I

Time : 3 Hours

Max. Marks : 80

अ विभागः

चत्वारः प्रश्नाः समाधेयाः। 5X4=20

1. श्लोकस्य अनुवादं कुरुत-

   रामः सत्पुरुषो लोके सत्यधर्मपरायणः।

   धर्मज्ञः सत्यसन्धश्च शीलवाननसूयकः॥

2. दौवारिकस्तु तमाकृष्य नयन्नेव प्रचलितः इतिवाक्यं ससन्दर्भं व्याख्यात ।

3. श्लोकं पूरयत-

   उद्यमेन ---------- मृगाः।

4. ससन्दर्भं व्याख्यात- 'श्रेयसा योक्तुकामोऽसि सुखार्हमखिलं जगत्'।

5. श्लोकस्य अनुवादं कुरुत-

   ददाति प्रतिगृह्णाति गुह्यमाख्याति पृच्छति।

   भुंक्ते भोजयते चैव षड्विधं प्रीतिलक्षणम्।

6. कपीशः, तथैव, महोर्मिः, इत्यत्र, तच्च इत्येतेषां सन्धिं विघटयत।

आ विभागः

सर्वे प्रश्नाः समाधेयाः। 5X12=60

7. द्वयोः श्लोकयोः प्रतिपदार्थं तात्पर्यं च लिखत।

   अ) अनन्तरत्नप्रभवस्य यस्य हिमं न सौभाग्यविलोपि जातम्।

   एको हि दोषो गुणसन्निपाते निमज्जतीन्दोः किरणेष्विवाङ्कः॥

   आ) अस्त्युत्तरस्यां दिशि देवतात्मा हिमालयो नाम नगाधिराजः।

   पूर्वापरौ तोयनिधी वगाहय स्थितः पृथिव्याः इव मानदण्डः॥

Code No. 4139

इ) दिवाकराद्रक्षति यो गुहासु लीनं दिवाभीतमिवान्धकारम्।
क्षुद्रेऽपि नूनं शरणं प्रपन्ने ममत्वमुच्चैःशिरसां सतीव॥

ई) न्यस्ताक्षरा धातुरसेन यत्र भूर्जत्वचः कुंजरबिन्दुशोणाः।
व्रजन्ति विद्याधरसुन्दरीणामनंगलेखक्रिययोपयोगम्॥

8. धर्मबद्धो दौवारिक इतिपाठ्यांशस्य सारं लिखत।

अथवा

विष्णुशर्मणः पंचतन्त्रस्य परिचयं कुरुत।

9. अधो निर्दिष्टेषु द्वयोः सर्वासु विभक्तिषु सर्वेषु च वचनेषु रूपाणि लिखत-

१. कवि २. देव ३. गो ४. भानु

10. अधो निर्दिष्टेषु पंच सन्धिनामपुरस्सरं सन्धत्त-

१. परम + ऐश्वर्यम् २. तथा + एव ३. षट् + नगर्यः
४. वाक् + मयम् ५. अनु + एति ६. तद् + जलम्
७. पद् + नगः ८. रामः + तरति ९. तत् + अपि
१०. तत् + लयः

Code No. 9011

FACULTY OF SCIENCE

B.Sc. (CBCS) I – Semester Examination, November / December 2019

SUBJECT : ELECTRONICS
Paper – I
(Circuit Analysis)

Time : 3 Hours **Max Marks : 80**

PART – A (8x4 = 32 Marks)
(Short Answer Type)

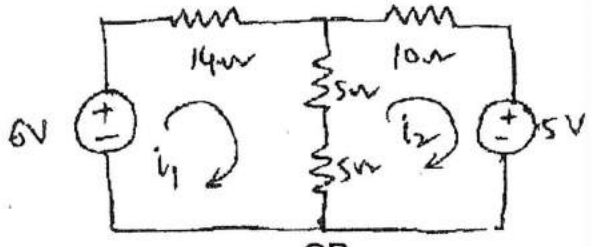
Note : All the following Eight question.

1. An alternating current is represented by I (t) = 220 sin (400t – 30°) then determine (a) frequency (b) Time period (c) Peak Value (d) rms Value
2. Define KCL and KVL with suitable examples.
3. Define Capacitive reactance and Inductive reactance.
4. State Reciprocity theorem and explain.
5. Find the load resistance and current for maximum power transfer from a source of 100Volts dc having internal resistance of 50Ω.
6. State Millman's therorem.
7. Define time constant of LR and RC Circuits.
8. Explain Passive differentiating circuit with circuit diagram.
9. Define time constant for RC and RL Circuits.
10. What is Quality factor? Obtain expression for quality factor of RLC senies Circuit
11. Explain the measurement of phase using CRO.
12. Mention application of CRO.

