



NMIMS Global Access
School for Continuing Education (NGA-SCE)
Course: Decision Science
Internal Assignment Applicable for April 2023 Examination

Assignment Marks: 30

Instructions:

- All Questions carry equal marks.
- All Questions are compulsory
- All answers to be explained in not more than 1000 words for question 1 and 2 and for question 3 in not more than 500 words for each subsection. Use relevant examples, illustrations as far as possible.
- All answers to be written individually. Discussion and group work is not advisable.
- Students are free to refer to any books/reference material/website/internet for attempting their assignments, but are not allowed to copy the matter as it is from the source of reference.
- Students should write the assignment in their own words. Copying of assignments from other students is not allowed.
- Students should follow the following parameter for answering the assignment questions.

For Theoretical Answer	
Assessment Parameter	Weightage
Introduction	20%
Concepts and Application related to the question	60%
Conclusion	20%

For Numerical Answer	
Assessment Parameter	Weightage
Understanding and usage of the formula	20%
Procedure / Steps	60%
Correct Answer & Interpretation	20%

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1. Based on the following data develop the forecasting model (adopt Exponential Smoothing Technique) by considering the following alpha levels. $\alpha = 0.2, 0.4, 0.6, 0.8$.

Write your conclusion after calculations of Errors (MAD and MSE only).

Forecast FTAs (foreign tourist arrival) for the year 2018.

Data: The following data shows the Foreign Tourist Arrival in the India from 1991 to 2017

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Year	FTAs in India (in Million)
1991	1.68
2001	2.54
2002	2.38
2003	2.73
2004	3.46
2005	3.92
2006	4.45
2007	5.08
2008	5.28
2009	5.17
2010	5.78
2011	6.31
2012	6.58
2013	6.97
2014	7.68
2015	8.03
2016	8.8
2017	10.04

Data Source: Data.gov.in

Note: You are advised to calculate manually, do not use any software.

(10 Marks)

2. Calculate the Correlations for the following pairs of variables and write your Conclusion.

- In Migration of Persons from other states (Census of India) & Total MSMEs
- In Migration of Persons from other states (Census of India) & Active Companies
- In Migration of Persons from other states (Census of India) & 2017-18 GSDP - CURRENT PRICES (₹ in Crore)
- Total MSMEs & Active Companies

Note: Use MS EXCEL, SPSS, SAS etc. for the calculations.

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State	Total MSMEs	Active Companies	In Migration of Persons from other states (Census of India)	2017-18 GSDP - CURRENT PRICES (₹ in Crore)
ANDAMAN & NICOBAR ISLANDS	6,061	319	81,267	7,871
ANDHRA PRADESH	6,41,929	1,16,210	15,91,890	15,46,313
ARUNACHAL PRADESH	60,932	237	1,36,010	22,432
ASSAM	20,189	6,346	4,95,699	2,88,691
BIHAR	9,02,520	20,867	11,11,954	4,84,740
CHANDIGARH	11,209	7,956	6,33,966	38,760
CHHATTISGARH	69,758	7,109	12,67,668	4,84,740
DELHI	1,63,821	2,16,531	63,30,065	6,86,824
GOA	8,620	4,125	2,69,689	70,494
GUJARAT	8,07,378	62,619	39,16,075	13,28,068
HARYANA	1,85,486	30,868	36,26,318	6,49,592
HIMACHAL PRADESH	14,674	3,344	3,95,504	1,38,351
JAMMU & KASHMIR	9,399	2,745	1,55,187	1,37,427
JHARKHAND	1,57,813	9,554	21,95,521	2,76,243
KARNATAKA	3,32,872	68,333	32,47,660	13,57,579
KERALA	1,25,934	31,244	6,54,423	7,01,577
MADHYA PRADESH	9,34,293	22,315	27,44,332	7,24,729
MAHARASHTRA	16,92,859	2,31,912	90,87,380	24,11,600
MANIPUR	34,423	434	20,100	23,835
MEGHALAYA	2,208	560	1,07,915	30,790
MIZORAM	3,238	66	41,380	18,737
NAGALAND	1,543	235	1,08,020	24,492
ODISHA	1,19,291	15,204	8,55,096	4,34,769
PUDUCHERRY	10,539	1,282	3,39,967	32,962
PUNJAB	2,03,394	16,909	24,88,299	4,78,636
RAJASTHAN	5,72,546	37,022	26,04,298	8,35,170
SIKKIM	875	2	61,163	23,495
TAMIL NADU	10,32,490	76,675	16,50,771	14,61,841
TRIPURA	5,936	317	87,378	44,219
UTTAR PRADESH	8,87,413	70,863	40,61,933	14,60,443
UTTARAKHAND	40,443	4,792	12,50,575	2,22,836
WEST BENGAL	2,31,190	1,35,844	23,81,045	9,99,585
Data Source	https://data.gov.in/	https://data.gov.in/	https://censusindia.gov.in/	https://data.gov.in/

