Sr. No.	Question	A	B	C	D	Ans
1	The C.G. of a plane lamina will not be at its geometrical centre if it is a	Circle	Equilateral Triangle	Rectangle	Right angled Triangle	d
2	A square hole is punched out of circular lamina of radius 'r' in such a way that centre of square is on Y axis and its base coincides with horizontal diameter of circle. If the side of square is 'r/2'. The X centroidal distance is	0	r/4	r/2	-r/4	a
3	A square hole is punched out of circular lamina of radius 'r' in such a way centre of square is on Y axis and that base coincides with horizontal diameter of circle. If the side of square is 'r/2'. The Y centroidal distance is	0	0.425 r	0.216 r	0.978 r	c
4	Centroidal distance of an equilateral triangle with side 'a' from any of the three sides is	`	0.471 a	0.288 a	0.235 a	c
5	A parabolic lamina of base 'a' and height 'h' is given by equation ' $y = hx^2/a^2$ '. The X centroidal distance is	3a/4	4a/3	a/3	3a/10	a
6	A parabolic lamina of base 'a' and height 'h' is given by equation ' $y = hx^2/a^2$ '. The Y centroidal distance is	3h/4	4h/3	h/3	3h/10	d
7	A quarter elliptical lamina is of base 'a' and height 'b'. The X centroidal distance is	$4ab/3\pi$	$4a/3\pi$	$4b/3\pi$	$\pi ab/4$	b
8	A quarter elliptical lamina is of base 'a' and height 'b'. The Y centroidal distance is	$4ab/3\pi$	$4a/3\pi$	$4b/3\pi$	$\pi ab/4$	c
9	From a quarter circular lamina of radius 'r', square of side 'r/2' is cut in such a way that, two sides of square coincides with two straight sides of quarter circle. Taking origin as corner point of lamina each centroidal corodinate is	0.424r	3.141/r	0.506r	0.318r	c
10	The C.G. of an isosceles triangle with base 'b' and sides 'a' is _____ from its base	$(4a^2 - b^2)^{1/2} / 6$	$(4b^2 - a^2)^{1/2} / 6$	$(b^2 - a^2) / 6$	$(a^2 - b^2) / 6$	a
11	The C.G. of a body is the point through which,	Earth attracts	resultant of external forces acts	both (a) and (b)	none of above	a
12	A triangular hole is cut from circular lamina of radius 'r' such that the vertex of triangle is on Y axis and base coincides with horizontal diameter. If base of traingle is '2r' and height is 'r'. The C.G. of remaining lamina is	0.222 r	-0.155 r	0.155 r	-0.222r	b

Sr. No.	Question	A	B	C	D	Ans
13	A letter 'A' is made up of wire bends.The length of each inclined wire is 30cm and the horizontal distance between them is 20cm. The horizontal wire is of length 10cm. The Y-centroidal distance from the base of 'A' is	28.28 cm	15 cm	10 cm	14.14 cm	d
14	A letter 'B' is made up of wire bends.The length of vertical wire is 20cm and the two semicircular arc with diameter of 10 cm. The X- centroidal distance from the vertical wire is	3.055 cm	5 cm	0 cm	1.945 cm	d
15	A wire bend forming an arc of circle with the subtended angle equal to 2α and is symmetrical about x axis. Locate the C.G.	(0, rsinα/α)	(rsinα/α, 0)	(rsinα/α, rsinα/α)	(0,0)	b
16	The C.G. of a wire bend forming a quarter circular arc is	(2r/π,2r/π)	(4r/3π,4r/3π)	(3r/4π,3r/4π)	(0,0)	a
17	The C.G. of a circular stor lamina with the subtended angle equal to 2α and is symmetrical about x axis is	(2r sinα/3α, 0)	(rsinα/α, 0)	(2r sinα/3α, 2r sinα/3α)	(0,0)	a
18	The C.G. of a quarter circular area is	(2r/π,2r/π)	(4r/3π,4r/3π)	(3r/4π,3r/4π)	(0,0)	b
19	A trapezoid having two parallel sides 'a' and 'b' and height 'h'. The Y centroidal distance from bottom side 'b' is	0.5h(b+2a)/(b+a)	0.5h(b-2a)/(b+a)	h(b+2a)/3(b+a)	h(b-2a)/3(b+a)	c
20	A symmetrical 'T' shaped lamina is made from two rectangles 10cm X 5cm , so that total height is 15cm. The centroidal distance from bottom is	9.5 cm	8.75 cm	6.25	5 cm	b
21	The Y centroidal distance of equal I stion from its bottom each having flange of size 10cm x 5 cm and web of size 5cm x 15 cm deep is	15 cm	20 cm	17.5 cm	12.5 cm	d
22	The Y centroidal distance of unequal I stion from its bottom having upper flange size of 15cm x 5 cm, lower flange size of 10cm x 5 cm and web size 5cm x 15 cm deep is	15 cm	20 cm	13. 75 cm	12.5 cm	c