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

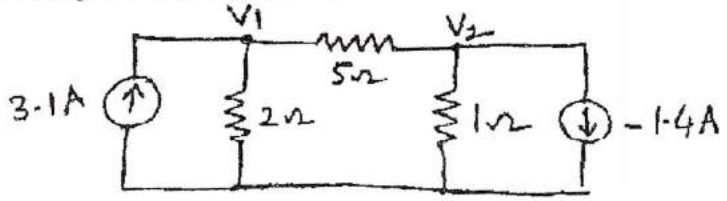
Note : All the following three question.

13 a. Determine V_1 and i_2 in the Circuit.



OR

b. Using Nodal analysis find V_1 and V_2 in the circuit.



14. a. State and prove Thevenins theorem

OR

b. State and prove superposition theorem. Give its significance.

15. a. Discuss the transient response of RL Circuit with relevant figures.

OR

b. Explain lowpass filter and passive integrating circuit.

16. a. Draw RLC parallel circuit obtain impedance at resonance and also an expression for resonating frequency.

OR

b. What is meant by deflection sensitivity. Draw the block diagram of CRO. Explain each block in detail.

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CODE NO: 4073

FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT AND SOCIAL SCIENCE
B.A./B.Com./B.B.A./B.Sc. and B.S.W. II –Year III-Semester (CBCS) Examination, November / December 2019

Subject: Sanskrit (Second Language)
Paper : III

Time : 3 Hours **Max. Marks: 80**

अ विभागः

पञ्च प्रश्नाः समाधेयाः। 5X4=20

1. 'उपरागान्ते शशिनः समुपगता रोहिणी योगम्' इति वाक्यं ससन्दर्भं व्याख्यात।
2. रामदासः इतिपाठ्यांशस्य लेखकस्य परिचयं लिखत।
3. 'स्वाध्यायप्रवचनाभ्यां न प्रमदितव्यम्' इतिवाक्यं ससन्दर्भं व्याख्यात।
4. अप्रस्तुतप्रशंसालंकारस्य लक्ष्यलक्षणसमन्वयं कुरुत।
5. जलमुचे, वाक्षु, नाम्ने, विदुषि इत्येतेषां लिङ्गविभक्तिवचनानि प्रत्यभिजानीत।
6. क्षिप्रं प्रसादयति सम्प्रति कोपि तानि कान्तामुखानि रतिविग्रहकोपितानि।
   उत्कण्ठयन्ति पथिकांजलदास्स्वनन्तः शोकोऽभिवर्धयति तद्वनितास्स्वनन्तः॥
   इतिश्लोकस्य भाषान्तरीकरणं कुरुत।
7. महाकविकालिदासः कति ग्रन्थान् अरचयत्? तानि कानि? विवृणुत।
8. दृष्टान्तालंकारस्य लक्ष्यलक्षणसमन्वयं कुरुत।

आ विभागः

सर्वे प्रश्नाः समाधेयाः। 5X12=60

9. द्वयोः श्लोकयोः प्रतिपदार्थं तात्पर्यार्थं च लिखत।
   अ) स्वायम्भुवान्मरीचेर्यः प्रबभूव प्रजापतिः।
   सुरासुरगुरुः सोऽत्र सपत्नीकस्तपस्यति॥
   आ) भवनेषु रसाधिकेषु पूर्वं क्षितिरक्षार्थमुशन्ति ये निवासम्।
   नियतैकयतिव्रतानि पश्चात्तरुमूलानि गृहीभवन्ति तेषाम्॥
   इ) उदेति पूर्वं कुसुमं ततः फलं घनोदयः प्राक् तदनन्तरं पयः।
   निमित्तनैमित्तिकयोरयं क्रमस्तव प्रसादस्य पुरस्तु सम्पदः॥

ई) स्मृतिभिन्नमोहतमसो दिष्ट्या प्रमुखे स्थितासि मे सुमुखि।
उपरागान्ते शशिनः समुपगता रोहिणी योगम्॥

10. बाणमहाकविना वर्णितानुसारं शूद्रकवैशम्पायनयोः सम्भाषणं विवृणुत।

अथवा

सूर्यनारायणशास्त्रिणा वर्णितानुसारं सहेतुकं रामदासस्य जीवनसरणिं लिखत।

11. गुरुः शिष्यान् किम् अनुशास्ति?

