

MN3AG8

SYBA
STATS - III

TOTAL MARKS :- 60

DURATION:- 2 HOURS

INSTRUCTIONS:-

- 1) All the questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Statistical tables will be provided on request.

Q.1)A) Attempt **ANY ONE** of the following. (1)

- 1) Define Merge & Burst event.
- 2) Define the most likely event.

B) Attempt **ANY TWO** from the following. (7)

- 1) What is float? What are the different types of floats?

2) A small project consists of following activities. Construct a network diagram for the project & identify critical path & project completion time. (7)

Activity	A	B	C	D	E	F	G	H
Preceding activity	-	-	-	A	B	C	D,E	F
Time (Days)	3	2	4	4	2	2	8	5

3) For the following project, draw PERT network & using the given expected time of each activity, identify the critical path. Further find (i) the expected project completion time, (ii) variance of the critical path, (iii) the probability of project completion in 25 days. (7)

Activity	1-2	2-3	2-4	3-4	3-5	4-5	4-6	5-7	6-7
Expected time (in days)	4	6	8	zero	2	3	6	2	5

Q.2)A) Select the correct alternative out of the given ones.

The number of possible samples of size n drawn out of N population units without replacement is _____ (1)

- (i) ${}^N C_n$, (ii) N, (iii) ∞ , (iv) n!

OR

A) Fill in the blank. (1)

In a _____ population all the sampling units are imagined

B) Attempt **ANY TWO** from the following. (7)

- 1) Describe various steps in conducting a sample survey.

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- 2) What is a simple random sampling? What are the different methods of drawing a random sample? Explain each briefly. (7)
- 3) Explain sampling & non-sampling errors. (7)

Q.3)A) Select the correct alternative out of the given choices. (ANY ONE). (1)

- 1) The time series analysis helps to _____.
- (i) To complete the two or more series.
 - (ii) To know the behavior of business.
 - (iii) To make predictions.
 - (iv) All of the above.
- 2) An additive model of time series with the components T, S, C, & I is _____.
- (i) $Y = T + C + S * I$
 - (ii) $Y = T + S + C$.
 - (iii) $Y = T + S + C + I$.
 - (iv) $Y = S + C * T + I$.

B) Attempt ANY TWO from the following.

- 1) Define a time series. Mention its important components with illustrations (7)
- 2) The following table gives the number of workers employed in a small industry during the years 1996-2005. Calculate the 4 yearly moving averages.

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
No. of workers	430	470	450	460	480	470	470	500	490	480

- 3) Using ratio to trend method, determine the quarterly seasonal indices for the following data :-

Year	I st Quarter	II nd Quarter	III rd Quarter	IV th Quarter
2005	30	40	36	34
2006	34	52	50	44
2007	40	58	54	48
2008	54	76	68	62
2009	80	92	86	82

Q.4)A) Select the correct alternative out of the given choices.

The equation $y = a.b^t$ represents _____.

- (i) Linear curve ,
- (ii) Parabolic curve ,
- (iii) Exponential curve
- (iv) None of these.

OR

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- Q.4) A) What is slack? Which are the different types of slacks defined for an activity? (1)
- Q.4) B) Attempt **ANY TWO** from the following.
- 1) How do you do numbering to nodes in a network diagram? (7)
 - 2) Explain :- (i) Stratified sampling, (ii) Systematic sampling. (7)
 - 3) Fit a parabolic curve of second degree to the data given below & estimate the value for 2008 & comment on it. (7)

Year	2002	2003	2004	2005	2006
Sales(in'000 Rs)	10	12	13	10	8