23	The Y centroidal distance of frustum of cone from base of diameter 'd', top diameter 'd/2' and height 'd' is	0.5d	0.44d	d	0.8d	b
24	A square hole is punched out of circular lamina of radius 'r = 20cm' in such a way centre of square is on Y axis and that base coincides with horizontal diameter of circle. If the side of square is 'r/2'. The Y centroidal distance is	0	8.50 cm	4.32 cm	19.56 cm	c
25	The Y centroidal distance of an equilateral triangle with each side equal to 10cm from any of the three sides is	8.66 cm	4.71 cm	2.88 cm	2.35 cm	c

Sr. No.	Question	A	B	C	D	Ans
26	A parabolic lamina of base 10cm and height 5cm is given by equation ' $y = hx^2/a^2$ '. The X centroidal distance is	7.5 cm	13.33 cm	3.33 cm	3 cm	a
27	A parabolic lamina of base 10cm and height 5cm is given by equation ' $y = hx^2/a^2$ '. The Y centroidal distance is	3.75 cm	6.67 cm	1.67 cm	1.5 cm	d
28	A quarter elliptical lamina of base 10cm and height 15cm. The X centroidal distance is	63.66 cm	4.244 cm	6.366 cm	10 cm	b
29	A quarter elliptical lamina of base 10cm and height 15cm. The Y centroidal distance is	63.66 cm	4.244 cm	6.366 cm	10 cm	c
30	From a quarter circular lamina of radius 10cm, square of side 5 cm is cut in such a way that, two sides of square coincides with two straight sides of quarter circle. The C.G. taking origin as corner point of lamina is	4.24 cm	0.314 cm	5.06 cm	3.18 cm	c
31	The C.G. of an isosceles triangle with base 10cm and sides 20cm is _____ from its base	6.455 cm	0 cm	5 cm	7 cm	a
32	A triangular hole is cut from circular lamina of radius 10cm such that the vertex of triangle is on Y axis and base coincides with horizontal diameter. If base of traingle is 20 cm and height is 10 cm. The C.G. of remaining lamina is	2.22 cm	-1.55 cm	1.55 cm	-2.22 cm	b
33	Wire bend forming an arc of circle with the subtended angle 30°, radius 10cm is symmetrical about x axis. Locate C.G.	(0, 9.88 cm)	(9.88 cm, 0)	(9.88 cm, 9.88 cm)	(0,0)	b
34	The C.G. of a wire bend forming a quarter circular arc with radius 10cm is	(6.366 cm, 6.366 cm)	(4.244 cm, 4.244 cm)	(2.387 cm, 2.387 cm)	(0,0)	a
35	The C.G. of a circular stor lamina with the subtended angle 30°, radius 10cm is symmetrical about x axis is	(6.59 cm , 0)	(9.88 cm, 0)	(6.59 cm , 6.59 cm)	(0,0)	a
36	The C.G. of a quarter circular area with radius 10cm is	(6.366 cm, 6.366 cm)	(4.244 cm, 4.244 cm)	(2.387 cm, 2.387 cm)	(0,0)	b
37	A trapezoid having two parallel sides 10cm and 20cm and height 30cm. The Y centroidal distance from side having width 20 cm is	20 cm	0 cm	13.33 cm	15 cm	c
38	A symmetrical 'T' shaped lamina is made from two rectangles 15cm X 5cm , so that total height is 20cm. The centroidal distance from bottom is	12.5 cm	7.5 cm	10 cm	11.5 cm	a
39	The Y centroidal distance of frustum of cone from base with base diameter 10cm, top diameter 5cm and height 10cm is	5 cm	4.4 cm	10 cm	8 cm	b

Sr. No.	Question	A	B	C	D	Ans
40	The angle made by side of square lamina with horizontal if suspended freely from the corner is	45°	90°	0°	All of above	a
41	The centre of gravity G is a point which locates the ……. of a system of particles.	area	volume	resultant weight	none	c
42	For a system of n particles, the weights of particles comprise of a system of	non-parallel forces	parallel forces	both A and B	none	b
43	The location of centre of gravity …….. that of the center of mass.	coincides with	is different than	is away	none	a
44	The centroid C is a point which defines the …… of an object.	area	volume	geometric centre	all of the above	c
45	The centroid coincides with centre of mass or centre of gravity only if material composing the body is	uniform	homogeneous	both A and B	none	c
46	Formulae used to locate the centre of gravity represent a balance between the sum of moments of all the parts of the system and the moment of …… for the system.	one part	two parts	resultant	all of the above	c
