

PSG COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)

BVoc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch- **BANKING, STOCK AND INSURANCE**

MATHEMATICS FOR BUSINESS

Time: Three hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL the questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- Identify the simple interest on Rs.6000 at 10% for 3 years.
(i) Rs. 3800 (ii) Rs. 2800 (iii) Rs. 1800 (iv) Rs. 1500
- If the payments are to be made at the beginning of each interval, then the annuity is called
(i) Perpetual Annuity (ii) Annuity Due
(iii) Present Value (iv) Immediate Annuity
- Mention the method to obtain optimum solution in a transportation problem
(i) NWCM (ii) LCM (iii) LCM (iv) MODI
- Indicate two-person zero sum game
(i) Sum of losses to one player is equal to the sum of gains to other
(ii) Sum of losses to one player is not equal to the sum of gains to other
(iii) None of the above
(iv) Both (i) and (ii)
- Choose Little's formula
(i) $L_s = \lambda W_s$ (ii) $L_q = \lambda W_s$ (iii) $W_s = W_q$ (iv) $L_s = \mu W_q$

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- a) Calculate the compound interest on Rs.20,000 for 5 years at 20% per annum.
(Or)
b) Calculate the effective rate of interest equivalent to a nominal rate of 12% per annum, compounded monthly.
- a) Calculate the Banker's discount on a bill whose present value is Rs.10,000 and which is legally due 4 months at 10% per annum.
(Or)
b) Calculate the term of a bill of Rs.18,360 whose true discount at 8% p.a is Rs.360.
- a) Calculate the basic solution for following transportation problem by Least cost method.

3	3	4	1	100
4	2	4	2	120
1	5	3	2	80
120	80	75	25	

(Or)

- b) Narrate basic feasible solution in transportation Problem.
- a) Solve the following game

		Player B	
		I	II
Player A	I	1	1
	II	4	-3

(Or)

- b) State Dominance Property for games.
- a) Discuss queueing theory.
(Or)
b) Classify Kendall's notation in queueing models.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

11. a) The difference between the CI and the SI for 3 years at 5% per annum on a certain sum of money was Rs.610. Discover the sum(principal).
(Or)
- b) At the end of each year the value of a machine depreciates by 10% of its value at the commencement of the year. If the value of the machine at the commencement was Rs.58,750, Discover the value of the machine after 3 years.

12. a) A sum of Rs.1000 is to be paid at the end of every year for a period of 5 years at the rate of 10% per annum compound interest. If the first installment is paid at the end of first year, how much amount will be accrued to the credit of the depositor?

(Or)

- b) A bill for Rs.1,825 was drawn on 22nd January at 6 months date and discounted on 16th April at the rate of 10% per annum. Calculate the banker's gain.
13. a) Outline transportation problem and MODI method.
(Or)
- b) Obtain Basic feasible solution for the following Transportation problem by NWCM, LCM and VAM. Compare your results

	W1	W2	W3	W4	Supply
F1	19	30	50	10	8
F2	70	30	40	60	10
F3	40	8	70	20	19
Demand	6	8	8	15	37

14. a) Discuss the following game by dominance rule.

		Player A			
		I	II	III	IV
Player B	I	3	5	4	2
	II	5	6	2	4
	III	2	1	4	0
	IV	3	3	5	2

(Or)

- b) Discuss the following game by using graphical method

	I	II	III
I	1	3	11
II	8	5	2

15. a) Customers arrive at a watch repair shop according to a Poisson process at a rate of one per every 10 minutes and the service time is an exponential distribution with mean 8 minutes.

Analyze

- The average number of customers in the shop
- The average waiting time a customer spends in the shop
- The average number of customers in the queue
- What is the probability that the server is idle?
- What is the probability that the server is busy?

(Or)

- b) A self-service store has one cashier at its counter, 9 customers arrive on an average 5 minutes while the cashier can serve 10 customers in 5 minutes. Assuming Poisson distribution for arrival rate and exponential distribution for service rate, Analyze

- Average number of customers in the system
- Average number of customers in the queue
- Average time a customer waits before being served
- Average time a customer spends in the system