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Class - BME

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TOPIC - BME Assignment-1

- (a) Advanced composite materials.
- (b) Textile engineering.
- (c) Mechanical engineering.
- (d) Computer Integrated manufacturing.
- (e) Machine Tools and Metal Fabrication.
- (f) Drafting.
- (g) Kinematics.
- (h) Mechanics.

Ans → The various branches of Manufacturing are

(a) What are the various branches of Manufacturing Engineering?

Unit-1

Q.1) What is Mechanical Engineering?

Ans → Mechanical engineering is the largest and one of the oldest disciplines; broadest of all engineering disciplines.

② Mechanical engineers apply the principles of mechanics and energy to the design of mechanics and devices.

③ The branch of engineering that encompasses the generation and application of heat and mechanical power and the design, production and use of machines and tools is called mechanical engineering.

④ Mechanical Engineering is probably the forerunner of many branches of Engineering and has persistently been their companion up to the present.

Q.6) What are the various branches of Manufacturing Engineering?

Ans → The various branches of Manufacturing eng are-

① Mechanics

② Kinematics

③ Drafting

④ Machine Tools and Metal Fabrication.

⑤ Computer Integrated Manufacturing.

⑥ Mechatronics.

⑦ Textile engineering.

⑧ Advanced composite materials.

Q11) List any 2 inventions where mechanical engineering and your discipline (branch of engineering) have contributed together.

Ans → Inventions where Mechanical Engineering and Electrical & computer Engineering have contributed together are -

① Electric vehicles -

Electric vehicles have steadily been gaining in popularity, and they are almost certainly the vehicles of the future because of their energy efficiency and reduced carbon emissions. Automatic gear technology, advanced battery and computer technology, energy management systems etc are making EVs ever more efficient and appealing to the mass-market.

② Robotics -

Robotics is an interdisciplinary field that integrates fields of mechanical, electrical & computer, mechatronics, computer, software etc engineering. Robotics develops machines that can substitute for humans and replicate human actions. Many robots are built to do jobs that are hazardous to people, such as defusing bombs, finding survivors in unstable ruins, and exploring ~~machine~~ mines and shipwrecks etc.

Unit-2

Q.1) Differentiate between Axle and shaft.

Axle	shaft
① Axle is a non rotating member	① shaft is rotating member
② Primary function is to provide support to elements like wheel, pulley etc.	② Primary function is to transmit torque.
③ Axle is subjected to bending moment	③ shaft is subjected to bending moment, as well as torsional moment (torque)
④ depending upon loading condition, cross sectional area of axle can be different e.g. Rectangular, circular, I-section, T-section etc.	④ Cross sectional area of shaft is generally circular because it causes minimum vibrations and peaking of torsional stress. (For a given cross section area circular shape provides minimum peak stress under same torsional loading)
⑤ Examples: Axles of automobiles, railway buggies	⑤ Examples: shaft of electric motor, shaft of IC engine

Q6) what is Gear Ratio? Also explain functions of gear.

Ans → Gear Ratio -

The ratio of the angular speed of the initial or driving member of a gear train or equivalent mechanism to that of the final or driven member (specifically: the number of engine revolutions per revolution of the rear wheels of an automobile) is called as gear ratio.

Functions of Gear are.

- ① Gears for setting the Rotate speed
- ② Gears for Transmitting Power
- ③ Gears for Changing Torque
- ④ Gears for changing the Power Direction.

Q11) Differentiate between V Belt and Flat Belt

Flat Belts	V-Belts
① Large centre distances.	① Smaller centre distances.
② More flexibility in centre to centre distance adjustments.	② Less flexibility in centre distances.
③ Slip is more	③ slip is very less
④ Less costly	④ cost is more.
⑤ Cross section is rectangular	⑤ cross section Trapezoidal.
⑥ Lower efficiency	⑥ Higher efficiency.
⑦ Pulley sizes are more	⑦ Pulleys are smaller.
⑧ Drives are bulky	⑧ Drives are compact.
⑨ wide range of materials leather, cotton, fabric, etc	⑨ Only rubber and fabric materials are used.

Q16) How are machine elements classified?

Ans → The classification is as follows -