47	For a triangle, the centroid is located at ……. from the base.	one third height	two third height	one half height	none	a
48	For a triangle, the centroid is located at ……. from the apex.	one third height	two third height	one half height	none	b
49	For a triangle, the centroid is located at ……. from the base and …….. from apex.	one third, one fifth	one third, two third	one half, one half	none	b
50	If an area or a line possesses an axis of symmetry, its centroid C is located	outside the axis	on that axis	above the axis	below the axis	b
51	If a circular stor is symmetric about x-axis, the centroidal x co-ordinate is	$2r\sin\theta/3\theta$	zero	$4r\sin\theta/3\theta$	$4r\sin\theta/3$	a
52	If an arc of a circle is symmetric about x-axis, the centroidal y co-ordinate is	4r/(3x3.14)	zero	2r/3.15	3r/(3.14)	b
53	If a semicircular arc is symmetric about y-axis, the centroid along x-axis is	4r/(3x3.14)	zero	2r/3.14 from both axes	3r/3.14	b
54	For a quarter-circular arc lying in first quadrant, centroidal X and Y co-ordinates respectively are	2r/3.14 and 3r/3.14	3r/3.14 and 2r/3.14	2r/3.14 from both axes	none	c
55	For a semicircular arc symmetric about x-axis, centroidal x co-ordinate is	2r/3.14	3r/3.14	r/3.14	none	a
56	For a quarter-circular area lying in first qudrant, centroidal X and Y coordinates are	2r/3.14 and 3r/3.14	3r/3.14 and 2r/3.14	(4r/3x3.14) from both axes	none	c
57	If a semicircular area is symmetric about y-axis, the centroidal y co-ordinate is	4r/(3x3.14)	2r/(3x3.14)	4r/(3.14)	2r/(3.14)	a

Sr. No.	Question	A	B	C	D	Ans
58	For a quarter-elliptical area of radii a and b lying in first qudrant, centroidal X and Y co-ordinates respectively are	4a/3x3.14 and 4b/3x3.14	3r/3.14 and 2r/3.14	(4a/3x3.14) along both axes	none	a
59	If a semielliptical area of radii a and b is symmetric about y-axis, the centroidal y co-ordinate is	4a/(3x3.14)	3r/3.14	4b/(3x3.14)	none	c
60	If a parabolic area of height h is symmetric about y-axis, the centroidal x co-ordinate is	3h/10	zero	h/10	7h/10	b
61	If a parabolic area is symmetric about y-axis, the centroid along y-axis from its base is	3h/10	zero	3h/5	7h/10	c
62	For a line of length 'a' passing through origin and inclination θ with x-axis, centroid along x is given by	(a/2) cos(θ)	(a/2) sin(θ)	a	a/2	a
63	For a line of length 'a' passing through origin and inclination theta with x-axis, centroid along y is	(a/2) cos(θ)	(a/2) sin(θ)	a	a/2	b
64	From a circular area of radius R, a smaller circle of radius r is removed. Top half of smaller circle is in Ist quadrant and bottom half is in fourth quadrant. R=2r. The centroid of remaining area is	(0,0)	(-r/3, 0)	(0, r/3)	(-r/3, r/3)	b
65	A square hole is removed from a thin circular lamina, the diagonal of the square being equal to the radius of circle R. One side of square coincides with diameter of circle such that top half of square is in Ist quadrant and bottom half is in fourth quadrant.The centroid of remaining area from the center of circle is	(0,0)	(-0.877R, 0)	(-0.095R, 0)	(0, -0.095R)	b
66	For a line of length 3 m passing through origin and inclination 40 with x-axis, centroid along x is	1.149	2	1.5	1	a
67	For a line of length 2.5 m passing through origin and inclination 45 with x-axis, centroid along y is	0.883	2.056	1.25	1	a
68	From a circular area of radius 4m, a smaller circle of radius 2m is removed. Top half of smaller circle is in Ist quadrant and bottom half is in fourth quadrant. The centroid of remaining area is	(0,0)	(-0.667, 0)	(0, 0.667)	(-0.667, 0.667)	b
69	A square hole is removed from a thin circular lamina, the diagonal of the square being equal to the radius of circle 4m. One side of square coincides diameter of circle such that top half of square is in Ist quadrant and bottom half is in fourth quadrant.The centroid of remaining figure is	(0,0)	(-3.508,0)	(-2.508, 0)	(0, -0.38)	b

