SCHEME OF EVALUATION

TED(15) 4026

Version: B

PRODUCTION DRAWING

D (5)

PART. A

1.

1. It should contain sufficient number of views of each part so that the shape of it can be fully identified.
2. It should contain necessary dimensions so that the size of part is fully defined.
3. The drawing should be prepared to a scale and the scale should be marked in the title block.
4. To make a portion of the part more clear, it can be drawn even to an enlarged scale and the scale should be mentioned near to it as shown.
5. The drawing should be furnished with symbol for identifying the methods of projection, the *first angle* or the *third angle.*
6. The material out of which the part is to be manufactured, should be specified preferably in the title block.
7. General surface finish requirements will be marked usually in the title block while the other surface requirements will be indicated at the respective positions on the drawing itself.
8. Operations like threading, knurling etc. should be indicated symbolically on the drawing itself.
9. General linear and angular tolerances will be marked in the title block while other tolerances should be marked either symbolically or otherwise at the respective positions on the drawing itself.
10. Each drawing should be identified by a number.

Any 5 points

5 marks

2. (1) Hole 45^{+39}_{0}

Shaft 45^{-25}_{-50}

(2) Hole 55^{+30}_{0}

Shaft 55^{+51}_{+32}

$2\frac{1}{2} + 2\frac{1}{2} = 5$ marks

3.

Roughness values, R_a in µm	Roughness grade numbers	Roughness grade symbols
50	N 12	~
25 12.5	N 11 N 10	▽
6.3 3.2 1.6	N 9 N 8 N 7	▽▽
0.80 0.40 0.20	N 6 N 5 N 4	▽▽▽
0.10 0.05 0.025	N 3 N 2 N 1	▽▽▽▽

Roughness Values & grade numbers = 5 marks

4.

OPERATION CHART

PART NAME :		MATERIAL:		WEIGHT / PIECE :			
PART NO :		SPECIFICATION :		TOTAL OPERATIONS :			
DRG. NO :		SIZE :		CYCLE TIME :			
EQUIPMENT :		QTY. REQD :		APPROVED :			
SEQUENCE	DEPT.	OPERATIONS	MACHINES	TOOLS / GUAGE	SET UP TIME (Minute)	OPEN TIME (Minute)	REMARKS

5 marks.

PART. B

1.

Maximum limit of the shaft = ϕ30 mm

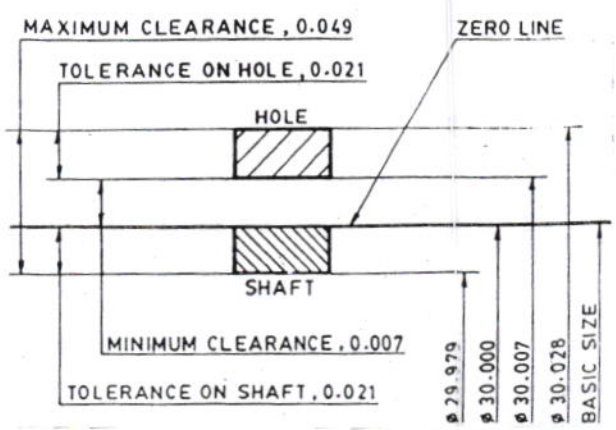
Minimum limit of the shaft = (Maximum limit of the shaft)– (Tolerance on the shaft)
= ϕ30 – 0. 021
= ϕ29. 979 mm

Minimum limit of the hole = (Maximum limit of the shaft) + (Minimum clearnace)
= ϕ 30 + 0. 007
= ϕ30. 007 mm

Maximum limit of the hole = (Maximum limit of the shaft) + (Toleranace on the hole)
= ϕ30.007 + 0. 021
= ϕ30. 028 mm

Check

Total tolerance = (Tolerance on the shaft) + (Tolerance on the hole)
= 0.021 + 0.021
= 0.042 mm



Maximum clearance = (Maximum limit of the hole) – (Minimum limit of the shaft)
= $\phi 30.028 - \phi 29.979$
= 0.049 mm

Minimum clearance = (Minimum limit of the hole) – (Maximum limit of the shaft)
= $\phi 30.007 - \phi 30$
= 0.007 mm

Difference in clearance = (Maximum clearance)– (Minimum clearance)
= 0.049 – 0.007
= 0.042 mm

∴ Total tolerance = Difference in clearance

Fig : 5
Limit & Tolerance } 5
check = 5
15 marks

2.

OPERATION CHART

NAME : Locating pin	MATERIAL: Steel	WEIGHT / PIECE : 1. 67 kg.
PART NO : 93 0031 08	SPEC. IS : 666 PART- I	TOTAL OPERATIONS : 11
DRG. NO : LP 0030 09	SIZE : ϕ 25 × 106	CYCLE TIME : 36 minutes
EQUIPMENT : Drill Jig	QTY. REQD : 25	APPROVED :

SEQUENCE	DEPT.	OPERATIONS	MACHINES	TOOLS / GUAGE	SET UP TIME (Minute)	OPEN TIME (Minute)	REMARKS
05	D_1	Remove bar stock to Turning department D_2	Truck	—	—	1	
10	D_2	Hold bar stock in self centering chuck machine to ϕ 24 for an approximate length of 106 mm	Lathe	Turning tool	1	4	
15	,,	Rough machine ϕ 18 for a length of 70 mm	,,	,,	—	6	
20	,,	Face the end	,,	Facing tool	1	2	
25	,,	Finish machine of ϕ 24	,,	Turning tool	—	4	
30	,,	Finish machine of ϕ 16 *h* 6	,,	,,	—	5	
35	,,	Thread *M* 16	,,	Threading tool	1	3	
40	,,	Chamfer the edge	,,	Chamfering tool	1	1	
45	,,	Part the pin from the bar stock	,,	Parting tool	1	3	
50	,,	Inspect the Locating pin	—	Gauges	—	1	
55	D_1	Store in bin	—	—	—	1	
		Total			5	31	

15 marks

3.

