

# CERTIFIED PUBLIC ACCOUNTANT

# FOUNDATION LEVEL 1 EXAMINATION

# F1.1: BUSINESS MATHEMATICS AND

# **QUANTITATIVE METHODS**

**DATE: THURSDAY 24, AUGUST 2023** 

# **INSTRUCTIONS:**

- GPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023
- i 2 ara This 023 icparaugust 2023 icparaugust 2023 icparaugust 2023 icparaugust 2023 icparaugust 2023 icparaugust 2 ara This 023 examination ara has 202 seven us questions t20 and ara only 23 ifive icparaugust 2023 icparaugust
- 3. Marks allocated to each question are shown at the end of increase of the end of the end of increase of the end o
- 4. Show all your workings where applicable.
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#### **QUESTION ONE**

- (a) Discuss the steps of computing trend line values by semi-average method as applied in time series analysis. T2023 ICPARAUGUST2023 ICPARAUG
- (b) Ganza consultant Ltd estimates its sales for a particular year to be FRW 24,000,000. The ICPARAUGUST 2023 ICPARAUGUST 202

cMonthust2023 icParaugu	Seasonal index 023 ICP/	RMonth	Seasonal index ICPARAI
c <b>January</b> st2023 icparaugu	OMO O O O TODADA TIGITOMO O O O TOD	RAUGUST2023 ICPARAU <b>July</b> 2	023 ICPARAUGUST2023 ICPARAUGU
c <b>February</b> r2023 icparaugu	ST2023 ICPARAUGUST2023 ICPA ST2023 ICPARAUGUST2023 <b>80</b> PA	RAUGUST2023 ICPARAUGUST2 RAUGUST2023 ICPA <b>August</b> 2	023 ICPARAUGUS 12023 I
c <b>March</b> ust2023 icparaugu	512023	raugust2023 <b>September</b> 2	des icparaugusteues icpara des icparaugusteues ic <b>t 00</b> ai
c <b>April</b> gust2023 icparaugu c <b>April</b> gust2023 icparaugu	5T2023	raugust2023 icparaugust2 raugust2023 icp <b>October</b> 2	023 ICPARAUGUST2023 ICPARA 023 ICPARAUGUST2023 IC $102$ A
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# Required:

Using this information above, calculate the estimates of monthly sales of the company. (Assume that there is no trend).

(c) Given the following table representing data of commodities for two years.

3 I	ICPARAUGUST2023 I	<u>CPARALIGUST2023 ICPARALIGUST2023 ICPARALIGUST2023 ICPARALIGUST2023 ICPARALIGUST2023 ICPARAL</u>
3 ]	Commodity 1	PARAUGUST2023 ICPARAUGUST2023 ICPAI $2021$ SI2023 ICPARAUGUST2023 ICPARAUGUST2023 $2022$ AU
3 ]	CPARAUGUST2073 I	PARALIGUST2023 [CPARALIGUST2023 [CPARALIGUST2023 [CPARALIGUST2023 [CPARALIGUST2023 [CPARALIGUST2023 [CPARALIGUST
3 ]	CPARAUGUST2023 I	PARPrice (FRW/unit)   T2Total-value   T202Price (FRW/unit)   RAUGTotal value
3.1	CPARAUGUST2023 K	(PARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAU
3 ]	CARAUGUST2023 I	$\phi$ paraugust2023 icparau $\phi$ u $\phi$ t2023 icparau $\phi$ 0 $\phi$ 12023 icparaugust2023 ic $\phi$ 4 kaugust2023 icf $\phi$ 8 $\phi$ 1
3 ]	CPARAUGUST2023 IC	PARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARA
3 ]	c <b>B</b> \raugust2023 io	PARAUGUST2023 ICPARAU&/\$T2023 ICPARAU48s 2023 ICPARAUGUST2023 IC7ARAUGUST2023 ICF49A
3 ]	CPARAUGUST2023 IC	PARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARA
3 ]	CARAUGUST2023 I	paraugust2023 icparau $6$ / $\pm$ t2023 icparau $18$ $\pm$ i2023 icparaugust2023 ic $5$ araugust2023 icf $20$ a
2	OD LD LITOTIOMO OOO TO	4D 4 D 4 1 1 3 1 1 3 7 3 7 3 7 4 7 4 1 1 3 1 1 3 7 4 7 3 7 3 7 4 7 4 7 4 7 4 7 4 7 4 7