Sr. No.	Question	A	B	C	D	Ans
70	The center of mass will coincide with the centroid provided the density of material is	non-uniform	uniform	varying	none	b
71	A triangle of base b and height h has its centroid (h/3) from its base. It is valid for	Isosceles traingle	Right angled triangle	Equilateral triangle	Any shape of traingle	d
72	For a line of length 2.5 m passing through origin and inclination 60 with x-axis, centroid along x is	0.625	0.5	2.5	1	a
73	For a line of length 2.5 m passing through origin and inclination 60 with x-axis, centroid along y is	1.083	1.75	2.5	1	a
74	From a circular area of radius 5m, a smaller circle of radius 2.5m is removed. Top half of smaller circleis in Ist quadrant and bottom half is in fourth quadrant. The centroid of remaining figure is	(0,0)	(-0.833, 0)	(0, 0.833)	(-0.833, 0.833)	b
75	A square hole is removed from a thin circular lamina, the diagonal of the square being equal to the radius of circle 5m. One side of square coincides diameter of circle such that top half of square is in Ist quadrant and bottom half is in fourth quadrant.The centroid of remaining figure is	(0,0)	(-4.435, 0)	(2.475, 0)	(0, 4.475)	b
76	A pebble dropped in flowing water will have frictional force in the direction	Vertically downward	Vertically upward	inclined downward direction	inclined upward direction	d
77	A body of weight 200N is placed on rough horizontal plane. If the coefficient of friction between the body and the horizontal plane is 0.3, determine the horizontal force required to just slide the body on the plane.	60N	200N	100N	30N	a
78	A body of weight 100N is placed on rough horizontal plane. Determine the coefficient of friction if a horizontal force of 60N just causes the body to slide over the horizontal plane.	0.6	0.1	0.06	0.006	a
79	A force of 450N is applied to move a weight of 1350N block placed at an angle of 36.86^o and the normal reaction created is 1080N. Then the maximum frictional force if μ=0.25 is.....	280N	270N	112.5N	None of these	b
80	If a force of 450N is applied to move a weight of 1350N block placed at an angle 36.86 and normal reaction is 1080N. Then the actual frictional force is if μk= 0.2 and μs=0.25.	280N	112.5N	216N	None of these.	c

Sr. No.	Question	A	B	C	D	Ans
81	The position of a machine block 'B' is adjusted by moving the wedge 'A', kNowing that the coefficient of static friction is 0.35 between all surfaces, determine angle of friction	20.3^o	19.3^o	30^o	29.3^o	b
82	A ladder resting on vertical and horizontal surface in first quadrant slides down under its own weight, frictional force at the ends will have following directions	Along positive X and Y axis	Along negative X and positive Y axis	Along positive X and positive Y axis	Along positive X and positive Y axis	b
83	The force required to pull the body of weight 50N on a rough horizontal plane is 15N. Determine the coefficient if the force is applied at the angle of 15^o with the horizontal.	$\mu=0.3$	$\mu=0.314$	$\mu=0.25$	None of these.	a
84	A body of weight 70N is placed on a rough horizontal plane to just move the body on the horizontal plane. A push of 20N inclined at 20^o to the horizontal plane is required. Find the coefficient of friction if normal reaction is 76.84N.	$\mu=0.3$	$\mu=0.2$	$\mu=0.244$	None of these.	c
85	Frictional force has the following relation with the normal reaction between two contact surfaces.	$F= \mu N$	$F=\mu^2 N$	$F=\mu/N$	$F=\mu N^2$	a
86	The angle of repose (α) holds the following relation with the angle of friction (Φ) in the condition of limiting equilibrium.	$\alpha =\Phi$	$\alpha =2\Phi$	$\alpha =\Phi/2$	$\alpha =\Phi^2$	a
87	A block of 100N resting on rough horizontal plane applied with horizontal force 50N towards right, the coefficient of static friction is	0.25	0.5	0.52	0.75	b