अथवा

ब्रह्मविद्यारूपिण्या हैमवत्या देवेभ्यः दत्तम् उपदेशं विवृणुत।

12. अधो निर्दिष्टेषु द्वयोः परिचयं लिखत-

अ) कौटिल्यः आ) भरतमुनिः इ) माघः ई) श्रीहर्षः

13. अधो निर्दिष्टेषु द्वयोः सर्वासु विभक्तिषु सर्वेषु च वचनेषु शब्दरूपाणि लिखत-

अ) जलमुक् आ) भवत् इ) नामन् ई) वाक्

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FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT AND SOCIAL SCIENCE
B.A./B.Com./B.B.A./B.Sc. and B.S.W. II –Year III-Semester (CBCS) Examination, November / December 2019

Subject: Arabic (Second Language)
Paper : III

Time : 3 Hours **Max. Marks: 80**

SECTION – A (5 x 4 = 20)

Answer any FIVE questions. Each question carries 4 marks

1. Translate the following :

١. ترجم العبارة الآتية :
"فالقرآن مكي ومدنيّ ، فالمكيّ هو ما نزل قبل الهجرة إلى المدينة ، وأما القرآن المكيّ فهو ما نزل بعد الهجرة"

2. Translate the following paragraph :

٢. ترجم العبارة التالية :
" القرآن المجيد هو إجمال ومتن والحديث الشريف هو تفصيل وشرح ولذا إنكار الحديث الشريف فهو إنكار القرآن الكريم"

3. Write some important names of Moulana Abul Kalam Azad's books :

٣. اذكر أهم مؤلفات مولانا أبي الكلام آزاد، اكتب أسماؤها فقط.

4. Explain the following paragraph :

٤. اشرح العبارة التالية :
" الصلاة : هي الركن الثاني من أركان الإسلام وتظهر المساواة في صفوف الصلاة فلا فرق بين الأبيض والأسود والغني والفقير والملك والخادم في ترتيب الصفوف كما يقوم بعضهم في جنب بعض "

5. Write the meaning of the following verses in your language :

٥. ترجم الأبيات الآتية في لغتكم :
كتابي صديقي الذكي الأمين حصاد عقول و كنز ثمين

6. Write the plural of the following words :

٦. اكتب جموع الكلمات التالية :
رجل - غني - مجلس - درس - مسلم .

7. Match the following :

٧. صل بين كل زوج مناسب من الكلمات التالية :

١) الخلق	----------	قبل الكلام
٢) إنما الأعمال	----------	أكابركم
٣) البركة مع	----------	عيال الله
٤) السلام	----------	بالنيات

8. Write about the poet Akhtal :

٨. اكتب عن الشاعر " أخطل ".

Cont. Pg. 2

SECTION – B (5 x 12 = 60)

Answer all questions. Each question carries 12 marks

9. (A) Write the summary of "Sayings of Prophet Mohammed (saws)" :

٩. اكتب خلاصة " الحديث النبوي الشريف ".

(OR)

(B) Write the summary of the lesson " القرآن الكريم " :

اكتب خلاصة " القرآن الكريم ".

10. (A) Translate and explain the given verses with reference to the context :

١٠. ترجم واشرح الأبيات التالية مع الإشارة إلى النص :

١) حروف كتابي مصابيح نور طيور تغني عطور زهور

٢) حروف كتابي سماء وبحر جبال صحارى بساتين خضر

٣) حروف كتابي دليل العمل زغاريد أمي لشعبي البطل

(OR)

(B) Write the summary of the poem " العلم " in your language :

اكتب خلاصة " العلم " في لغتكم.

11. (A) Answer the following questions in Arabic :

١١. أجب عن الأسئلة الآتية بالعربية :

١) هل الحديث الشريف تفصيل للقرآن الكريم ؟

٢) ما كان الإسم الكامل لمولانا آزاد ؟

٣) هل الإسلام دين المساواة ؟

٤) أين ولد أبو الكلام آزاد ؟

(OR)

(B) Describe the summary of the lesson "Al Masawaat Al Insaniah" in your language:

اكتب عن خلاصة " المساواة الإنسانية "

12. (A) Describe with examples " الفعل المضارع المجزوم " :

١٢. اكتب عن " الفعل المضارع المجزوم " مع الأمثلة

(OR)

(B) Describe " الفعل المضارع المنصوب " with examples :

اكتب عن " الفعل المضارع المنصوب" بالأمثلة

13. (A) Write a note on Impact of Hadith e Shareef on Arabic Literature :

١٣. اكتب عن تأثير الحديث الشريف على الأدب العربي

(OR)

(B) Write a note on Arabic Literature during Umayyad's period :

اكتب عن تأثير الأدب العربي في العصر الأموي

❁ ❁ ❁ ❁

CODE NO: 4047

FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT AND SOCIAL SCIENCE
B.A./B.Com./B.B.A./B.Sc. and B.S.W. II –Year III-Semester (CBCS) Examination, November / December 2019

Subject: Hindi (Second Language)
Paper : III

Time : 3 Hours **Max. Marks: 80**

खण्ड – 'क'

