PAPER ID-420870

Subject Code: KME603

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VI) THEORY EXAMINATION 2021-22
THEORY OF MACHINE

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

Qno.	Question	Marks	CO
a.	Describe the binary, ternary and quaternary joint in a chain.	2	1
b.	What do you understand by interference?	2	2
c.	What is the difference between flywheel and governor?	2	3
d.	What do you understand by instantaneous center?	2	1
e.	What is constrained motion? Define.	2	1
f.	Discuss types of transmission system.	2	4
g.	Write short notes on Lower pair and higher pair.	2	1
h.	What do you understand by degree of freedom?	2	3
i.	Write short notes on Coefficient of fluctuation of energy.	2	3
j.	Discuss the types of follower.	2	1

SECTION B

2. Attempt any *three* of the following:

Qno.	Question	Marks	CO
a.	Describe the velocity and expression for a quick return shaper mechanism.	10	1
b.	What do you understand by effort and power of governor? Find its expression.	10	4
c.	What is the difference between absorption and transmission dynamometer? Also explain torsion dynamometer.	10	5
d.	In a porter governor the mass of each ball is 6kg and mass of sleeve is 40kg; upper arm is pivot at spindle axis and length is 400mm, while lower arm is 250mm long and pivot 40mm away from sleeve axis. Calculate the equilibrium speed of governor for 150mm radius of rotation. Also calculate the effort for this speed.	10	4
e.	What is the difference between involute and cycloidal form of teeth?	10	2

SECTION C

3. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Four masses A, B, C and D are lies in a plane at a shaft. The masses are 12kg, 10kg, 18kg and 15kg and radius of rotation is 40mm, 50mm, 60mm and 30mm respectively. The angular position of B, C and D is 60^0, 135^0 and 270^0 from A. then calculate the balancing mass whose radius of rotation is 100mm.	10	4
b.	What do you understand by mechanism? Discuss any one inversion of double slider crank chain.	10	1

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4. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Describe the working of Gyroscope with the help of suitable example.	10	5
b.	Derive the expression for minimum number of teeth on pinion to avoid interference.	10	2

5. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Draw the Cam-Profile for a roller follower rotating in clockwise direction with following details: i)Diameter of roller follower=20mm, ii) least radius of cam=30mm, iii)follower lift=40mm,iv)Angle of ascent=60^0, v)angle of dwell=$40^0$and angle of descent=70^0 The motion of follower is Uniform acceleration and retardation. If cam is rotating with 300RPM then calculate the maximum velocity and acceleration during ascent	10	4
b.	Discuss law of gearing with proper diagram. Also prove the law.	10	2

6. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Describe the simple, compound, reverted and epi-cyclic gear train with the help of figure**.**	10	2
b.	What do you understand by lubrication system? Explain any one type.	10	5

7. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Two gears A and B are attached in an epi-cyclic gear train. Gear have 36 and 45 teeth respectively; if arm rotate anticlockwise direction with centre of fixed gear A at 150rpm then calculate the speed of gear B; also calculate the speed of gear B if Gear A is not fixed and rotate Clockwise direction at 300rpm.	10	2
b.	What do you understand by gear nomenclature? Explain with the diagram.	10	2