22-02-2024
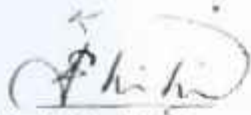
PROFESSIONAL SECTION

REGULAR EXAMINATION NOTICE

FY & SY SEM-II & IV

All the students of First Year & Second Year (BMS/BAMMC/BScIT/BScDS) are hereby informed that their Semester End Examination for Sem-II & IV (Regular) will be commencing from 27th March 2024.

Timetable will be displayed on notice board.

Prof. Shahid Pervez
Chairman Exam Committee
Professional Courses

Prof. (Dr.) Hanif Lakdawala
Asst. Director
Professional Courses

Prof. (Dr.) Shaukat Ali
Principal

Time Table - S. Y. B. Sc. (Data Sc) Semester-IV (Regular) March-2024

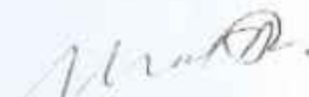| Sr. No.	Date	Day	Name of the Subjects	Time	Duration
1	27-03-2024	Wednesday	Testing of Hypothesis	11:30 am to 02:00 pm	2 ½ Hrs
2	28-03-2024	Thursday	Big Data	11:30 am to 02:00 pm	2 ½ Hrs
3	30-03-2024	Saturday	Fundamental of Accounting	11:30 am to 02:00 pm	2 ½ Hrs
4	01-04-2024	Monday	Artificial Intelligence	11:30 am to 02:00 pm	2 ½ Hrs
5	02-04-2024	Tuesday	Numerical Methods	11:30 am to 02:00 pm	2 ½ Hrs

Note:
1) Students without valid I-Card are not allowed to sit for the Semester End Examination.
2) Seating arrangement will be displayed later on notice board.
3) Mobile phones are not allowed in the examination hall.

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Chairman, Exam Comm.
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Principal

Note: All questions are compulsory:

Q1. Attempt any THREE from the following: [15]
   A   Explain different sources of data collection.
   B   Define Big Data. Also explain why companies collect data?
   C   Explain Typical analytic architecture of big data.
   D   What is data repository? Explain it characteristics.
   E   How growth of big data taken place? Explain.

Q2. Attempt any THREE from the following: [15]
   A   What are the key roles for a successful analytics project.
   B   Explain Data Analytics Lifecycle with proper diagram.
   C   Write short nots on Data conditioning.
   D   Explain various data types in big data.
   E   What do you mean by dirty data? Explain in detail.

Q3. Attempt any THREE from the following: [15]
   A   Solve using map reduce algorithm (i) Dog , Cat , Mouse (ii) Dog , Dog , Cat (iii) Dog , Cat , Duck.

   B   Explain Hadoop architecture.
   C   Explain CF using M X N Matrix
   D   Explain Collaborative Filtering
   E   Explain Tradeoff analysis in recommendation engine

Q4. Attempt any THREE from the following: [15]
   A   How can mining unstructured data benefit businesses in terms of gaining insights into customer sentiments and preferences?
   B   What are the key challenges businesses face when mining unstructured data, and how can they overcome these challenges to extract valuable insights?
   C   What components are crucial for a text mining framework to analyze social media? How do they help in extracting useful insights?
   D   How can businesses blend text mining and social network analysis into current systems to boost customer engagement and enhance brand image using social media data?
   E   What metrics should businesses prioritize when assessing the success of their text mining and social network analysis in understanding customer behavior and improving marketing strategies on social media?

Q5. Attempt any THREE from the following: [15]
   A   How can businesses effectively translate their strategic goals into actionable analytics projects for implementing a comprehensive data analytics solution?
   B   What steps are involved in planning and executing a complete data analytics solution that aligns with business objectives and drives tangible results?

   C   What are the key considerations for businesses when selecting technologies and tools to implement a data analytics solution that supports their specific business goals and objectives?
   D   How do you identify core data sources in the initial data discovery phase of the analytics life cycle, and why is this important?
   E   What role does data modeling play in the analytics life cycle, and what techniques are commonly used to prepare data for analysis?

----X--X----

APCCE / Class: SYDS / SEM-IV / SUB: FUNDAMENTALS OF ACCOUNTING / DUR 2 ½ Hrs. / Mks: 75 / DT. 30/03/24

Note: 1) All questions are compulsory and Figures to the right indicate marks.
3) Mixing of sub-questions is not allowed and try to accommodate the whole QP in a single page.

Q1.		Attempt any THREE:	[15]
	a.	Explain Internal and External users?	
	b.	Explain the three Economic Entity?	
	c.	State the 2 Basic Accounting Equation?	
	d.	Explain in brief 2 Owner Equity?	
	e.	Explain the types of Accounting?	
	f.	What are the measurement principles?	

Q2.		Attempt any THREE:	[15]
	a.	Explain what are Journal Entries?	
	b.	What is a Trial balance and what is its purposes?	
	c.	Describe the part of T-account?	
	d.	Explain what a is Ledger?	
	e.	What are the basic steps in the recording process?	
	f.	What are the Debit and Credit Procedures (Assets and liabilities)?	

