University of Mumbai
Online Examination 2020

Program: BE Automobile Engineering

Curriculum Scheme: Revised 2016

Examination: Fourth Year (Semester VII)

Course Code: **AEC701** and Course Name: **Automotive Design**

Time: 1 hour   Max. Marks: 50

Note to the students: All the Questions are compulsory and carry equal marks.

Q1.	The width of space between the two adjacent teeth measured along the pitch circle is known as
Option A:	Working depth
Option B:	Tooth space
Option C:	Tooth thickness
Option D:	Total depth
Q2.	The overall heat transfer coefficient under normal working condition with natural air circulation is
Option A:	12 to 18 W/m² °C
Option B:	22 to 26 W/m² °C
Option C:	24 to 28 W/m² °C
Option D:	20 to28 W/m² °C
Q3.	In finding the tooth size and strength, it is safe to assume that the teeth of worm gear are always _____ than the threads of the worm
Option A:	stronger
Option B:	equal
Option C:	weaker
Option D:	doubled
Q4.	In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called
Option A:	normal pitch
Option B:	axial pitch
Option C:	diametral pitch
Option D:	module
Q5.	The form factor of a spur gear tooth depends upon
Option A:	circular pitch only
Option B:	pressure angle only
Option C:	number of teeth and circular pitch

Option D:	number of teeth and the system of teeth
Q6.	The connecting rods are made of I sections because
Option A:	It is easy to draw the assembly drawing
Option B:	It reduces the friction and inertia forces
Option C:	It reduces the friction and wear and tear
Option D:	It reduces the weight and inertia forces
Q7.	The values of thermal conductivity factor (k) for grey cast iron is k = 46.6 W/m/°C , whereas for aluminium alloy it is ………….
Option A:	175 W/m/°C
Option B:	165 W/m/°C
Option C:	155 W/m/°C
Option D:	185 W/m/°C
Q8.	Cylinders and cylinder liners are usually made of …………… with homogeneous and close-grained structure.
Option A:	brass
Option B:	copper
Option C:	grey cast iron
Option D:	Forged steel
Q9.	The clearance between the cylinder liner and piston is provided to take care of ……………….. and distortion under load.
Option A:	thermal expansion
Option B:	linear expansion
Option C:	lateral expansion
Option D:	corrosion
Q10.	The length of the crank pin is determined by ……………….. consideration
Option A:	compression
Option B:	tension
Option C:	shearing
Option D:	bearing
Q11.	The material used for lining of friction surfaces of a clutch should have ………… coefficient of friction.
Option A:	low
Option B:	high
Option C:	very low
Option D:	very high
Q12.	In a centrifugal clutch, the force with which the shoe presses against the driven member is the ………….. of the centrifugal force and the spring force.
Option A:	Difference
Option B:	Sum

Option C:	ratio
Option D:	product
Q13.	Total frictional torque acting on the friction surface in case of design of clutch is given by
Option A:	$n.\mu.w.R^2$
Option B:	$n.\mu.w.R$
Option C:	$n.\mu.w.$
Option D:	$\mu.w.R$
Q14.	A plate clutch having a single driving plate with contact surfaces on each side is required to transmit 110 kW at 1250 r.p.m. The outer diameter of the contact surfaces is to be 300 mm. The coefficient of friction is 0.4. find the required torque.
Option A:	820 N-m
Option B:	840 N-m
Option C:	860 N-m
Option D:	880 N-m
Q15.	The heat generation in brake depends upon
Option A:	p.v
Option B:	p/v
Option C:	pv/2
Option D:	$1/2pv^2$
Q16.	A band brake consists of the lever attached to one end of the band. The other end of the band is fixed to the ground. The wheel has a radius of 200mm and wrap angle of the band is 270°. The braking force applied to the lever is limited to 100N, and the coefficient of friction between the band and the wheel is 0.5. No other information is given. The maximum wheel torque that can be completed is in Nm. It is assumed that the distance form pivot to fixed is 1m and fixed to force is 1m
Option A:	200
Option B:	382
Option C:	604
Option D:	844
Q17.	When the intensity of the pressure between the block and brake drum is uniform, the angle of contact between the block and brake drum is less than
Option A:	45
Option B:	90
Option C:	60
Option D:	30
Q18.	Braking torque for double block shoe brake is
Option A:	(Ft1+Ft2)r
Option B:	(Ft1+Ft2)

Option C:	Ft1
Option D:	Ft2
Q19.	The type of cam does not require any external force to have contact between cam and follower is
Option A:	cylindrical cam
Option B:	conjugate cam
Option C:	disk cam
Option D:	end cam
Q20.	The push rod is designed by considering it as
Option A:	beam
Option B:	shaft
Option C:	column
Option D:	axle
Q21.	The push rod is located between the
Option A:	valve spring and valve
Option B:	rocker arm and valve
Option C:	rocker arm and cam shaft
Option D:	rocker arm and tappet
Q22.	Cams with translating followers are designed with pressure angle of
Option A:	25 degree
Option B:	20 degree
Option C:	30 degree
Option D:	40 degree
Q23.	The velocity ratio of two pulleys connected by an open belt or crossed belt is
Option A:	directly proportional to their diameters
Option B:	inversely proportional to their diameters
Option C:	directly proportional to the square of their diameters
Option D:	inversely proportional to the square of their diameters
Q24.	Calculate the angle of wrap if diameter of the two pulleys are 550mm and 300mm. Also the centre distance is 2800mm.
Option A:	174.8 °
Option B:	167.8 °
Option C:	159.3 °
Option D:	200 °
Q25.	V belts result in smooth and quite operation even at high speeds.
Option A:	Yes
Option B:	No they are very noisy
Option C:	They are not endless and hence not smooth motion
Option D:	They are endless and gives noise