# Required:

Compute the quantity index by using Fisher's formula from the data given in the above using Fisher's formula from the data given in the above using Fisher's formula from the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the control of the data given in the above using the data given in the data given in the above using the data given in the data

(Total: 20 Marks)

PARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023

#### **QUESTION TWO**

(a) As a result of network diagram analysis, project teams may identify a need to compress the schedule. Schedule compression shortens the project duration in order to meet schedule deadlines without reducing the project scope. Schedule compression techniques include crashing and fast tracking. If utilized, project teams should recreate and reassess the network diagram to ensure that no new schedule issues have emerged.

# Required:

In reference to network analysis, differentiate crashing and fast tracking. ARAUGUS (4 Marks)

(b) Table below gives the time and cost data in respect to normal and crash periods of a (cparaugust 2023 icparaugust 2023 ic

I <del>CPARAUGUST 2023 ICPAR</del> IC <b>ACTIVITY</b> T 2023 ICPAR	<del>august2023 icparaugu</del> a <b>Normal time</b> augu	s <del>T2023 ICPARAUGUST2023</del> S <b>Normal cost</b> JST2023	Crash time23 ICI	<del>araugust2023 icparau</del> a <b>Crash cost</b> icparau
ICPARAUGUST2023 ICPAR	ALICHISTOROS ICDADALICHI	ST2023 ICPARAUGUST2023 S <b>(FRW000)</b> GUST2023	ICDADALIGHISTOROS ICE	PARAUGUST2023 ICPARAU A <b>(FRW000)</b> ICPARAU
ICEARAUGUST2023 ICEAR	AUGUST2023 ICPARAUGU	ST2023 ICPARAUGUS 22023 ST2023 ICPARAUGUS $360$ 3	ICPARAUGUST2023 ICI	PARAUGUST 2023 ICHARAU
ICPARAUGUST2023 ICPAR	AUGUST 2023 ICPARAUGU AUGUST 2023 ICPARAUGU	ST2023 ICPARAUGUS (2023) ST2023 ICPARAUGUS (2023) ST2023 ICPARAUGU (4003)	ICPARAUGUST2023 ICI ICPARAUGUST2023 ICI ICPARAUGUST2022 ICI	ARAUGUST2023 ICPARAU PARAUGUST2023 ICPARAU
ICPARAUGUST2023 ICPAR	AUGUST2023 ICPARAUGU	S12023 ICPARAUGUS 1003 ST2023 ICPARAUGU20003 ST2023 ICPAPAUGU20003	ICPARAUGUST2023 ICF	ARAUGUST 2023 15000 T
ICARAUGUST2023 ICPAR. ICBARAUGUST2023 ICPAR.	AUGUST2023 ICPARAUGU AUGUST2023 ICPARAUGU	ST2023 ICPARAUGU <b>299023</b> ST2023 ICPARAUGU <b>200</b> 03 ST2023 ICPARAUGU <b>200</b> 03	ICPARAUGUST2023 PCF ICPARAUGUST2023 PCF	ARAUGUST2023 <b>2500</b> 01 ARAUGUST2023 <b>1500</b> 1
ICATRAUGUST2023 ICPAR IC <b>Z</b> ARAUGUST2023 ICPAR	AUGUST2023 ICPARAUGU AUGUST2023 ICPARAUGU	ST2023 ICPARAUGUS <b>Y992</b> 3 ST2023 ICPARAUGUS <b>700</b> 3 ST2023 ICPARAUGUS <b>70</b> 02	ICPARAUGUST2023 <b>P</b> CF ICPARAUGUST2023 <b>J</b> CF	PARAUGUST2023 ICANAU PARAUGUST2023 ICANAU PARAUGUST2023 ICANAU
ICPARAUGUST2023 ICPAR ICPARAUGUST2023 ICPAR	'AUGUST2023 ICPARAUGU 'AUGUST2023 ICPARAUGU	ST2023 ICPARAUGUS $72023$ ST2023 ICPARAUGU $16003$	ICPARAUGUST2023 TCF ICPARAUGUST2023 5CF	PARAUGUST2023 ICYXYAU PARAUGUST2023 <b>2000</b> AU
ICPARAUGUST2023 ICPAR ICPARAUGUST2023 ICPAR	AUGUST2023 ICPARAUGUS AUGUST2023 ICPARAUGUS	ST2023 ICPARAUGUS 5003 ST2023 ICPARAUGUS 5003	ICPARAUGUST2023 CE ICPARAUGUST2023 <b>C</b> E	ARAUGUST2023 KYMAU ARAUGUST2023 IO <del>J</del> AJAU
ICPARAUGUST2023 ICPAR	august2023 icparau	ST2023 ICPARAUGUS 12023	ICPARAUGUST2023 <del>I</del> CF	PARAUGUST2023 ICPARAU