सूचना : निम्नलिखित में से किन्हीं पाँच प्रश्नों के उत्तर दीजिए। (5X4=20)

1. सूरदास के अनुसार बलदाऊ की बेनी कैसी थी?
2. तुलसीदास के अनुसार दूसरों की सुख–संपत्ति देखकर हमें क्या नहीं करना चाहिए?
3. कबीरदास ने किसका खण्डन किया?
4. सुमित्रानन्दन पंत के अनुसार परिस्थितियों को अपने अनुकूल कौन बना सकता है?
5. सुभद्रा कुमारी चौहान ने जीवन को युद्धक्षेत्र क्यों कहा है?
6. भरत के माता–पिता का क्या नाम था?
7. कृष्णभक्ति शाखा का परिचय दीजिए।
8. 'विज्ञान : वरदान या अभिशाप' विषय पर विचार कीजिए।

खण्ड – 'ख'

सूचना : निम्नलिखित प्रश्नों के उत्तर विस्तार से लिखिए।

9. किन्हीं दो की सन्दर्भ सहित व्याख्या कीजिए। (2X 6=12)

(क) सरवर तरवर संत जन, चौथा बरसे मेंह।
परमारथ के कारनें, चारों धारी देह।।

(ख) तुलसी मीठे वचन तें, सुख उपजत चहूँ ओर।
दसीकरण एक मंत्र है, तज दे वचन कठोर।।

(ग) फूल लेकर तितलियों को गोद में, भँवर को अपना अनूठा रस पिला।
निज सुगंधों और निराले ढंग से, है सदा देता कली का जी खिला।।

Contd.....2

(घ) दो पथ, असंयम और संयम, हैं तुम्हें अब सब कहीं,
पहला अशुभ है, दूसरा शुभ है, इसे भूलो नहीं।
पर मन प्रथम की ओर ही तुमको झुकायेगा अभी,
यदि तुम न सँभलोगे अभी तो, फिर न सँभलोगे कभी।।

10. किसी एक कविता का सारांश लिखिए। (1X 12=12)

1. बाल–लीला 2. भारत 3. मेरा नया बचपन

11. किसी एक प्रश्न का उत्तर दीजिए। (1X 12=12)

1. आदिकाल की परिस्थितियों पर प्रकाश डालिए।

(अथवा)

2. भक्तिकालीन काव्य की विशेषताएँ बताइए।

12. किन्हीं दो कवियों पर टिप्पणी लिखिए। (2X 6=12)

(क) कबीर (ख) चंदबरदाई

(ग) सुमित्रानंदन पंत (घ) सुभद्रा कुमारी चौहान

13. (क) किसी एक विषय पर निबन्ध लिखिए। (1X 6=6)

1. आधुनिक शिक्षा और नारी
2. शिक्षा पर भूमंडलीकरण का प्रभाव
3. समाज में नारी का स्थान

(ख) हिन्दी में अनुवाद कीजिए। (6X 1=6)

1. India is the country of festivals.
2. Divya writes the examination well.
3. Bhagya is singing a song.
4. Ramcharit Manas was written by Tulsidas.
5. Chand Bardai was a great poet.
6. Hindi is very easy language.

హిందీ లో అనువదించండి.

1. భారతదేశం పండుగల దేశం.
2. దివ్య పరీక్ష బాగా వ్రాసింది.
3. భాగ్య పాట పాడుతుంది.
4. రామచరిత్ మానస్ తులసిదాస్ చేత రచించబడింది.
5. చంద్ బరదాయి ఒక గొప్ప కవి.
6. హిందీ చాలా సరళమైన భాష.

Code No. 4032

FACULTIES OF ARTS, COMMERCE, SCIENCE, MANAGEMENT SOCIAL SCIENCE

B.A, B.com, B.B.A, B.Sc & B.S.W II-Year III-Semester Examination, November / December 2019

SUBJECT : TELUGU (Second Language)

Paper - III TELUGU (Second Language)

Time : 3 Hours **Max Marks : 80**

విభాగము - ఎ (5×4 = 20 మార్కులు)

సూచన : కింది వాటిలో ఏవైన **ఐదు** ప్రశ్నలకు సమాధానాలు రాయండి.

1. వలవదధిక దీర్ఘవైర వృత్తి - సందర్భ వ్యాఖ్య
2. శరణని వచ్చిన శత్రువునైన పరికింపగా రాచపాడి రక్షింప - సందర్భ వ్యాఖ్య
3. ముడిపెట్టెను రేపటి దారికోసమై - సందర్భ వ్యాఖ్య
4. జీవచ్ఛవంబు సరిగనిపించెన్ - సందర్భ వ్యాఖ్య
5. లాటాను ప్రాసమును సోదాహరణముగా వివరించండి.
6. మీ పాఠ్య భాగమాధారముగా 'విశాలాక్షి' పాత్ర చిత్రణ చేయండి.
7. ధర్మజుని వాక్చాతుర్యమును వివరించండి.
8. ఈ కింది వాక్యాలను తెలుగులోనికి అనువదించండి.