88	A block of 200N resting on rough horizontal surface is pulled by force 100N, 30^o to the horizontal. If $\mu=0.175$, frictional force is	494.87N	200N	487.94N	487.94N	a
89	The end rope is fastened to the bucket is used to lift the water from well using rope and pulley arrangement. When water is lifted upwards, then	Bucket side is tight and effort side is slack.	Effort side id tight and bucket side is slack.	Both sides are tight.	None of the above.	b
90	If a block is placed on a inclined plane in impending motion condition, is pulled and moving by a force opposite to the impending motion. The frictional force will act along	Up the plane	Down the plane	upward and downward both	None of these	b
91	A block of 200N resting on rough horizontal surface is pulled by a force 100N, 30^o to the horizontal. If $\mu=0.175$, normal reaction is	150N	200N	60N	-200N	a

Sr. No.	Question	A	B	C	D	Ans
92	Find the maximum force 'P' required to move a block of mass 800N resting on a floor having μ=0.50	100N	200N	400N	300N	c
93	A body of weight 500N is pulled up on an inclined plane, by a force of 350N. The inclination of the plane is 30^o to the horizontal and the force is applied parallel to the plane. Coefficient of friction is	μ=0.3	μ=0.2	μ=0.244	μ=0.23	d
94	A 50N weight is lifted up by a force of 240. 52N applied to the belt wrapped around a pulley. If coefficient of friction is 0.5, lap angle should be	π	π/2	2π	π/4	a
95	A body of weight 90N is placed on a rough horizontal plane. Determine the coefficient of friction if a horizontal force of 63N just causes the body to slide over the horizontal plane.	1.42	0.35	0.7	0.07	c
96	In an open belt system two pulleys A & B are connected through a flat belt. Pulley A is 150 mm radius & pulley B is 250 mm radius. Pulley A is connected to a motor & pulley B is driving a machine tool. Which one of the following statement is correct.	Belt slips first on pulley A	Belt slips first on pulley B	Belt does not slip on pulley A	Belt does not slip on pulley B	c
97	In an open belt arrangement angle of lap of bigger pulley is 196^0, what is the angle of lap on smaller pulley,	196^o	186^o	164^o	Any one of these depending upon centre distance between the pulleys.	c
98	In the relation $T_2/T_1 = e^{\mu\beta}$, where β is measured in	Degrees	Radians	May be in degrees or radians	None of the above	b
99	If T_2 = 2700 N, T_1 = 1600N, β = 2400 then μ = ?	0.15	0.25	0.125	1.25	c
100	If T_2 = 2700 N β = 4Π/3, μ = 0.125 then	1200 N	3600 N	1600 N	1000 N	c
101	In the relation $T_2/T_1 = e^{\mu\beta}$	$\mu < 0$	$0 < \mu \leq 1$	$\mu > 1$	Any one of the above	b
102	In a belt friction experiment in a lab for tension in tight side is kept constant, then for the values of tension in slack side for the values of β (the angle of lap) of π, 2π, 3π will be	Same	Increases in proportion of as β increases	Decreases in proportion as β increases	None of the above	c
103	For a particular value of β, Tension in tight side = Tension in slack side	μ = 0	μ = 1	μ > 1	None of the above	a

Sr. No.	Question	A	B	C	D	Ans
104	Angle of wrap of a belt – pulley system is the angle of contact between	The pulley & the belt	Of belt with horizontal	Of belt with the vertical	None of he above	a
105	For a given angle of wrap, if μ_s is doubled the ratio of tension in tight side to tension in slack side is	Get halfed	Get doubled	Remains same	None of the above	d
106	The friction that is developed between flexible belt & pulley on drum can be utilized for	Generation of power	Transmission of power	Distribution of power	None of the above	b
107	If tension in tight side is 960 N, the angle of lap is 165^0 & coefficient of belt friction is 0.3 then tension in slack side is	1920 N	294 N	404.72 N	960 N	c
108	A belt supports two weights W_1 & W_2 over a pulley. If W_1 = 1000N find the minimum weight W_2 to keep W_1 in equilibrium. Assure the pulley is locked & $\mu = 0.25$ & $\beta = \pi$	250 N	456 N	500 N	1000 N	b