#### Required:

i. Draw the network diagram of the project and identify the critical path AUGUST (4 Marks)

ii. What is the normal duration and cost of the project? CPARAUGUST 2023 ICPARAUGUST (42 Marks)

iii. Determine the optimum project duration, if the indirect cost is FRW150,000/day

(8 Marks)

(Total: 20 Marks)

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#### **QUESTION THREE**

(a) The linear programming method is applicable in problems characterized by the presence of ICPARAUGUST2023 I

#### Required:

#### Explain in brief what Linear Programming is.

(4 Marks)

**(b)** A woodworker builds and sells band-saw boxes. He manufactures two types of boxes using a combination of three types of wood: maple, walnut and cherry. To construct the Type I box, the carpenter requires 2 board foot (bf) of maple and 1 bf of walnut. To construct the Type II box, he requires 1 bf of walnut and 3 bf of cherry. Given that he has 10 bf of maple, 5 bf of walnut and 11 bf of cherry and he can sell Type I of box for FRW 120,000 and Type II box for FRW 160,000.

#### Required:

Use the Simplex method to advise the woodworker on how many of each box type should leparaugust 2023 leparau

(c) A manufacturing company owns three factories (A, B and C) and distribute his products to five different retail agencies (destinations). The following table shows the capacities of the three factories, the quantity of products required by the various retail agencies and the cost of shipping one unit of the product from each of the three factories to each of the five retail agencies.