The Panchatantra written by Vishnu Sharma in Sanskrit (Translated into Telugu by Paravastu Chinaya Suri and into other languages by various scholars) Consist of the stories of animals in a beautiful way. It depicts the anecdotes of ethical, Social and Political events among the animals in the forests. Though the panchatantra seems to be the stories of children, it consist of great information of politics ad administration useful for the rulers and ruled.

విభాగము - బి (5×12 = 60 మార్కులు)

అన్ని ప్రశ్నలకు సమాధానాలు రాయండి

9. ఈ కింది పద్యాలలో ఒకదానికి సమగ్ర వ్యాఖ్యను రాయండి.

ఎ) యగపడగించు టెంతయు శుభంబదిలెస్స! యడంగునే పగం
బగ? వగగొన్న మార్కొనక పల్కక యుండగవచ్చునే? కడుం
దెగ మొదలెత్తిపోవ బగ దీర్పగ వచ్చిన గ్రౌర్య మొందు; నే
మిగతి దలంచినం బగకు మేలిమి లేమి ధ్రువంబు గేశవా!

లేదా

బి) అరుణ గభస్తిబింబ ముదయాద్రి పయిం బొడతేర గిన్నెలో
బెరుగును వంటకంబు వడ పిందియలుం గుడువంగ బెట్టు ని
ర్భర కరుణా ధురీణయగు ప్రాణము ప్రాణము తల్లియున్నదే?
హర హర! యెవ్వరింక గడుపారసి బెట్టెద రీప్సితాన్నముల్.

10. ఎ) సాగరయ్య గుణశీలములు వర్ణించండి.

లేదా

బి) 'గుడిసెలు కాలిపోతున్నై' కవితలో కవి సందేశమేమి?

11. ఎ) 'జానాయి' గుణశీలములు వివరించండి.

లేదా

బి) 'చలిచీమలు' నాటకం నాటి సాంఘిక, రాజకీయ పరిస్థితులు తెలుపుము.

12. ఎ) 'గుణనిధి' కథ సారాంశమును రాయండి.

లేదా

బి) చలిచీమలు నాటక నామౌచిత్యాన్ని వివరించండి.

13. ఎ) అర్థాంతరన్యాస, శ్లేషాలంకారాలను సోదాహరణముగా వివరించండి.

లేదా

బి) ఈ కింది పద్య పాదాలలోని అలంకారాలను గుర్తించి లక్ష్య లక్షణ సమన్వయం చేయండి.

అ) "అతని పుత్రుండు గుణనిధి యనెడివాడు దర్పకుని తోడి జోడు సౌందర్యరేఖ"

ఆ) అతని కృపాంబునిధిలోన మనుజేశ్వరుండు క్రమ్మఱ నోలలార్చి....

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Code No. 8187/E

FACULTY OF SCIENCE

B.Sc. V-Semester (CBCS) Examination, November / December 2019

Subject : Mathematics (Linear Algebra)

Paper – V (DSC)

Time : 3 Hours **Max. Marks: 60**

PART – A (5 x 3 = 15 Marks)
(Short Answer Type)
Note : Answer any five of the following questions.

1 Define null space of a matrix.

2 Find a matrix A such that w = Col A ,

$$\text{where } w = \left\{ \begin{bmatrix} 6a-b \\ a+b \\ -7a \end{bmatrix} : a,b \in R \right\}$$

3 Find the eigen values of the matrix

$$A = \begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}.$$

4 Find the characteristic equation of the matrix

$$A = \begin{bmatrix} 5 & -2 & 6 & -1 \\ 0 & 3 & -8 & 0 \\ 0 & 0 & 5 & 4 \\ 0 & 0 & 0 & 1 \end{bmatrix}.$$

5 If $A = \begin{bmatrix} 7 & 2 \\ -4 & 1 \end{bmatrix}$, find a formula for A^k given that $A = PDP^{-1}$ where

$$P = \begin{bmatrix} 1 & 1 \\ -1 & -2 \end{bmatrix}, D = \begin{bmatrix} 5 & 0 \\ 0 & 3 \end{bmatrix}.$$

6 Define orthogonal set.

7 Define vector subspace with an example.

8 Find $[dist(u_1 - v)]^2$.

PART – B (3x15=45 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) Let M_{2x2} be the vector space of all 2x2 matrices and define T: $M_{2x2} \rightarrow M_{2x2}$ by $T(A) = A + A^T$ where $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. Show that T is a linear transformation.

