

KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(6 Pages)

Reg. No:.....

Question Code: 26E03905

Course Code : 25UEH021

UG Degree - End Semester Examinations, April 2026

Second Semester

B.COM HONOURS

Business Mathematics and Statistics

(For those who joined in June 2025 onwards)

Time : 3Hours

Maximum : 75 Marks

PART - A ($10 \times 1 = 10$ Marks)

Answer ALL Questions

Choose the correct answer :

- CO:1 1. Periodic fixed sum paid under certain stated conditions is called:
K:1 (a) Annuity (b) Perpetuity
(c) Deferred Perpetuity (d) Annuity due
- CO:1 2. The compound interest of Rs. 8,000 for 3 years at 10% per year is
K:2 (a) Rs.2000 (b) Rs.2545
(c) Rs.2,600 (d) Rs. 2,648
- CO:2 3. Debt equity ratio is a measure of
K:1 (a) Short term solvency (b) Long term solvency
(c) Profitability (d) Efficiency
- CO:2 4. The mathematical expression that provides a measure of the
K:2 relationship between two figures is called:
(a) Conclusion (b) Ratio
(c) Model (d) Decision
- CO:3 5. If 20 units of some product cost Rs.25,000 and 50 units cost Rs.
K:1 3,400 to produce, the linear cost function is
(a) $Y=30x+1900$ (b) $Y= 20x+5900$
(c) $Y = 50x+3400$ (d) $Y = 10x+ 900$
- CO:3 6. The area bounded by the curve $xy = 1$, the x axis $x=1$ and $x=2$ is:
K:2 (a) $\log 2$ (b) $\log \frac{1}{2}$
(c) $2 \log 2$ (d) $\frac{1}{2} \log 2$

- CO:4 7. In the simultaneous tossing of two perfect dice, the probability of
K:1 obtaining 4 as the sum of the the resultant faces is
(a) $4/12$ (b) $1/12$
(c) $3/12$ (d) $2/12$
- CO:4 8. Student's t-distribution was discovered by
K:2 (a) Karl pearson (b) Laplace
(c) Fisher (d) Gosset
- CO:5 9. When the two regression lines coincide, the value of r is:
K:1 (a) 0 (b) -1
(c) 1 (d) 0.5
- CO:5 10. AI can help investors by
K:2 (a) Ignoring market trends (b) Analyzing large volumes of
financial data
(c) Reducing data availability (d) Eliminating all investment
risk

PART - B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

- CO:1 11. (a) Explain the objectives of ratio analysis.

K:3

(OR)

- (b) Explain the various techniques of inventory management

- CO:2 12. (a) From the following information, determine the EOQ:

K:3

Annual Consumption: 90000 units

Cost per unit: Rs.50

Buying cost per order: Rs.10

Cost of carrying inventory: 10% of cost

(OR)

- (b) From the following particulars, calculate inventory turnover ratio

Minimum stock level Rs.2,000

Maximum stock level Rs.6,000

Issues during the period Rs.20,000

- CO:3 13. (a) A manufacturer can sell x items per week at a price of $P=600-4x$ rupees. Production cost of X items works out to Rs. C where $C=40x+2000$. How much production will yield maximum profit?
K:4

(OR)

- (b) Find the area enclosed by the parabola $y^2=4x$, $x=1, x=4$ and the x -axis.

- CO:4 14. (a) An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that i) both are white ii) both are red iii) one is of each color.
K:3

(OR)

- (b) Comment on the following:

For a binominal distribution, Mean = 7 and Variance = 11.

- CO:5 15. (a) Discuss the role of Machine Learning in modern financial systems.
K:4

(OR)

- (b) Develop the ethical concerns in AI-driven financial decision making.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 500 words.

- CO:1 16. (a) The difference between compound interest and simple interest is Rs. 384.60. Number of years 4. Rate of interest 10%. Find out the Sum.
K:3

(OR)

- (b) If Rs. 450 amount to Rs.504 in 3 years at simple interest, what will Rs. 650 amount in 2 years 6 months, the interest rate being the same in both case.

CO:2 17. (a) The following is the Statement of Profit and Loss of a company for the year ended 31 March 2026.
K:4

Statement of Profit and Loss Account

Particulars	Amount (₹)
Revenue from Operations (Net Sales)	25,00,000
Cost of Goods Sold	16,00,000
Gross Profit	9,00,000
Selling and Administrative Expenses	2,50,000
Depreciation	50,000
Operating Profit (EBIT)	6,00,000
Interest Expense	1,00,000
Profit Before Tax	5,00,000
Income Tax	1,50,000
Profit After Tax	3,50,000

Additional Information

- Shareholders' Equity = ₹17,50,000
- Capital Employed = ₹30,00,000
- Total Assets = ₹35,00,000
- Number of Equity Shares = 70,000
- Market Price per Share = ₹140
- Dividend per Share = ₹2

Calculate the following profitability ratios:

1. Gross Profit Ratio
2. Operating Profit Ratio
3. Net Profit Ratio
4. Return on Capital Employed (ROCE)
5. Return on Equity (ROE)
6. Return on Assets (ROA)
7. Earnings Per Share (EPS)
8. Price Earnings Ratio (P/E Ratio)

(OR)

- (b) The following Balance Sheet information is available for a company as on 31 March 2026.

Balance Sheet Extract

Particulars	Amount (₹)
Equity Share Capital	10,00,000
Reserves and Surplus	4,00,000
12% Preference Share Capital	2,00,000
10% Debentures	6,00,000
Long-Term Bank Loan	3,00,000
Current Liabilities	5,00,000
Fixed Assets	18,00,000
Current Assets	12,00,000

Additional Information

- Profit before Interest and Tax (EBIT) = ₹4,50,000
- Interest on Debentures = ₹60,000
- Interest on Bank Loan = ₹30,000

Calculate:

1. Debt–Equity Ratio
2. Proprietary Ratio
3. Capital Gearing Ratio
4. Interest Coverage Ratio
5. Fixed Assets to Long-Term Funds Ratio

- CO:3 18. (a) Find the area of the circle of radius 'a' using integration.

K:5

(OR)

- (b) A man plans to invest some amount in a small saving scheme with a guaranteed compound interest at the rate of 12 % for 5 Years. How much should he invest if he wants the amount Rs. 25,000 at the end of 5 years period.

- CO:4 19. (a) In a certain sample of 2,000 families, 1,400 families are consumers of tea. Out of 1,800 families, 1,236 families consume tea. Use chi-square test and state whether there is

K:6

any significant difference between consumption of tea among Hindu and non-hindu families.

(OR)

- (b) Sample of two different types of bulbs were tested for length of life and the following data were obtained:

	Type I	Type II
Sample size	8	7
Sample Mean	1234 hours	1136 hours
Sample of SD	36 hours	40 hours

Is the difference in the means significant?

- CO:5 20. (a) From the following data of the rainfall and production of rice, find the most likely production corresponding to the rainfall of 40".

K:4

	Rain fall(inches)	Production (Quintals)
Mean	3.5	50
Standard deviation	5	8
Co-efficient of correlation = +0.8		

(OR)

- (b) An investment of Rs. 10,000 (having scrap value of Rs. 500) yields the following returns:

Year	1	2	3	4	5
CFAT	4000	4000	3000	3000	2500

The cost of capital is 10%. Is the investment desirable? Discuss it according to NPV method assuming the P.V factors for 1st, 2nd, 3rd, 4th and 5th year. 0.909, 0.826, 0.751, 0.683 and 0.620 respectively.