ICPARAUGUST2023	ICPARAUGUST202	23 ICPARAUGUST:	Retailaraugusi	C2023 ICPARAUGU	JST2023 ICPARAU	GUST2023 ICPARA
ICPARAUGUST2023	ICPARAUGUST202		2023 icparaugusi	C2023 ICPARAUGU	JST2023 ICPARAU	GUST2023 ICPARA
ICPARAUGUST2023	ICPARAUGUST202		Agency	C2023 ICPARAUGU	JST2023 ICPARAU	GUST2023 ICPARA
CPAFactories 23	ICPARAUGUST202 ICPARAUGUST202	3 ICPARAUGUST 3 ICPARAUGUST	2023 ICPARAUGUS 2023 ICPARAUGUS 2023 ICPARAUGUS	2023 ICPARAUGI 2023 ICPARAUGI	IST2023 ICPARAL IST2023 ICPAR <b>/5</b> . IST2023 ICPARAL	GUST2Capacity
CPARAU <b>A</b> UST2023	ICPARAUGUST202	3 ICPARAUGUS <b>9</b>	2023 ICPARAUGUS	2023 ICPARAI <b>36</b>	IST2023 ICPA <b>5</b> AU	GUST2023 ICPA <b>5()</b>
CPARAUGUST2023	ICPARAUGUST202	3 ICPARAUGUST	2023 ICPARAUGUS	2023 ICPARAUGI	IST2023 ICPARAU	IGUST2023 ICPARA
ICPARAU <b>B</b> JST2023	ICPARAUGUST <b>24</b>	3 ICPARAUGU <mark>S2</mark>	2023 ICPARAUG <b>U</b>	2023 ICPARAI <b>2()</b>	IST2023 ICPARA <mark>U</mark>	GUST2023 ICP <mark>A00</mark>
ICPARAUGUST2023	ICPARAUGUST202	3 ICPARAUGUST	2023 ICPARAUGUST	2023 ICPARAUGU	IST2023 ICPARAU	GUST2023 ICPARA
ICPARAU <b>G</b> UST2023	ICPARAUGUST <b>14</b>	3 ICPARAUGU <b>33</b>	2023 ICPARAUGUS	2023 icparai <b>23</b>	IST2023 ICPA <b>26</b> .	GUST2023 ICP <b>A5.0</b>
ICPARAUGUST2023	ICPARAUGUST202	3 ICPARAUGUST	2023 ICPARAUGUS	2023 icparaugi	IST2023 ICPARAU	GUST2023 ICPARAI
CPARAUGUST2023 Requirement	ICPARAUGUST202 ICPARAUGUST202 ICPARAUGUST <b>00</b>	3 ICPARAUGUST: 3 ICPARAUGUST: 3 ICPARAUGU <b>60</b>	2023 ICPARAUGUST 2023 ICPARAUGUST 2023 ICPARAUGUST	2023 ICPARAUGU 2023 ICPARAUGU 2003 ICPARAUGU	IST2023 ICPARAU IST2023 ICPARAU IST2023 ICPA <b>40</b>	GUST2023 ICPARA GUST2023 ICPARA GUST2023 ICI <b>300</b>

#### Required:

Use the North West Corner Method to determine the initial basic feasible solution of the interest of the inter

(Total: 20 Marks)

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### **QUESTION FOUR**

(a) To build any model, certain reasonable assumptions are quite necessary. List three assumptions for building a model of two-person zero sum game 12023 [CPARAUGUST (3 Marks)]

**(b)** Given a game represented by the following pay-off matrix:

#### Plaver B

ICPARAUGUST2023 ICPARAUGUST2023 ICP RAUGUST2023 ICPARAUGUST2023 ICPARAUGUST202	CPARAUGUS 1 2023 ICPARAUGUS 1 2023 ICI	AKAUGUS12023	3 ICPARAUGUSI.	2023 ICPARAUGU	S12025 ICPARAUG	J512025 ICPARAU	
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ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUST202	CPARAUGUST:	2028 ICPARAUGU	STX023 ICPARAUG	JS 2023 ICPARAU	G
ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G
ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPARAUGUST2023 ICPARAUGUST2023 ICF	ARAUGUST 2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G
ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUS <del>7</del> 2023	3 ICPARAUGUST:	2023 ICPARAŪĠU	ST2023 ICPARA®G	JST2023 ICPARAU	G
ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G
ICPARALIGUST2023 ICPARALIGUST2023 ICP <del>ARALIGUST2023 ICPARALIGUST2023 ICPAR</del>	CPPIAVErSA2023 ICPARAUGUST2023 ICF	PARAUGUS <b>Z</b> 2023	3 ICPARAUGUST	2023 ICPARAU <b>Q</b> iU	ST2023 ICPARAUG	JST2023 ICPARAU	G
ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2223 ICPARAUGUST2023 ICPARAUGUST202	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAŪG	JST2023 ICPARAU	G
ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUS 8: 23 ICPARAUGUS 12023 ICPARAU 3: UST2023 ICPARA 5; UST2023 ICPARAUGUST2023 ICPARAU	CPARAUGUST2023 ICPARAUGUST2023 ICF	ARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	UST2023 ICPARAU	G
ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2(23 ICPARAUGUST2023 ICPARAUGUST202	CPARAUGUST2023 ICPARAUGUST2023 ICF	PARAUGUS <b>8</b> 2023	3 ICPARAUG <b>(2</b> ST)	2023 ICPARAU <b>3</b> iU	ST2023 ICPARA <b>5</b> G	JST2023 ICPAI	G
ICPARAUGUST2023 ICPARAUGUST2023 ICP <mark>ARAUGUST2123 ICPARAUGUST2023 ICPARAUGU</mark> ST2023 ICPARAUGUST2023 ICPARAUGUST2	CPARAUGUST2023 ICPARAUGUST2023 ICF	ARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G
icparaugust2023 icparaugust2024 icparaugu492023 icparaud4s12023 icparal8 ust2023 icpar44 gust2023 icp440 i icparaugust2023 icparaugust2023 icp <u>araugust2023 icparaugus12023 icparaugust2023 icparaugust2023 icparaug</u> ust2023	CPARAUGUST2023 ICPARAUGUST2023 ICF	ARAUGUST2023	3 ICPARAUGUST:	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G
ICPARAUGUST2023 ICPARAUGUST2023 ICP <u>ARAUGUST2(23 ICPARAUGUS) 2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUG</u> UST2023 ICPARAUGUST	CPARAUGUST2023 ICPARAUGUST202 <mark>3</mark> ICF	PARAUGU\$P2023	3 ICPARAU <del>d</del> ST2	2023 ICPARA <b>U</b>	ST2023 ICPARA <del>Y</del> Gʻ	JST2023 ICP <del>A</del> RAU	G
	CPARAUGUST2023 ICPARAUGUST2023 ICF	ARAUGUST2023	3 ICPARAUGUST	2023 ICPARAUGU	ST2023 ICPARAUG	JST2023 ICPARAU	G

