



S-3771

M. Sc. (Tech.) (Part-I) (Sem. I) Examination
March / April – 2011

Workshop Technology & Mechanism : Paper - I
(Paper - INS - II)

Time : 3 Hours]

[Total Marks :70

Instructions :

(1)

नीचे दशांशवैक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
M. Sc. (Tech.) (Part-1) (Sem. 1)

Name of the Subject :
Workshop Technology & Mechanism : Paper - 1

Subject Code No. : 3 7 7 1 Section No. (1, 2,.....): Nil

Seat No. :

Student's Signature

- (2) Figures to the **right** indicate full marks for the question.
(3) Assume suitable data if necessary.
(4) Answer should be brief and to the point.

1 Answer any eight of the following:

16

- (1) Write down the name of various materials used in bearing.
- (2) Write down the name of various elements of manufacturing process.
- (3) What is the difference between rolling contact bearing and sliding contact bearing?
- (4) Which are the desirable properties of bearing materials?
- (5) Define taper and what do you mean by taper 1 in 40 on shafts.
- (6) What do you understand by the terms drilling and reaming?
- (7) List the any four work holding devices used on lathe machine.
- (8) State the basic requirement of metal cutting.
- (9) What is tool signature? State as per ASA.
- (10) Define Zero error.

- 2 Write short note: (any **three**) 18
- (1) Anti friction bearing
 - (2) Sliding contact bearing
 - (3) Cone clutch
 - (4) Universal coupling.
- 3 Answer any **three** of the following : 18
- (1) Sketch three views of single point cutting tool and show the various angles on it.
 - (2) Sketch and state the purpose of any three operations performed on drilling machine.
 - (3) Give detail classification of lathe machine.
 - (4) How drilling machine is specified?.
- 4 Answer any **three** of the following : 18
- (1) Derive an expression to calculate machining time for drilling operation. If five holes of 25 mm diameter is to be generated in 40 mm thick plate. Estimate the drilling time. Assume $V=50$ m/min, feed = 0.075 mm/rev, approach of drill as 2 mm and over-travel of drill as 3 mm.
 - (2) A lathe machine is supplied with lead screw of 6 TPI and change gear set of 16, 18, 20, 22, 24, 26, 28, 32, 36, 40, 44, 48, 52, 56, 64, 72, 80,100 and 127 teeth gear. Calculate the change gear ratio to cut threads of 12 TPI and 7.5 mm pitch.
 - (3) A shaft having a total length of 400 mm and has a taper length of 250 mm the larger diameter is 35 mm and smaller diameter is 30 mm. Calculate: (1) Conicity, (2) taper in mm/m, (3) angle of taper in degree and, (4) angle to be set on compound rest.
 - (4) Define speed and feed. A Mild steel bar is turned on a lathe, the depth of cut is 6 mm and feed is 1.5 mm/rev. Assume cutting speed as 25 m/min. Find the minimum time required to reduce the bar from 250 mm to 200 mm. The length of job is 400 mm. Take approach and over-travel as 2 mm each.