109	Find lap angle β if the rope is wrapped & the pulley for ¼ of the circumference	$\pi / 4$	$\pi / 2$	$3\pi / 2$	2π	b
110	Find tension in slack side if tension in tight side is 1.0 kN & $e^{\mu\beta} = 2.0$	2	1	0.5	3	c
111	Find tension in slack side if tension in tight side is 500 N & $e^{\mu\beta} = 1$	250 N	500 N	750 N	1000 N	b
112	In static belt friction the slipping is	Already occurred	Impending	Never occurred	None of the above	b
113	In belt friction the pulley is driven by virtue of the friction between	Its rim & encircling belt	Its centre & flat surface of the belt	Two pulleys	None of the above	a
114	For transmission of power the friction is developed between pulley on drum &	Bigger pulley	Smaller pulley	Flexible belt	None of the above	c
115	In equation $T_2/T_1 = e^{\mu\beta}$ when the belt & pulley are moving the equation does not take in to account (where T_2 is tight side tension)	Inertia effect of the mass	Pressure effect of the mass	Surface tension effect of the mass	None of the above	a
116	On what parameter, the pressure transmitted between belt & surface of the rim in contact with belt depends upon	Thickness of belt	Mass moment of inertia	Width of the belt	Coefficient of friction	d
117	Find β (Angle of lap) if the belt is wrapped round the pulley for complete circumference	2π	π	$\pi/2$	$\pi/6$	a
118	Torque provided ‘T’ by rope is given by where T_1 = slack side T_2 = tight side R = radius of drum	$T = T_2.R$	T = T1.R	T = (T1+ T2)R	T = (T2 –T1)R	d
119	In the formula for torque provided by rope $T = [T_2 – T_1] R$ where R is	Diameter of pulley	Circumference of the pulley	Area of the pulley	Radius of the pulley	d
120	Find the couple applied on fly wheel if tension in tight side 200N, tension is slack side 100N & R = 0.4m	40 Nm	120 Nm	20 Nm	None of the above	a

Sr. No.	Question	A	B	C	D	Ans
121	A flat belt & pulley system of a machinery is rotating in an anticlockwise direction. A breaking torque is applied to stop the working of the machinery. The maximum & minimum tension in the two sides of the belt are 90 kN & 60 kN μs = 0.30 & μk = 0.25 find the angle with which the belt is in contact with the pulley	89^o	45^o	180^o	None of the above	d
122	The frictional force depends upon	Area of surface in contact	Shape of surface in contact	Velocity of sliding	Nature of the surfaces in contact	d
123	Frictional force play an important role in mechanical devices such as	Belts & pulleys	Jack screws	Hand brake	All of above	d
124	The coefficient of static friction for belt & pulley in contact is the ratio of the	Maximum static friction to minimum static friction	Maximum static friction to the normal force between the bodies	Maximum static friction to the tangential force	All of the above	b
125	If the number of turns of the rope or belt are given around the pulley, the value of β in radians can be obtained using	1 Turn = p radian	1 Turn = 2p radians	1 Turn = p/2 radians	1 Turn = 3p radians	b
126	For a moving body the kinetic frictional force getting developed between to surfaces in contact	Increase with increase in velocity of body	Decrease with increase in velocity of body	Remains approximately constant	None of above	c
127	A flat belt & a pulley system of machinery is rotating in a clockwise direction. A braking torque is applied to stop the working of the machinery. The maximum & minimum tension in the two sides of the belt are 150 kN & 75 kN μs = 0.30 & μk = 0.25 find the angle with which the belt in contacts with the pulley	107^o	120^o	159^o	None of the above	c
128	A flat belt is moving over a pulley such that the maximum tension is 3.5 times the minimum tension in the belt μs = 0.4 & μk = 0.3 between the belt & the pulley for maintaining the equilibrium in the system the lap angle required is	100^o	239^o	175^o	None of the above	b
