Sl. No.	Parameters	Definition	Unit	Reference	
LinearAspects					
1	Perimeter (P)	Length of the watershed boundary	km		
2	Basin length (Lb)	Maximum length of the watershed measured parallel to the main drainage line	km		
3	Stream order (Nu)	Hierarchical ordering	Dimensionles s	Strahler (1957)	
4	Stream length (Lu)	Length of the major stream	km	Horton (1945)	
5	Stream length ratio (RL)	RL= Lu / Lu-1 Where, Lu= Total stream length of order (u), Lu- 1=The total stream length of its next lower order.		Horton (1945)	
6	Bifurcation ratio (Rb)	Rb = Nu/N(u-1), where Nu is number of streams of any given order and N(u-1) is number in the next higher order	Dimensionles s	Horton (1945)	
7	Stream length ratio (Rl)	Rl = Lu/L(u-1), where Lu is stream length order u and L(u-1) is stream segment length of the next lower order	Dimensionles s	Horton (1945)	
8	Rho coefficient (ρ)	$\rho = RL/Rb$	Dimensionles s	Horton (1945)	
Aeria	Aspects	•			
1	Area (A)	Area of watershed	km <sup>2</sup>		
2	Drainage density (Dd)	$Dd = \frac{\sum Lt}{A}$ where Lt is the total length of all the ordered streams	km <sup>-1</sup>	Horton (1945)	

## Parameters used for the morphometric analysis

Stream frequency (Fs)	$Fs = \frac{\sum Nt}{A}$ where Nt is total number of stream segments of all orders	km <sup>-2</sup>	Horton (1945)			
Drainage texture (T)	$T = Dd \times Fs$	km <sup>-3</sup>	Smith (1950)			
Texture ratio (T)	T=N1/P Where, N1=Total number of first order stream, P=Perimeter of basin.		Hortan, 1945			
Length of overland flow (Lo)	Lo = 1/2Dd	km	Horton (1945)			
Constant of channel maintenance (C)	C = 1/Dd	km	Schumm (1956)			
Form factor (Ff)	$Ff = A/Lb^2$	Dimensionles s	Horton (1945)			
Circularity ratio (Rc)	$Rc = 4\pi A/P^2$	Dimensionles s	Miller (1953)			
Elongation ratio (Re)	$Re = \frac{1.128\sqrt{A}}{Lb}$	Dimensionles s	Schumm (1956)			
Shape index (Sw)	Sw = 1/Ff	Dimensionles s	Horton (1945)			
Relief Aspects						
Bain relief (R)	R = H-h, where H is maximum elevation and h is minimum elevation within the basin	km	Schumm (1956)			
Relief ratio (Rr)	Rr = R/Lb	Dimensionles s	Schumm (1956)			
Ruggedness number (Rn)	$Rn = R \times Dd$	Dimensionles s	Strahler (1958)			
Dissection index (DI)	DI = R/Ra, where Ra is absolute relief	Dimensionles s	Singh and Dubey (1994)			
Melton ruggedness ratio (MRn)	$MRn = H - h/A^{0.5}$	Dimensionles s	Melton (1965)			
	Drainage texture (T) Texture ratio (T) Length of overland flow (Lo) Constant of channel maintenance (C) Form factor (Ff) Circularity ratio (Rc) Elongation ratio (Re) Shape index (Sw) Aspects Shape tailor (Rr) Bain relief (R) Relief ratio (Rr) Ruggedness number (Rn) Dissection index (DI) Melton ruggedness ratio	InterfaceInterfaceDrainage texture (T)T = Dd × FsTexture ratio (T)T=N1/P Where, N1=Total number of first order stream, P=Perimeter of basin.Length of overland flow (Lo)Lo = 1/2DdConstant of channel maintenance (C)C = 1/DdForm factor (Ff)Ff= A/Lb²Circularity ratio (Rc)Rc = $4\pi A/P^2$ Elongation ratio (Re) $Re = \frac{1.128\sqrt{A}}{Lb}$ Shape index (Sw)Sw = 1/FfAspectsR = H-h, where H is maximum elevation and h is minimum elevation within the basinRelief ratio (Rr)Rr = R/LbRuggedness number (Rn)Rn = R×DdDissection index (DI)DI = R/Ra, where Ra is absolute reliefMelton ruggedness ratio $MBn = H = h/A^{0.5}$	Stream frequency (Fs)where Nt is total number of stream segments of all orderskm <sup>-2</sup> Drainage texture (T) $T = Dd \times Fs$ km <sup>-3</sup> Texture ratio (T) $T=N1/P$ Where, N1=Total number of first order stream, P=Perimeter of basin.kmLength of overland flow (Lo) $Lo = 1/2Dd$ kmConstant of channel maintenance (C) $C = 1/Dd$ kmForm factor (Ff) $Ff = A/Lb^2$ Dimensionles sElongation ratio (Re) Shape index (Sw) $Re = \frac{1.128\sqrt{A}}{Lb}$ Dimensionles sShape index (Sw) $Sw = 1/Ff$ Dimensionles sRelief ratio (Rr) $Rr = R/Lb$ Memensionles sRuggedness number (Rn) $DI = R/Ra,$ where Ra is absolute reliefDimensionles sMelton ruggedness ratio $MRn = H = h/4^{0.5}$ Dimensionles sMelton ruggedness ratio $MRn = H = h/4^{0.5}$ Dimensionles s			