OR

(b) Find the dimension of the subspace

$$H=\left\{\begin{bmatrix} a-3b+6c \\ 5a+4d \\ b-2c-d \\ 5d \end{bmatrix} : a,b,c,d \in R\right\}$$

10 (a) Show that if $v_1, v_2 \ldots v_r$ are eigen vectors that correspond to distinct eigen value $\lambda_1, \lambda_2, \ldots \lambda_r$ of an n x n matrix A then the set $(v_1, v_2, \ldots v_r\}$ is linearly indepdendent.

OR

(b) Is $\lambda = 3$ an eigen value of $\begin{bmatrix} 1 & 2 & 2 \\ 3 & -2 & 1 \\ 0 & 1 & 1 \end{bmatrix}$. If so find the one corresponding eigen vector.

11 (a) Diagonalize the matrix

$$A=\begin{bmatrix} 1 & 3 & 3 \\ -3 & -5 & -3 \\ 3 & 3 & 1 \end{bmatrix}$$ if possible

OR

(b) Let $y=\begin{bmatrix} 7 \\ 6 \end{bmatrix}$ and $u=\begin{bmatrix} 4 \\ 2 \end{bmatrix}$. Find the orthogonal projection of y on to u. The write y as the sum of two orthogonal vectors, one in span {u} and other one orthogonal to u.

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1059-16-469-101

Code No. 3314/E

FACULTY OF SCIENCE

B.Sc. VI-Semester (CBCS) Examination, May / June 2019

Subject : Mathematics

Paper – VII (SEC – 4) : (H : Graph Theory)

Time : 1½ Hours **Max. Marks: 40**

Note : Answer ALL the questions.

PART – A (2 x 5 = 10 Marks)
(Short Answer Type)

1 (a) Define bipartite graph and give an example.

OR

(b) Define sub-graph of a graph and give an example.

2 (a) Draw the graph with adjacency matrix

$$A=\begin{bmatrix} 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

OR

(b) Give an example to show that an Eulerian graph need not be Hamiltonian.

PART – B (2 x 15 = 30 Marks)
(Essay Answer Type)

3 (a) (i) Does there exists a graph with the degree sequence

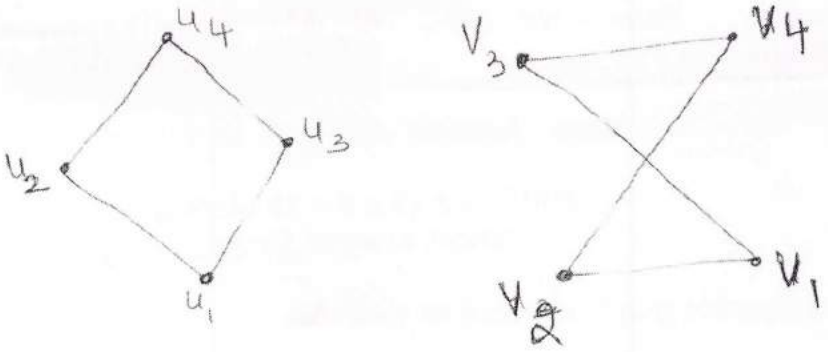
7, 6, 5, 4, 3, 3, 3, 1, 1, . Justify your answer.

(ii) Define complete graph. Draw the complete graph with 5 vertices.

OR

(b) (i) Define graph isomorphism.

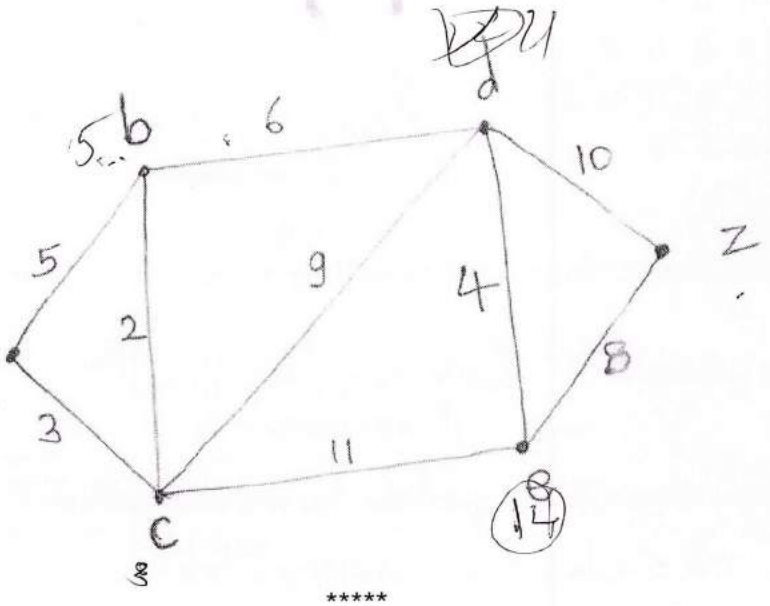
(ii) Show that the following two graphs are isomorphic. Also exhibit such an isomorphism.