#### Required

Compute the value of the game and provide a suitable interpretation. CPARAUGUS (7 Marks)

(c) The probability of demand for hiring cars on any day in Kigali City is as follows

AUG Number of cars demanded: UCO ST2023 ICPARAUGUST2022 ICPARAUGUST2023 APARAUGUST2023 ICPARAUGUST2023 ICPARAU

Cars have a fixed cost of FRW 90,000 each day to keep the daily hire charges (variable costs icparaugust 2023 icparaugust 202

# Required:

i. If the car-hire company owns 4 cars, calculate the daily expectation (2 Marks)

ii. If the company is about to go into business and currently has no car, estimate the Parau icparaugust2023 i

Firiugust2023 ICPARAUGUST2023 ICPARAUGUST2023

#### **QUESTION FIVE**

(a) Explain the following by giving a suitable example:

i:Mutually exclusive events cparaugust2023 icparaugust2023 icparaugust2023 icparaugust2(13Mark) i. pakaugust2023 icparaugust2023 icparaugust20

(b) The probability that a student doing CPA passes a test in Law is 2/3, and the probability that he passes both a test in Law and a test in Business Mathematics is 14/25. The probability that he passes at least one test is 4/5.

# Required:

# Compute the probability that he passes the test in Business Mathematics (3 Marks)

(c) A Masters of Business Administration graduate applies for a job in two firms X and Y. The probability of his being selected in firm X is 0.7 and being rejected at Y is 0.5. The probability of at least one of his applications being rejected is 0.6.

### Required:

Calculate the probability that he will be selected by one of the firms 23 ICPARA

(5 Marks)

(d) A telephone exchange receives on an average 4 calls per minute.

# Required:

Find the probability on the basis of Poisson distribution, if

ici. 2 or less calls per minute. CPARAUGUST 2023 ICPARAUG	GUST2023 ICPARAUGUST2023 ICPARAUGUST(22Marks)
ICPARAUGUS I 2023 ICPARAUGUS I 2023 ICPARAUGUS I 2023 ICPARAUG	GUS 12023 ICPARAUGUS 12023 ICPARAUGUS 12023 ICPARAU
icii. up to 4 calls per minute and August 2023 ICPARAU	GUST2023 ICPARAUGUST2023 ICPARAUGUST <b>(22 Marks)</b> ) GUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAU
Bigiir More than 4 calls per minute are received AUC PARAUGUST 2023 ICPARAUGUST 2023 ICPARA	GUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAU
6000000000000000000000000000000000000	GUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAU

icparaugust2023 icparaugust202

Number of cars per household August 2023 ICPARAUGUST.	Relative frequency RAUGUST 2023 ICPARA
CRARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2 D23 ICPARAUGUST2023 ICPARAUGUST2023 IGPARAL
CYARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I <b>U</b> P <b>AK</b> AI
CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGU
CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I <b>CPAK</b> AL
CRARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGU
C <del>P</del> ARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I <b>YPAK</b> AI
CDARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I $_{0}^{\mathbf{P}}$ 1 $_{2}^{\mathbf{A}}$ 1
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CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAI
CFARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I $_{0}$ P $_{0}$ 2A
CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2	2023 ICPARAUGUST2023 ICPARAUGUST2023 I <b>CPAR</b> AI

#### Required:

Calculate the expected value and standard deviation of the random variable (5 Marks)

(Total: 20 Marks)

GARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST**Page 6 of 8** 

# **QUESTION SIX**

# (a) State three advantages of stratified random sampling.

(3 Marks)

(b) The weighted geometric mean of four numbers 8, 25, 17 and 30 is 15.3. If the weights of the first three numbers are 5, 3 and 4, respectively gust2023 ICPARAUGUST2023 ICPA

# Required:

# Find the weight of fourth number.

(7 Marks)

(c) From the analysis of monthly wages paid to employees in two service organizations X and Y, the following results were obtained: 2023 ICPARAUGUST2023 ICPAR

CPARAUGUST2023 ICPARAUGUST2023 ICPARAU CPARAUGUST2023 ICPARAUGUST2023 ICPARAU	Organization X ST2023 ICPAR	Organisation Y UGUST 2023 ICPARAI
Number of wage-earners	GUST2023 ICPARAUGUST2023 <b>5(5)</b> ). GUST2023 ICPARAUGUST2023 ICPAR	AUGUST2023 ICPARAUGUST2023 IC <b>650</b> N AUGUST2023 ICPARAUGUST2023 ICPARAU
Average monthly wages (FRW)	GUST2023 ICPARAUGUST20 <b>5000</b> F	AUGUST2023 ICPARAUGUST2023 4500 L AUGUST2023 ICPARAUGUST2023 ICPARAU
Variance of the distribution of	GUST2023 ICPARAUGUST2023 <b>900</b> .F	AUGUST2023 ICPARAUGUST2023 17600 N
wages (FRW) PARAUGUST2023 ICPARAU	GUST2023 ICPARAUGUST2023 ICPAR	AUGUST 2023 ICPARAUGUST 2023 ICPARAU

# Required:

i. Identify the organization that pays a larger amount as monthly wages. AUGUS (5 Marks)

ii. In which organization is there greater variability in individual wages of all wage CPARAU CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023

(Total: 20 Marks)

CPARAUGUST2023 ICPARAUGUST2023 ICPARAUGUST2023

#### **QUESTION SEVEN**

- (a) Define scatter diagram? How does it help in ascertaining the nature and degree of international control of the international con
- **(b)** A researcher wants to find out if there is any relationship between the heights of the sons and the heights of the fathers. He took a random sample of six fathers and their six sons. Their heights in inches are given below in an ordered array:

3 :	Height of father in inches: ICPARAUGUST2023 IC	J(
3 :	CPARAUGUST2023AGRARAUGUST2023 ICPARAUGUST2023	J(
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#### Required:

Using the short method

- i. Par Fit a regression line of Y on X, and hence predict the height of the son if father's Para height is 70 inches.
- ii. Fit a regression line of X on Y, and hence predict the height of the father if son's height is 65 inches. [4] Marks
- iii. Calculate Karl Pearson's coefficient of correlation. CARAUGUST2023 ICPARAUGUST (2-Marks)

(Total: 20 Marks)

**End of question Paper** 

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