22BSB210N/ N19BSB10

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BVoc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch – **BANKING, STOCK & INSURANCE**

MATHEMATICS FOR BUSINESS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The fees paid by the borrower for using the money lender is called _____ a) interest b) borrower c) principle d) discount	K1	CO1
	2	Rate of interest is the interest for _____ per unit of time. a) Rs.200 b) rs.50 c) Rs.150 d)Rs.100	K2	CO1
2	3	_____of an annuity is the sum of the present values of all the installment payment. a) present value b) interest value c) cumulative value d) discount value	K1	CO2
	4	The value due on the due date from a bill of exchange is its _____ a) place value b) present value c) face value d)discount value	K2	CO2
3	5	The solution to a transportation problem with m sources and n destination is feasible, if the number of allocations are _____. a) m+n-1 b) m+n+1 c) m+n d) m*n	K1	CO3
	6	The dummy source or destination in a TP is introduced to _____. a) prevent solution to become degenerate b) to satisfy rim conditions c) ensure that total cost does not exceed a limit d) solve the balanced transportation problem	K2	CO3
4	7	A game is said to be fair, if _____ a) upper value is more than lower value of the game b) upper and lower values of the game are not equal c) upper and lower values of the game are same and zero d) none of the above	K1	CO4
	8	Games which involve more than two players are called _____ a) biased games b) negotiable games c) conflicting games d) n person games	K2	CO4
5	9	Customer behaviour in which the customer moves from one queue to another for his personal economic gains is called _____. a) balking b) jockeying c) reneging d) alternating	K1	CO5
	10	Service mechanism in a queuing system is characterized by _____. a) customer's behaviour b) servers behaviour c) customers in the system d) all of the above	K2	CO5

SECTION - B (35 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	A certain sum deposited in a bank at 15% p.a. compounded monthly amounts to Rs.42,143.63 at the end 5 years. Find the principal.	K1	CO1
		(OR)		
	11.b.	If a term deposit of Rs.4,000 earns an interest of Rs.2,500 in 50 months. Find the rate of interest.		
2	12.a.	In a company a machine costs Rs.80,000 and its life is estimated to be 20 years. Sinking fund is created for replacing the machine at the end of its life time when its scrap realizes a sum of Rs.5,000 only. Calculate the amount which should be provided every year for the sinking fund if it accumulates at 9% p.a. compounded annually.	K1	CO2
		(OR)		
	12.b.	The banker's gain on a sum due 10 months hence at 6% is Rs.25. Find the sum due.		

Cont...

3	13.a.	Determine an initial basic feasible solution to the following transportation problem by North west corner method; D: A 11, B 16, C 21, Required 200 E: A 13, B 18, C 24, Required 225 F: A 17, B 14, C 13, Required 275 G: A 14, B 10, C 10, Required 250 Available: A 250, B 300, C 400	K2	CO3
		(OR)		
	13.b.	Find the starting solution in the following transportation problem by Vogel's approximation method : S1: D1 3, D2 7, D3 6, D4 4, Supply 5 S2: D1 2, D2 4, D3 3, D4 2, Supply 2 S3: D1 4, D2 3, D3 8, D4 5, Supply 3 Demand: D1 3, D2 3, D3 2, D4 2		
4	14.a.	For the game with the following pay-off matrix, determine the optimum strategies and the value of game; Player P1 \ Player P2: 1, 2 P1: 5, 1 P2: 3, 4	K1	CO4
		(OR)		
	14.b.	Solve the following game; $\begin{pmatrix} 2 & 5 \\ 7 & 3 \end{pmatrix}$		
5	15.a.	A T.v repairman finds that the time spend on his job has an exponential distribution with mean 30 minutes. If he repairs in the order in which they come in and if the arrival of set in approximately poission with an average rate of 10 per 8 hour day. Find the repairman's experted idle time each day in hours?	K2	CO5
		(OR)		
	15.b.	A super market have two sales girls serving at the counters. The customers arrive in a Poisson fashion at the rate of 12 customers per hour. The service time for each customer is exponential with mean 6 minutes. Find; a) The probability that an arriving customer has to wait for server b) The average number of customers in the system c) The average time spent by a customer in the super market.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	V.P.Balaraman deposits Rs.12,000 in Pandurangan Associates and gets Rs.27,566.93 at the end of $3\frac{1}{2}$ years. Find the rate of compound interest which the company pays per month.	K1	CO1
2	17	On the eve of retirement, a college Professor decides to endow a fund at 16% interest which will facilitate the College to give a prize worth Rs.1000 every year to the best outgoing student of his subject. How much should he donate now, if the prize is to be given.	K1	CO2
3	18	Solve the following transportation problem; From \ To: A, B, C, Supply I: 6, 9, 4, 14 II: 4, 9, 8, 12 III: 1, 2, 6, 5 Demand: 6, 10, 15	K2	CO3
4	19	Solve the following game : $\begin{pmatrix} 2 & 2 & 3 \\ 4 & 3 & 2 \end{pmatrix}$.	K1	CO4
5	20	At Dr.Prachi's clinic patients arrive at an average of 6 patients per hour. The clinic is attended by Dr.Prachi herself. Some patients require only the required prescription. Some come for minor check-up, while some others require thorough inspection for the diagnosis. This takes the doctor six minutes per patient on an average. It can be assumed that arrivals follow a Poisson distribution and the Doctor's inspection time follows as exponential distribution. Determine : a) The average number of patients in the clinic b) The average number of patients in the queue c) The average waiting time of a patient in the clinic.	K2	CO5

Z-Z-Z END