4 (a) Let G be a graph with n vertices ($n \geq 3$) and every vertex has degree at least n/2. Then show that the graph G is Hamiltonian.

OR

(b) Using Dijkstra's algorithm, find the shortest path from a to z in the following graph.



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Code No. : 4006

FACULTIES OF ARTS, COMMERCE, SCIENCES, MANAGEMENT & SOCIAL SCIENCES

B.A/. B.Com/ B.B.A/ B.Sc. & BSW II Year III Semester Examination, November /December 2019

Subject: General English
Paper - III

Time : 3 Hours **Max. Marks: 80**

Part - A (5 x 4 = 20 Marks)

Answer any FIVE of the following in about 100 words.

1. Answer as directed.
   a) Dog is a faithful animal. (Give the synonym of the underlined word).
   b) The dessert was awful. (Give the antonym of the underlined word).
   c) He said that the secret _____ success lies in hard work. (Fill in the blank with a suitable preposition).
   d) Write the answers with ink (Correct the sentence).

2. Answer as directed.
   a) Please clear the luggage. (Replace the underlined British English word with a American word).
   b) In the US, the elevator is out of order; in the UK, _____ is under repair. (Fill in the blank with appropriate word in American English).
   c) The two skits will be performed by Suma. (Rewrite the sentence beginning with "Suma ...).
   d) Hundreds of tourists see the Charminar every day. (Rewrite the sentence beginning with "The Charminar...).

3. Answer as directed.
   a) Hurry on; we are getting late. (Correct the particle in the underlined phrasal verb).
   b) She looks forward for staying with you. (Correct the particle in the underlined phrasal verb).
   c) Each one of those boys ___ (is/are) an expert swimmer. (Fill in the blank with correct form of the verb given in brackets.)
   d) Neither the acting nor the direction were good. (Correct the verb form)

4. Answer as directed.
   a) The idiom "to see red" means _____.
   b) The idiom "to take a leaf out of someone's book" means _____.
   c) Manu wanted to watch the film, _____ he fell asleep half way through. (Choose the appropriate connective.)
   d) It is your money. You can do what you like with it. (Combine the two sentences into one using an appropriate connective.)

5. Answer as directed.
   a) A _____ is one who supplies goods.(vendor/vandal). (Choose the appropriate option).
   b) If you pay _____, it means you pay in advance. (at the front/upfront) (Choose the appropriate option).
   c) I wondered whether he can help me. (Correct the sentence).
   d) The guest said, "I don't like sugar in my coffee." (Change into reported speech).

6. Answer the following:
   a) How does Bronte use images of nature?
   b) How do people in Workers' Paradise spend their time?

7. Answer the following:
   a) In the poem "Punishment in Kindergarten", why was the speaker called a peculiar girl?
   b) According to R.K. Narayan, which three countries use English?

8. Answer the following:
   a) In "As I Grew Older", what does Hughes compare his dream to?
   b) According to Ambedkar, what is social democracy?

Part B (5 x 12 = 60 Marks)

Answer the following in about 300 words each.

9. a. Bring out the central argument of Bronte's poem "Life".

   OR

   b. Explain the main idea of Tagore's "A Wrong Man in Workers' Paradise".

10. a. Summarise the speaker's experience on a picnic day in "Punishment in Kin dergarten".

    OR

    b. Discuss R.K. Narayan's attitude towards American English.

11. a. What is the poet's dream in "As I Grew Older"?

    OR

    b. What "anxieties" does Dr. Ambedkar express in his speech and what is the ba sis for his apprehensions?

12. a. Write a discursive essay on "Meaningful life".

    OR

    b. Write an argumentative essay on the topic "Is Science always right??"

13. a. Write a progress report on the "Swacchh Campus" taken up in your college.

    OR

    b. Write a media report on: Rising trend of students of professional courses opting to write competitive examinations.

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Code No: 4121

FACULTIES OF ARTS, COMMERCE, SCIENCE, SOCIAL SCIENCE & MANAGEMENT

B.A. /B.Com/B.Sc./B.S.W./B.B.A. I-Semester(CBCS) Examination, Nov./Dec. 2019

Subject: General English
Paper – I

Time: 3 hours **Max Marks: 80**

PART- A (4 x 5 = 20 Marks)
Answer any four of the following.

1. **Answer as directed**
   a) Sridhar was sleeping in the garden. ((Identify and underline the common noun).
   b) A _____ of sailors. (Fill in the blank with a collective noun).
   c) Chronology. (Identify and underline the root in the given word).
   d) Momento. (Correct the spelling)
   e) Food (write the phonetic transcription of the given word).