129	A flat belt & a pulley system of machinery is rotating in a clockwise direction. A braking torque is applied to stop the working of the machinery. The maximum & minimum tension in the two sides of the belt are 80 kN & 30 kN μs = 0.35 & μk = 0.30 find the angle with which the belt in contacts with the pulley	188^o	180^o	185^o	190^o	a

Sr. No.	Question	A	B	C	D	Ans
130	A flat belt & a pulley system of machinery is rotating in a clockwise direction. A braking torque is applied to stop the working of the machinery. The maximum & minimum tension in the two sides of the belt are 125 kN & 60 kN μs = 0.35 & μk = 0.30 find the angle with which the belt in contacts with the pulley	135^o	140^o	137^o	136^o	b
131	A flat belt is moving over a pulley such that the maximum tension is 4.5 times the minimum tension in the belt μs = 0.35 & μk = 0.3 between the belt & the pulley for maintaining the equilibrium in the system the lap angle required is	287^o	250^o	266^o	135^o	a
132	In an open belt arrangement angle of lap of bigger pulley is 185^0, what is a angle of lap on smaller pulley	160	192	175	Any one of these depending upon the centre distance between the pulleys	c
133	If T_2 = 2100 N, β= 4π/3, μ = 0.125 then T_1 = ? Assume T1 = Tight side, T2 = slack side	3100	3230	3610	3545	d
134	If couple applied is 24 N-m & T_2 = 150N & R = 0.3m Find T_1 = ?	70	29	24	27	a
135	Find the couple applied on fly wheel if T_2 = 1898 N, T_1 = 498N & R = 0.5m	700	650	675	525	a
136	Which of the following statement is true in belt friction	Static friction = kinetic friction	Static friction > kinetic friction	Static friction < kinetic friction	None of the above	b
137	If the belt is sliding on the drum then the ratio T_1/T_2 (tight side / slack) depends on following factors	Angle of lap	Kinetic friction	Both a & b	None of these	c
138	When sliding of the belt on the drum is depending the ratio of tight / slack (T_1/T_2) is depend as which factors	Static friction & kinetic friction	Static friction & angle of wrap	Angle of contact & kinetic friction	Tight side & slack side	c
139	A flat belt is moving over a pulley such that the maximum tension is 3.0 times the minimum tension in the belt. If μs = 0.4 and μk = 0.3 between the belt and the pulley then for maintaining the equilibrium in the system the lap angle required is	100°	175°	210°	130°	c
140	The coefficient of static friction μ_s and coefficient of kinetic friction μ_k depends strongly on	Nature of surfaces in contact	Area of contact between two surfaces	State of rest or motion of the bodies in contact	None of the above	a

Sr. No.	Question	A	B	C	D	Ans
141	A drum is subjected to two flat belt tensions T_1 and T_2 such that $T_1 < T_2$ if μ is the coefficient of friction between the belt and the drum and ß is the angle with which the belt is in contact with the drum then the relation between the T_1, T_2, μ and ß is given as	$T_1/T_2 = e^{\mu/\beta}$	$T_2/T_1 = e^{\mu ß}$	$T_2/T_1 = e^{ß/\mu}$	$T_2/T_1 = e^{\mu/ß}$	b
142	A flat belt connects pulley A, which driver a machine tool to pulley B the coefficient of friction μ_s and μ_k between the pulleys and the belt is same if the diameter of pulley A is greater than that of pulley B, which pulley will slip first	Pulley A	Pulley B	Both pulley will slip at a time	may be (a), (b), (c)	b
143	A flat belt and a pulley system of a machinery is rotating in a clockwise direction. A breaking torque is applied to stop the working of the machinery. The maximum and minimum tension in the two sides of the belt are 80kN and 50kN. If μs= 0.30 and μk = 0.25 , then find the angle with which the belt in contacts with the pulley.	89°	40°	107°	None of the above	c
144	A fiat belt and a pulley system of a machinery is rotating in a clockwise direction. A breaking torque is applied to stop the working of the machinery. The maximum and minimum tension in the two sides of the belt are 100kN and 60kN μs= 0.30 and μk = 0.25 find the angle with which the belt in contacts with the pulley.	89°	118°	107°	None of the above	b
