				Seat No. :									
					Senter	<b>X-12</b> mber-2	2020						
					B.Sc.	. Sem	-VI						
Tim	le : 2 H	lours]	ł	C) Statis	C-309 tical ( (Old	) : Sta Qualit Sylla	tistics ty Co bus)	s ntrol		I	Max. ]	Marks	: 50
Inst	ructio	ns: (1) All (2) Atte (3) Que	Questie empt ar estion 9	ons in ( ny <b>THI</b> 9 in <b>Sec</b>	Section REE q action I	n I carr uestion I is CC	y equa s in Se MPUI	l mark ction I LSOR	rs. I. Y.				
					Secti	ion – I							
1.	(A)	) What is SQC ? State its uses.											7
	(B)	Write a short r	note on	"Theo	ry of R	Runs".							7
2.	(A)	Discuss the ca	uses of	variati	ions in	a prod	uction	proces	s.				7
	(B)	Explain the concept of $3\sigma$ limits in SQC. 7											7
3.	(A)	Differentiate b	etweer	ı varial	ole cha	rts and	attribu	ite chai	rts.				7
	(B)	State the ma conclusions yo	in obj ou draw	ectives from	of d both th	rawing ne chart	TX aıts.	nd R	chart.	Also	explai	n wha	t 7
4.	(A)	Draw the appr	opriate	chart f	for the	follow	ing dat	a and g	give yo	our con	clusior	15.	7
		Sample No.	1	2	3	4	5	6	7	8	9	10	
		Ā	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2	
		R	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0	
		[Take $n = 5$ , A	$_{2} = 0.5$	77, D <sub>3</sub>	= 0, D	$b_4 = 2.1$	15]	-				·]	

(B) Explain the construction of p and np charts. Also explain what conclusions you draw from both the charts.

7

SK-120		1	<b>P.T.O.</b>
	(B)	Explain the single sampling plan in detail with the help of an example.	7
5.	(A)	Define Acceptance Sampling. State its advantages.	7

6.	(A)	Write a short note on Producer's Risk and Consumer's Risk.	7
	(B)	What is OC curve ? State its characteristics.	7
7.	(A)	Explain the difference between lot inspection and sample inspection.	7
	(B)	State the advantages of sampling inspection.	7
8.	(A)	Explain the sampling plan for variables when LCL is specified and $\sigma$ is unknown.	7
	(B)	Explain the sampling plan for variables when UCL is specified and $\sigma$ is known.	7
		Section – II	
9.	Atte	mpt any <b>four</b> .	8

## (1) Define Specification Limits.

- (2) Define Rational Subgrouping in SQC.
- (3) Define Low Spots in attribute charts.
- (4) Define AOQ and AOQL.
- (5) Define ATI.
- (6) N = 1000, n = 80 and c = 2. Explain the given single sampling plan.
- (7) State the formula for sample size 'n' in sampling plan for variables when UCL is specified and  $\sigma$  is unknown.
- (8) What do you mean by cost of inspection ?

Seat No. : \_\_\_\_\_

# **SK-120**

## September-2020

## B.Sc., Sem.-VI

# CC-309 : Statistics Statistical Quality Control (New Syllabus)

Time : 2 Hours										[Max. Marks : 50			
Insti	ructio	ns: (1) All (2) Atte (3) Que	Questie empt ar estion 9	ons in 1y <b>TH</b> I 9 in <b>Sec</b>	Section REE q action II	n I carr uestion I is CC	ry equa is in Se MPUI	l mark ection 1 LSOR	rs. I. Y.				
					Secti	on – I							
1.	(A)	What is SQC ? State its uses.									7		
	(B)	Write a short note on "Theory of Runs".										7	
2	<b>(Δ)</b>	Discuss the causes of variations in a production process 7											
2.	(A) (D)	Englain the ca		f 2 = 1		aprou	uction	proces	5.				7
	(B)	Explain the concept of $3\sigma$ limits in SQC.											
3.	(A)	Differentiate b	etweer	n varial	ole cha	rts and	attribu	ite cha	rts.				7
	(B)	State the main objectives of drawing $\overline{X}$ and R chart. Also explain what											
		conclusions you draw from both the charts.									7		
4			• ,	1	C (1	C 11	• • •	1			1 .		-
4.	(A)	Draw the appr	opriate	chart	tor the	Tollow	ing dat	a and g	give yo	our con	clusior	is.	/
		Sample No.	1	2	3	4	5	6	7	8	9	10	
		Ā	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2	
		R	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0	
		[Take $n = 5$ , A	$_{2} = 0.5$	77, D <sub>3</sub>	= 0, D	$a_4 = 2.1$	15]					<u> </u>	

(B) Explain the construction of p and np charts. Also explain what conclusions you draw from both the charts.

5. (A) Define Acceptance Sampling. State its advantages.7(B) Explain the single sampling plan in detail with the help of an example.7

#### SK-120

**P.T.O.** 

7

3

6.	(A)	Write a short note on Producer's Risk and Consumer's Risk.	7
	(B)	What is OC curve ? State its characteristics.	7
7.	(A)	Explain the difference between lot inspection and sample inspection.	7
	(B)	State the advantages of sampling inspection.	7
8.	(A)	What is Double Sampling Plan ? State its advantages. Explain the double sampling plan (2000, 50, 1, 100, 4)	7
	(B)	Explain the sampling plan for variables when LCL is specified, when $\sigma$ is known and when $\sigma$ is unknown.	7

#### Section – II

### 9. Attempt any **four**.

- (1) Who introduced control charts in SQC based upon the theory of random variations ?
- (2) Who was the pioneer of SQC in India ?
- (3) Define Low Spots in attribute charts.
- (4) Define ATI.
- (5) Define AQL.
- (6) State the formula for sample size 'n' in sampling plan for variables when UCL is specified and  $\sigma$  is unknown.
- (7) What do you mean by cost of inspection ?
- (8) State the formula for sample size 'n' in sampling plan for variables when LCL is specified and  $\sigma$  is known.

8