

**DIPLOMA VIEP MECHANICAL ENGINEERING
(DMEVI)**

00820

Term-End Examination

June, 2013

BIME-022 : POWER TRANSMITTING ELEMENTS

Time : 2 hours

Maximum Marks : 70

*Note : (i) Attempt **any five** questions. All questions carry equal marks. Question **no.1** is compulsory.
(ii) Design data book and calculator are allowed.*

Attempt **all** questions.

1. (a) Lewis equation in gears is used to find the : 7x2=14
- (i) Fatigue stress
 - (ii) Compression stress in bending
 - (iii) Tensile stress
 - (iv) Contact stress
- (b) Helical gear is used _____.
- (c) Belt drive is classified into _____.
- (d) The product of circular pitch and diametral pitch is _____.
- (i) π
 - (ii) 2π
 - (iii) $\frac{\pi}{2}$
 - (iv) $\frac{D}{T}$

- (e) Gear finish operations :
- (i) Lapping (ii) Shearing
- (iii) Grinding (iv) All of these.
- (f) Define in brief helical gear.
- (g) Flat belt is superior than V belts.
(True/False)

2. (a) Differentiate between shaft and axil, enumerate the different materials for forming shaft. Also mention some manufacturing process that suitable for shaft and axial. 7

(b) For the belt drive prove that $\frac{\pi}{T_2} = (e)^{\mu P}$ 7
where symbol carry usual meaning.

3. (a) Find the 20 degree involute worm and gear which will transmit 11.25 kW between shafts that are 0.25 mm apart, if the speed reduction is to be 10.5 to 1 and the driving shaft is turning at 1200 rev/min. 7

(b) What is belt slip and creep ? Clearly make a difference between the two. 7

4. (a) How many cotton ropes 32 mm diameter will be required to transmit 375 kW over pulleys 12 m apart at a speed of 30 m/s. 7

(b) Explain constructions of chain in detail. 7

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| 5. | (a) | Explain different types of keys. | 7 |
| | (b) | Explain different types of couplings. | 7 |
| 6. | (a) | Explain wire rope construction in detail. | 7 |
| | (b) | Explain Application of Ropes. | 7 |
| 7. | (a) | Explain chain selection in detail. | 7 |
| | (b) | Explain different classification of Gears. | 7 |
| 8. | (a) | What are different materials used in gear ? | 7 |
| | (b) | A rawmade pinion is to transmit 30 kW at 1150 rev/min. Select a standard module for 20° full depth involute teeth ? | 7 |
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