4

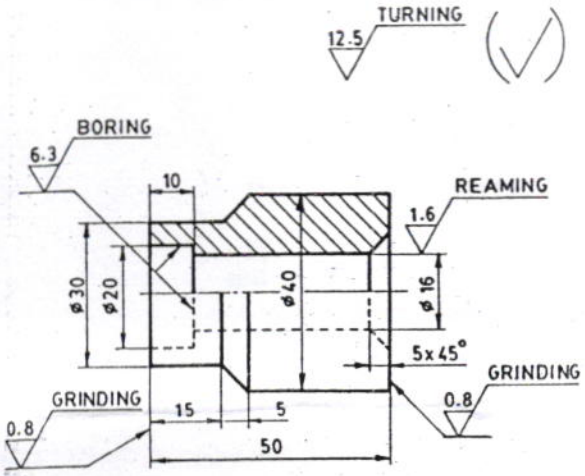


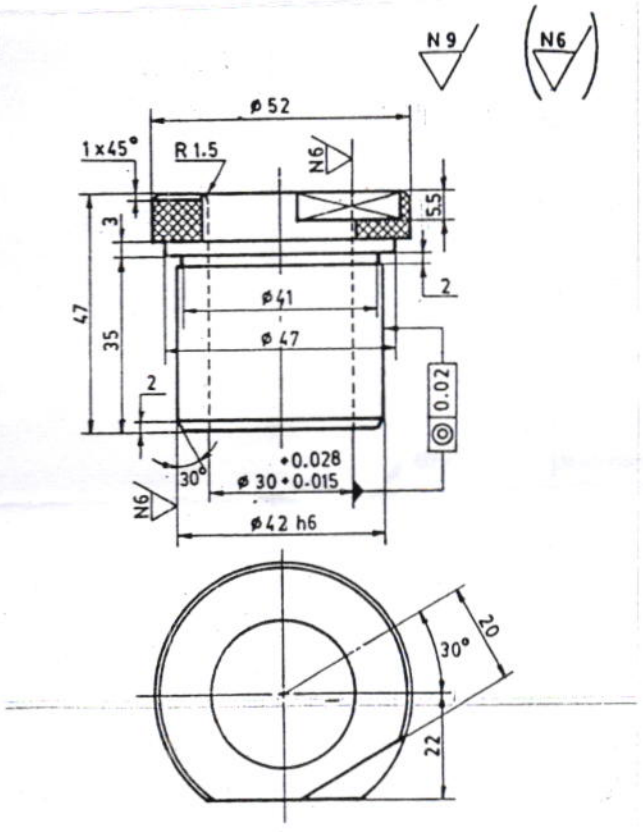
Fig: 5

Surface finish marking = 10 as per BIS

15 marks

PART. C

1.



Sketch = 10

(a) = 10

(b) = 10

(c) = 10

(d) = 10

50 marks

5

III. 2.

Marks distribution

1. Drawing of dissembled views of socket, spigot and cotter with dimensions and item list ----------15

2 Easy running fit between socket and spigot H7e8 marking on the drawing----------5

3 Sliding fit between cotter and socket,spigotH7g6-----5

4 Parallelism between socket and spigot end----------5

5 Co-axially of socket, outside surface of spigot---------5

6 Perpendicularity of spigot end with axis----------5

7. Roughness value of N8 for inside surface of socket cylindrical surface of spigot, cotter----------5

8. All the other surfaces with roughness value of N9----5

TOTAL 50

D (29) VERSION. A

SCHEME OF VALUATION

SCORING INDICATORS

REVISION - 2015

COURSE TITLE - THERMAL ENGINEERING

COURSE CODE - 4024

I. 1 Closed system
Open system,
Adiabatic system
Isolated system — 2

2 Thermal efficiency of an air standard cycle is known as air std efficiency — 2

3 Ratio of Indicated power to heat supplied — 2

4 is the ratio of the mass of actual dry steam to the mass of wet steam — 2

$$x = \frac{m_g}{m_g + m_f}$$

where, m_g - Mass dry steam
m_f - Mass water vapour.

5 The major function of an intercooler in multi stage compression is to remove heat of compressed gas during the stages of compression. — 2

PART -- B

II. 1 (a).Zeroth law of TD :- When two systems are each in thermal equilibrium with a third system then two systems are also in thermal equilibrium with one another — 2

(b). First law of TD :- The heat and work are mutually convertible OR, Energy can be neither created nor destroyed thuogh it can be transformed from one form to another — 2

(c) Second law of T D

Kelvin plank statement - It is inpossible to construct an engine working on cyclic , whose sole purpose is to convert heat energy from a single thermal reservoir into equivalent amount of work

O R,

Clausius statement :- It is impossible to construct a machine , working in a cyclic process, to transfer heat from a body at lower temperature to a body at a higher temperature without the aid of an external agency

any ONE — 2 MARKS

2+2+2 =6