Q3.		Attempt any THREE:	[15]

a.

The adjusted trial balance columns of Falcetto Company's worksheet for the year ended December 31, 2017, are as follows.

	Debit		Credit
Cash	14,500	Accumulated Depreciation—	
Accounts Receivable	11,100	Equipment	18,000
Inventory	29,000	Notes Payable	25,000
Prepaid Insurance	2,500	Accounts Payable	10,600
Equipment	95,000	Owner's Capital	81,000
Owner's Drawings	12,000	Sales Revenue	536,800
Sales Returns and Allowances	6,700	Interest Revenue	2,500
Sales Discounts	5,000		673,900
Cost of Goods Sold	363,400		
Freight-Out	7,600		
Advertising Expense	12,000		
Salaries and Wages Expense	56,000		
Utilities Expense	18,000		
Rent Expense	24,000		
Depreciation Expense	9,000		
Insurance Expense	4,500		
Interest Expense	3,600		
	673,900		

Instructions

Prepare a multiple-step income statement for Falcetto Company.

b.

2. In its income statement for the year ended December 31, 2017, Sale Company reported the following condensed data.

Interest expense	$ 50,000	Net sales	$1,650,000
Operating expenses	590,000	Interest revenue	20,000
Cost of goods sold	902,000	Loss on disposal of equipment	7,000

Instructions

(a) Prepare a multiple-step income statement.
(b) Prepare a single-step income statement.

P.T.O.

	c	1. Gerald D. Englehart Company has the following inventory, purchases, and sales data for the month of March.

Inventory:	March 1	200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **periodic inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) average-cost.

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d. Hinske Company had the following transactions during April.

1. Sold merchandise on account.
2. Purchased merchandise on account.
3. Collected cash from a sale to Renfro Company.
4. Recorded accrued interest on a note payable.
5. Paid $2,000 for supplies.

Identify the journal in which each of the transactions above is recorded.

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e. 1. On June 1, the balance of the Accounts Receivable control account in the general ledger of Rath Company was $13,620. The customers' subsidiary ledger contained account balances as follows: Wilson $2,000, Sanchez $3,140, Roberts $2,560, and Marks $5,920. At the end of June, the various journals contained the following information.

Sales journal: Sales to Roberts $900, to Wilson $1,400, to Hardy $1,500, and to Marks $1,200.
Cash receipts journal: Cash received from Roberts $1,610, from Marks $2,600, from Hardy $580, from Sanchez $2,100, and from Wilson $1,540.
General journal: An allowance is granted to Marks $325.

Instructions

(a) Set up control and subsidiary accounts and enter the beginning balances. Do not construct the journals.
(b) Post the various journals. Post the items as individual items or as totals, whichever would be the appropriate procedure. (No sales discounts given.)
(c) Prepare a schedule of accounts receivable and prove the agreement of the control account with the subsidiary ledger at June 30, 2017.

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f. Gerald D. Englehart Company uses a perpetual inventory system. The company has the following inventory, purchases, and sales data for March.

Inventory:	March 1	200 units @ $4.00	$ 800
Purchases:	March 10	500 units @ $4.50	2,250
	March 20	400 units @ $4.75	1,900
	March 30	300 units @ $5.00	1,500
Sales:	March 15	500 units	
	March 25	400 units	

The physical inventory count on March 31 shows 500 units on hand.

Instructions

Under a **perpetual inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) moving-average cost.

Q4.	Attempt any THREE:	[15]
a.	What is Fraud?	
b.	Explain Human Resource Controls?	
c.	Elaborate the principle of Internal Control Activity?	
d.	Explain making band deposit and written cheques with the diagram?	
e.	Explain Voucher System Control?	
f.	What is Internal Control?	

Q5.	Attempt any THREE:	[15]
a.	Determining the Payroll?	
b.	What is Reconciliation Procedure and Explain its step?	
c.	Justify the reporting of Current Liabilities and Analyse it?	
d.	Explain Debit and Credit Memorandum?	
e.	Explain Cash Equivalents?	
f.	Explain the reporting of a Contingent Liability?	

----X----X----

APCCE / SYCS / Sem-IV/ Artificial Intelligence / Reg–Mar-24/Mrks:75/Dur. 2½ Hrs. / Dt. 01/04/24

Note: All questions are compulsory:

Q1. Attempt any THREE from the following: [15]

   A   Draw an explain the structure of intelligent agent.

   B   Write and explain the components of artificial intelligence.

   C   Differentiate between computational intelligence and Artificial intelligence.

   D   Explain the following approaches of AI

       i)   Thinking Humanly   ii) Acting Humanly

   E   Write and explain the application of artificial intelligence.

   F   What is an agent ? Explain the generic robotic agent structure.

Q2. Attempt any THREE from the following: [15]

   A   Explain Breadth First Search with suitable example. Also write its time and space complexity.

   B   Write the name of different uninformed search. Write the advantages and disadvantages of BFS.

   C   What is Searching in Artificial Intelligence? Explain the properties of search algorithm.

   D   What is machine learning? Write its features.