2. **Answer as directed.**
   a) Children should obey _____parents. (Use appropriate pronoun).
   b) She is one of those which help old people. (Correct the sentence).
   c) Our team won the hockey champion. (Add appropriate suffix to the Underlined word).
   d) Don't be _____ ('child') (Use an appropriate prefix).
   e) admision (Correct the spelling)

3. **Answer as directed.**
   a) Where _____ your friends going yesterday? (Fill in the blank with the correct form of 'be').
   b) Where _____ you see my phone. (Fill in the blank with the correct auxiliary 'do').
   c) She wanted to _____ her best suit (Choose between 'wear' 'ware').
   d) Keep_____ (guess) the answers till you get the right one. (Fill in the blank with the correct form of the 'guess').
   e) alas we lost the match (punctuate the sentence)

4. **Answer as directed.**
   a) Give the past and past participle forms of the verb 'know'.
   b) How have you been _____? (Fill in the blank with the correct form of 'do').
   c) Many do a mistake out of carelessness. (Correct the underlined collocation).
   d) necessity is the mother of_____ . (Fill in the blank with the correct form of 'invent').
   e) Write the homophone for the word – 'cot'.

5 **Expand the following topic sentence into a paragraph.**
Doubt is the beginning of wisdom.

6 What is the importance of goal-setting in one's personal and professional life?

PART- B (4 x 15 = 60 Marks)
Answer the following questions.

7 a) What was Charlie's outlandish dream?

OR

b) What is the significance of the title 'The Curb in the Sky'?

8 a) According to Inge, what makes some people happy and why?

OR

b) What lesson can one learn from story of the ambassador and his ser vant in Inge's essay?

9 a) What lessons can we learn from 'Psalm of Life' ?

OR

b) What is the tone of the poem 'Psalm of Life' . Explain with examples.

10 a) Bring out the hypocrisy of human beings as seen in *The Dear De parted.*

OR

b) Examine the character of Mrs. Slater as mother, daughter and sister?

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Code No :4141

Faculty of Arts, Commerce, Science, Management & Social Science

B.A. / B.Sc. / B.Com. / B.B.A. I Year, I – Semester Examination, November 2019

Second Language Arabic, Paper I

Title of the paper : **Classical Prose, Modern Prose, Grammar & History of Arabic Literature.**

Time : 3 Hours **Max Marks : 80**

Section – A (4 X 5 = 20)

Answer any FOUR questions. Each question carries 5 marks.

I. Translate the following verses with reference to the context :

١) ترجم الآيات التالية مع الإشارة إلى نصها :

" أَلَمْ نَشْرَحْ لَكَ صَدْرَكَ ۞ وَوَضَعْنَا عَنْكَ وِزْرَكَ ۞ "

2. Answer the following question :

٢) متى أسست الجامعة العثمانية ؟

3. Write five examples of المذكر والمؤنث :

٣) اكتب خمسة أمثلة للمذكر والمؤنث.

4. Write in brief about Arabic Lanugage :

٤) اكتب عن اللغة العربية مجملا

5. Write any five meaning of the following words :

٥) هات معاني خمس كلمات من التالية :

لـغـة - طالب - أهلا وسهلا - النظافة - اسم - مدينة - طعام - كلية.

6. Convert any five of the following singular words into plurals :

٦) آت بخمسة جموع للكلمات الآتية :

سيّارة - فـرد - ثوب - رئيس - الجريدة - العالم - بـلـد - جامعة.

Cont. Page – 2

Section – B (4 X 15 = 60)

Answer all questions. Each question carries 15 marks.

7. **(A)** Explain the summary of Suratul Teen in detail:

٧) بيّن تفسير سورة التين بالتفصيل

(OR)

(B) Write the summary of "Suratul Inshirah" in detail:

اكتب عن تفسير سورة الانشراح مفصلا.

8. **(A)** Write in detail the summary of the lesson "Al Nazafah":

اكتب بالتفصيل عن خلاصة " النظافة "

(OR)

(B) Explain the summary of the lesson "Al Hiwar" :

٨) اكتب خلاصة " الحوار" مفصلا

9. **(A)** Write about "Kinds of Kalima" in detail with examples :

٩) اكتب عن أقسام الكلمة بالأمثلة مفصلا

(OR)

(B) Explain Kinds of Noun with examples:

بيّن أقسام الاسم بالأمثلة.

10. **(A)** Explain Seven Muallaqaat :

١٠) اكتب عن المعلقات السبع

(OR)

(B) Describe the characteristic features of Arabic language :

اذكر ميزات اللغة العربية.

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