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S.E. Mechanical (Sem-III) (Revised Course 2016-2017)
EXAMINATION Nov/Dec 2019
Machine Drawing

[Duration : Four Hours]

[Total Marks:100]

Instructions:

- i) Answer **Any One** question out of two from **PART- A** and **Any One** question out of two forms **PART- B**.
- ii) **PART – C** and **PART – D** are **COMPULSORY**.
- iii) Assume missing data. If any
- iv) Neatness and accuracy carries weightages.

PART –A

- Q.1 (A) Show the Conventional Representation of the following: (02)
- i. Concrete
 - ii. Lead (04)
- (B) Sketch the roughness grade symbol and mention the roughness grade number for surface roughness value of 12.5 microns and 3.2 microns. (04)
- (C) List the DISPLAY commands in Auto CAD. (04)
- (D) A cylinder of 80mm diameter and 70mm axis resting on ground is completely penetrated by a (10) square prism of 30 mm side and 80 mm axis, horizontally. Both axes intersect & bisect each other. All faces of prism are equally inclined to VP. Draw projections showing curves of intersections.
- Q.2 (A) With the help of neat sketches, show actual projection and conventional representation of diamond knurling. (02)
- (B) Sketch the roughness grade symbol and mention the roughness number for surface roughness value of 0.1 microns and 25 microns. (04)
- (C) Discuss the advantages of AUTOCAD over manual drafting. (04)
- (D) A cone of 80mm diameter and 100mm long resting on the ground is completely penetrated by (10) a cylinder of 40mm diameter and 120mm axis, horizontally. Both axes intersect & bisect each other. Draw projections showing curve of intersections.

PART- B

- Q.3 (A) Sketch Any ONE: (02)
1. Seller's Thread
 2. Buttruss Thread
- (B) Sketch Any ONE: (04)
1. Lewis Foundation Bolt
 2. Hollow saddle Key
- (C) Sketch Any ONE: (04)
1. Universal Coupling
 2. Cotter Joint with a Jib
- (D) Sketch the top view and sectional front view of a double riveted lap joint with chain type of riveting. Take thickness of plates as 25mm. take the section plane perpendicular to the rivet row and passing through the rivet center. (06)
- (E) Decide the limits for the shaft and hole pair designed as **45H7g8**
 Given:
1. Diameter step: 40m-50mm
 2. Fundamental Deviation of g shaft = $-2.5D^{0.34}$
 3. $IT_5=7i$, $IT_6=10i$, $IT_7=16i$, $IT_8=25i$, $IT_9=40i$
- Fundamental Tolerance unit $i(\mu m) = 0.45D^{1/3} + 0.001D$
- Q.4 (A) Sketch the symbols for the following geometric tolerance and mention the category. (02)
1. Total Runout
 2. Cylindricity
- (B) Sketch Any ONE: (04)
1. Lock Nut
 2. Square Headed Bolt
- (C) Show sectional representation and welding symbol for: (04)
1. Plug Weld
 2. Square Butt Weld
- (D) Sketch plan and sectional elevation of a triple – riveted butt joint (zig- zag riveting) for joining plates having thickness 16mm. Take 2 over plates. (04)
- (E) Defines the following with the help of neat sketches. (06)
1. Hole Basis System
 2. Tolerance
 3. Clearance Fit

PART - C

Q.5 Assemble the different parts of **BLOW OFF COCK** as shown in figure 1 and draw its **FRONT VIEW**. (30)

PART- D

Q.6 Draw the part drawings of following parts of **TAILSTOCK OF MILLING MACHINE** as shown in (30) figure 2

1. BODY
2. CENTRE
3. HANDWHEEL

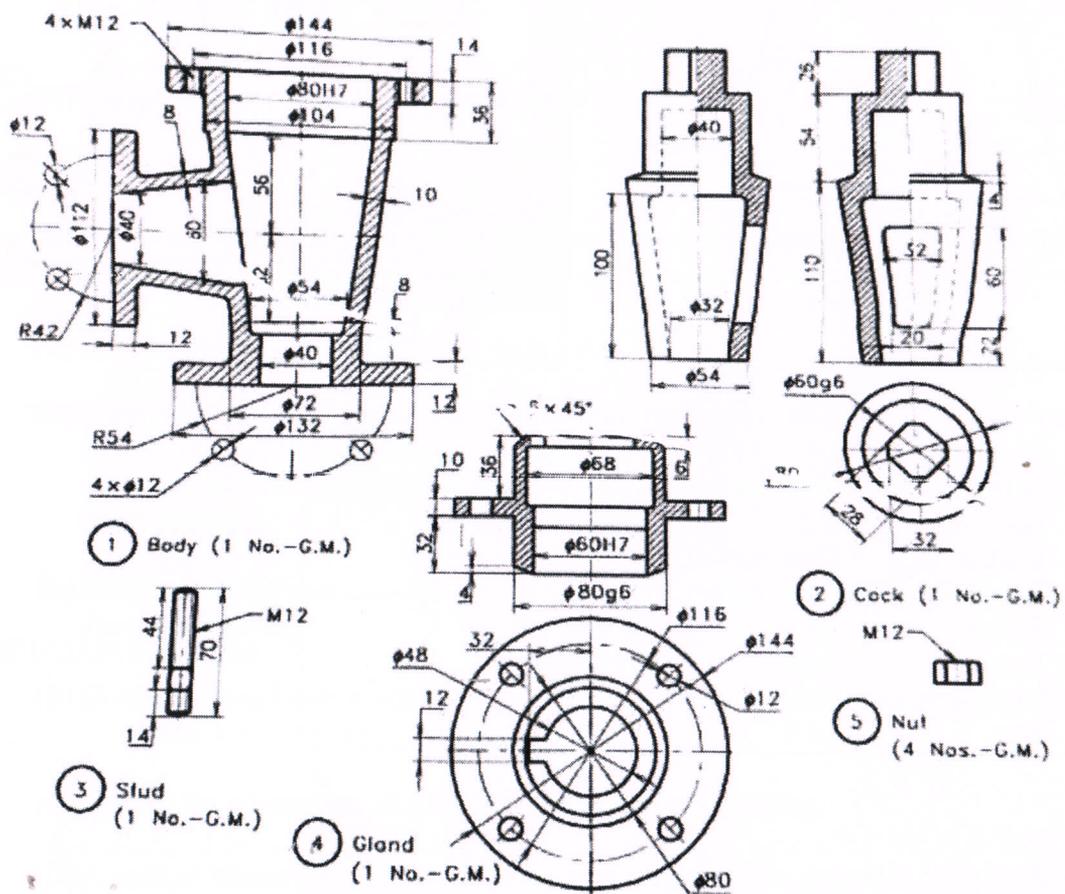


FIGURE 1 BLOW OFF COCK

$$1.2x_1 + 2.1x_2 + 4.2x_3 = 9.9$$

$$5.3x_1 + 6.1x_2 + 4.7x_3 = 21.6$$

$$9.2x_1 + 8.3x_2 + x_3 = 15.2$$

Q4 b) The distance covered by an athlete for 50 mts race is given in the following table [6]

Time(sec)	0	1	2	3	4	5	6
Distance (mts)	0	2.5	8.5	15.5	24.5	36.5	50

Calculate the speed of the athlete at Time = 5 sec. Also calculate acceleration

Q6 a) Solve the following equations by Picard's Method. [8]

i) $y'(x) = x^2 + y^2, y(0) = 0$

ii) $y'(x) = xe^y, y(0) = 0$