(10 Marks)

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3. a. Summarized the following data by calculating the mean and standard deviation.

(5 Marks)

Note: You are advisable to use EXCEL. You are supposed to Copy the numbers (final calculations) from EXCEL and paste them into your word document.

State	District	Number Of Indigenous (Desi) Total Cattle	Total Buffalo
UTTARAKHAND	Uttarkashi	82991	25945
UTTARAKHAND	Chamoli	132165	37922
UTTARAKHAND	Rudraprayag	71277	31115
UTTARAKHAND	Tehri Garhwal	80833	79394
UTTARAKHAND	Dehradun	87753	52185
UTTARAKHAND	Garhwal	235412	30076
UTTARAKHAND	Pithoragarh	108417	37056
UTTARAKHAND	Bageshwar	70863	31432
UTTARAKHAND	Almora	132038	77444
UTTARAKHAND	Champawat	45506	18599
UTTARAKHAND	Nainital	101009	77759
UTTARAKHAND	Udham Singh Nagar	63311	152911
UTTARAKHAND	Hardwar	63728	214480

Data Source: Ministry of agriculture and farmers' welfare.

3. b. Write about the general pattern (here, time series component) across the given years using an appropriate graph. **(5 Marks)**

Note: You may use EXCEL, Tableau, Power BI Etc. for creating Graph

PLEASE CHECK THE TABLE BELOW

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Year	Productivity Groundnut (Kg./hectare)	Productivity Rape seed & Mustard (Kg./hectare)	Year	Productivity Groundnut (Kg./hectare)	Productivity Rape seed & Mustard (Kg./hectare)	Year	Productivity Groundnut (Kg./hectare)	Productivity Rape seed & Mustard (Kg./hectare)	Year	Productivity Groundnut (Kg./hectare)	Productivity Rape seed & Mustard (Kg./hectare)
1950-51	775	368	1968-69	653	469	1986-87	841	700	2003-04	1357	1159
1951-52	649	393	1969-70	720	493	1987-88	855	748	2004-05	1020	1038
1952-53	611	408	1970-71	834	594	1988-89	1132	906	2005-06	1187	1117
1953-54	811	389	1971-72	823	396	1989-90	930	831	2006-07	866	1095
1954-55	766	425	1972-73	585	545	1990-91	904	904	2007-08	1459	1001
1955-56	752	336	1973-74	845	493	1991-92	818	895	2008-09	1163	1143
1956-57	783	411	1974-75	724	612	1992-93	1049	776	2009-10	991	1183
1957-58	734	387	1975-76	935	580	1993-94	941	847	2010-11	1411	1185
1958-59	828	426	1976-77	747	496	1994-95	1027	958	2011-12	1323	1121
1959-60	708	365	1977-78	866	460	1995-96	1007	916	2012-13	996	1262
1960-61	745	467	1978-79	835	525	1996-97	1138	1017	2013-14	1750	1188
1961-62	725	425	1979-80	805	411	1997-98	1040	668	2014-15	1400	1089
1962-63	695	417	1980-81	736	560	1998-99	1214	869	2015-16	1465	1183
1963-64	769	300	1981-82	972	541	1999-00	766	960	2016-17	1398	1304
1964-65	814	507	1982-83	732	577	2000-01	977	935	2017-18	1893	1410
1965-66	554	446	1983-84	940	673	2001-02	1127	1002	2018-19	1422	1511
1966-67	604	408	1984-85	898	771	2002-03	694	854	2019-20	2063	1331
1967-68	759	483	1985-86	719	674				2020-21	1676	1511