   E   Define the following terms in search algorithm

       i)   Search Space ii) Start Space iii) Goal Test iv) Search Tree v) Action

   F   What is Depth first Search? Write its advantages and disadvantages.

Q3. Attempt any THREE from the following: [15]

   A   Explain Simple relational knowledge and Inheritable knowledge.

   B   Write the different drawbacks in Semantic Representation of knowledge.

   C   What is knowledge representation? Explain Object, Events, Performance and Facts.

   D   Explain AI knowledge cycle with suitable diagram.

   E   Write and explain different types of knowledge used in AI.

   F   What is logical representation of knowledge? Explain its syntax and semantics. Also write its advantage and disadvantages.

Q4. Attempt any THREE from the following: [15]

   A   Explain Conditional probability with suitable example.

   B   Write and explain the relation between knowledge and intelligence.

   C   What is Probabilistic reasoning in AI? Write its need.

   D   Explain the following approaches of AI

       i)   Thinking Rationally ii) Acting Rationally

   E   Write a note on Bayes' theorem in AI.

   F   Define the following terms in search algorithm

       i)   Transaction Model ii) Path Cost iii) Solution iv) Optimal Solution v) Search

Q5. Attempt any THREE from the following: [15]

   A   Write the advantages and disadvantages of supervised learning.

   B   Differentiate between supervised and unsupervised learning in AI

   C   Explain Supervised and Unsupervised learning.

   D   What is supervised learning? Write the steps involved in supervised learning.

   E   Write a note on machine learning life cycle.

   F   Explain any two applications of machine learning.

----X---X----

Note : 1) All questions are compulsory.

2) Figures to the right indicate marks.

3) Mixing of sub-questions is not allowed and try to accommodate whole QP in single page.

Q1.   Attempt any THREE: [15]

a) Differentiate the following with respect to x when $y=\sqrt[3]{x^2}$.

b) Explain Interpolation.

c) Differentiate the following with respect to x when $y=\frac{x}{e^x}$.

d) Explain types of matrix.

e) If $A=\begin{matrix}9 & 1\\ 4 & 3\end{matrix}$ $B=\begin{matrix}1 & 5\\ 7 & 12\end{matrix}$ find the matrix X such that 3A+5B+2X=0.

f) From the following table estimate the number of students who obtain marks between 40 and 45.

Marks less than (X)	No of students
30 - 40	31
40 - 50	42
50 - 60	51
60 - 70	35
70 - 80	31

Q2.   Attempt any THREE: [15]

a) Find the value of the given variable by using Gauss elimination method.
   $x-y=-2$ and $y = x^2$.

b) Used the method of elimination to find the solution to the following system or to determine if the system is inconsistent or dependent.
   $2x+3y =20$ and $7x+2y=53$

c)   Used the method of substitution to find the solution to the following system or to determine if the system is inconsistent or dependent.
   $7x-8y=-12$ & $-4x+2y=3$

d) Find the value of the given variable by using Gauss elimination method.
   $x+3y+6z=12$, $x+4y+5z=14$ and $x+6y+7z=18$

e) Used the method of substitution to find the solution to the following system or to determine if the system is inconsistent or dependent.
   $3x+9y=-6$ & $-4x-12y=8$

Q3.   Attempt any THREE: [15]

a) Explain Least Square Method.

b) Let $f(x) =e^x$ for $0\le x\le 2$ approximate $f(0.25)$ using linear interpolation with $x_0=0$ and $x_1=0.5$.

c) Regression equation of two series are 5x-6y+90=0 and 15x-8y-180=0 find the mean value of x and y and also the coefficient of correlation r.

d) Find the quadratic regression model for the following data.

x	3	4	5	6	7
y	2.5	3.2	3.8	6.5	11.5

e) From the following data find the two regression and estimated y when x=13 and estimate x when y=10.

x	14	10	15	11	9	12	6
y	8	6	4	3	7	5	9

f) Explain Scatter Diagram with example

Q4. Attempt any THREE: [15]

a) Find the initial value of dy/dx=2xy where y(0)=3.

b) Explain Adams-Bashforth Explicit Methods.

c) Explain Runge-Kutta method of fourth order.

d) Apply Runge –Kutta method of second order to find on approximate value of y when x=0.02 given that dy/dx=x²+y and y(0)=1.

e) Find the initial value of dy/dx=6x-3 where y(0)=4.

f) Explain Comparisons of linear and non-linear equation.

Q5. Attempt any THREE: [15]

a) Explain Higher Order ODE.

b) Find the eigen value for the following matrix.

$A= \begin{matrix} 2 & 1 \\ 4 & 5 \end{matrix}$

c) Explain Hessenberg Matrices.

d) Evaluation & eigen value for the following.

$\begin{matrix} 1 & 0 & 0 \\ 0 & -1 & 2 \\ 2 & 0 & 0 \end{matrix}$

e) Complete 6 iteration of the power method to approximate a dominant eigen vector. $A= \begin{matrix} 2 & -12 \\ 1 & -5 \end{matrix}$

f) Explain problems with the power method.

****** ALL THE BEST ******