145	Which belt is use for the transmission of power at low speed	Flat belt	B belt	V belt	Both a & c	a
146	If the tension in tight side is 450N, & tension in slack side 150N then $e^{\mu ß}$ is	1	2	3	4	c
147	Which friction is experienced by a body when it is at rest under the action of external	Static	Kinematics	Rolling	Sliding	a
148	What is the relation between tight side & slack side for flat belt	slack side / tight side = $e^{\mu ß}$	tight side / slack side = $e^{\mu ß}$	tight side / slack side = $e^{\mu ß} . \cos \alpha/2$	tight side / slack side = $e^{\mu ß . \cos \alpha/2}$	b
149	If T_2 = 2100 N, T_1 = 1100 N, ß = 1400 then μ = ?	0.212	0.22	0.262	0.253	c
150	A rope is wrapped around a horizontal bar for 2 & ½ turn. By exerting a force of 800N at the free end of the rope and assuming a load of 60kN on the other end determine coefficient of friction	μ = 0.275	μ = 0.375	μ = 0.175	None of above	a

Sr. No.	Question	A	B	C	D	Ans
151	By exerting a force of 800N at the free end of the rope, and assuming a load of 200kN on the other end determine the number of time the rope should be wrapped around the bar (bar is horizontal)	1.275	3.196 turn	2.175	None of above	b
152	A weight on tight side (T_1) =100kN μ = 0.19 calculate (T_2) = slack side angle of contact (ß) = 180° for maintaining equilibrium.	181kN	55kN	45kN	65kN	b
153	A weight 100kN acted on one side of pulley with μ = 0.19 and angle e of contact (ß) = 180°, calculate maximum force (p) required for maintaining equilibrium.	55kN	181kN	45kN	65kN	b
154	A flat belt passes over a pulley such that the maximum tension is two times a minimum tension in the belt. If μs = 0.4 between the belt & pulley, then for maintaining the equilibrium in the system the lap angle required is	100	175	130	None of the above	a
155	A 80 kN weight is to be supported by a rope. The coefficient of friction between the rope & the pulley is μs = 0.19 & μk = 0.15 the force T minimum required for maintaining equilibrium is	145kN	44kN	134kN	None of the above	b
156	A 80 kN weight is to be supported by a rope. The coefficient of friction between the rope & the pulley is μs = 0.19 & μk = 0.15 the force P maximum required for maintaining equilibrium is	145kN	44kN	134kN	24kN	a
157	A cylinder having a mass of 250kg is to be supported by the chord which wrapped over the pipe. Determine the largest vertical force F needed to support the load if the chord passes once over the pipe ß = 180^0, μ = 0.2	2.5kN	7.31kN	4.6kN	None of above	c
158	A cylinder having a mass of 250kg is to be supported by the chord which wrapped over the pipe. Determine the largest vertical force F needed to support the load if the chord passes once over the pipe ß = 180^0, μ = 0.2	372N	500N	200kN	None of above	a
159	If tension in tight side T_1 = 5N & tension in slack side T_2 = 3N Take angle of lap ß = 30° Find the coefficient of friction μ?	0.3	0.98	0.45	0.5	b
160	If tension in tight side T_1 = 6N & tension in slack side T_2 = 4N Take angle of lap ß = π/2rad. Find the coefficient of friction μ?	0.45	0.25	0.4	0.3	b

Sr. No.	Question	A	B	C	D	Ans
161	If tension in tight side T_1 = 50N & tension in slack side T_2 = 35N Take angle of lap ß = 135° Find the coefficient of friction µ?	0.2	0.15	0.125	0.221	b
162	If tension in tight side T_1 = 60N & tension in slack side T_2 = 25N Take angle of lap ß = 90° Find the coefficient of friction µ?	0.425	0.55	0.45	0.5	b
163	If tension in tight side T_1 = 70N & tension in slack side T_2 = 50N Take angle of lap ß = 120° Find the coefficient of friction µ?	0.1	0.16	0.125	0.3	b
164	If tension in tight side T_1 = 80N & tension in slack side T_2 = 40N Take angle of lap ß = 45° Find the coefficient of friction µ?	0.8	0.882	0.9	0.85	b