Q.4 i. What are the functions of the piston? Give the name of the materials used for the manufacturing of the piston. **3**

ii. Draw the full section front view and top view of the piston shown in figure 3. **7**

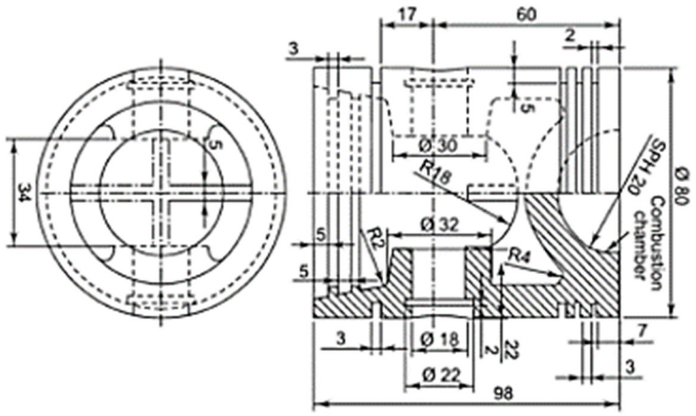



Figure 3

OR iii. Draw the assembled front view of connecting rod shown in figure 4. **7**

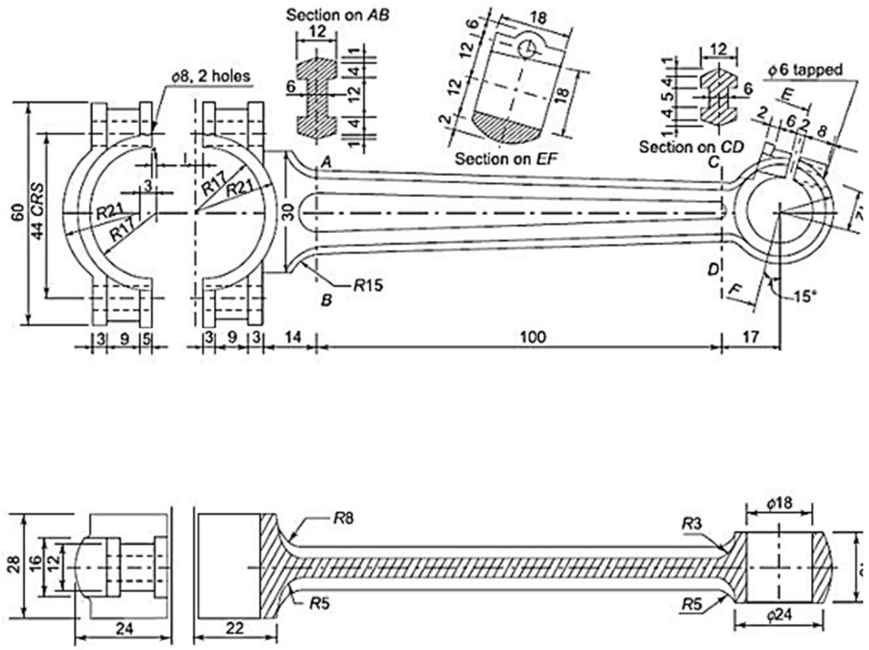



Figure 4

*Total No. of Questions: 6* *Total No. of Printed Pages:5*

**Enrollment No.....**

# Faculty of Engineering

## End Sem (Odd) Examination Dec-2022

## AU3CO12 Automotive Component Drawing

Programme: B. Tech. Branch/Specialisation: AU

**Duration: 3 Hrs.** **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. The thread angle in Acme thread is- **1**

(a) 30° (b) 29° (c) 60° (d) 45°

ii. It indicates the average departure of a machined surface over standard sampling length (Usually 0.8 mm to 2.5 mm)- **1**

(a) Roughness height

(b) Mean roughness index

(c) Surface roughness number

(d) Lay

iii. In this coupling muff is made in two semi-cylindrical halves which are joined together my means of bolts and nuts- **1**

(a) Box or muff coupling

(b) Half lap coupling

(c) Split Muff coupling

(d) None of these

iv. A pivot bearing in which the lower end of the vertical shaft is supported- **1**

(a) Wall bracket

(b) Plummer block

(c) Footstep bearing

(d) All of these

v. What is the function of gudgeon pin? **1**

(a) Acts as stiffeners

(b) Supports piston head

(c) Connects piston to connecting rod

(d) All of these

P.T.O.

vi. Which of the following parts of piston act as bearing for connecting rod side thrust? **1**

(a) Reinforcing ribs (b) Piston barrel
(c) Piston pin (d) Piston skirt

vii. Energy is stored in a flywheel in the form of- **1**

(a) Heat energy (b) Potential energy
(c) Kinetic energy (d) All of these

viii. In a four stroke IC engine cam shaft rotates at- **1**

(a) Same speed as crankshaft
(b) Twice the speed of crankshaft
(c) Half the speed of crankshaft
(d) None of these

ix. Command is useful for creating a parallel copy of a drawing entity which can be a line, circle, or polyline. **1**

(a) Pedit (b) Mirror (c) Array (d) Offset

x. Which of the following is the incorrect statement? **1**

(a) Chamfer command is used to bevel the edges
(b) Fillet command is used to round the corners
(c) Array command is used to draw multiple copies
(d) Scale command is used to draw plain scales

Q.2 i. Define Unilateral and Bilateral limit systems. **2**

ii. Draw any three types of welded joints with their symbolic representations. **3**

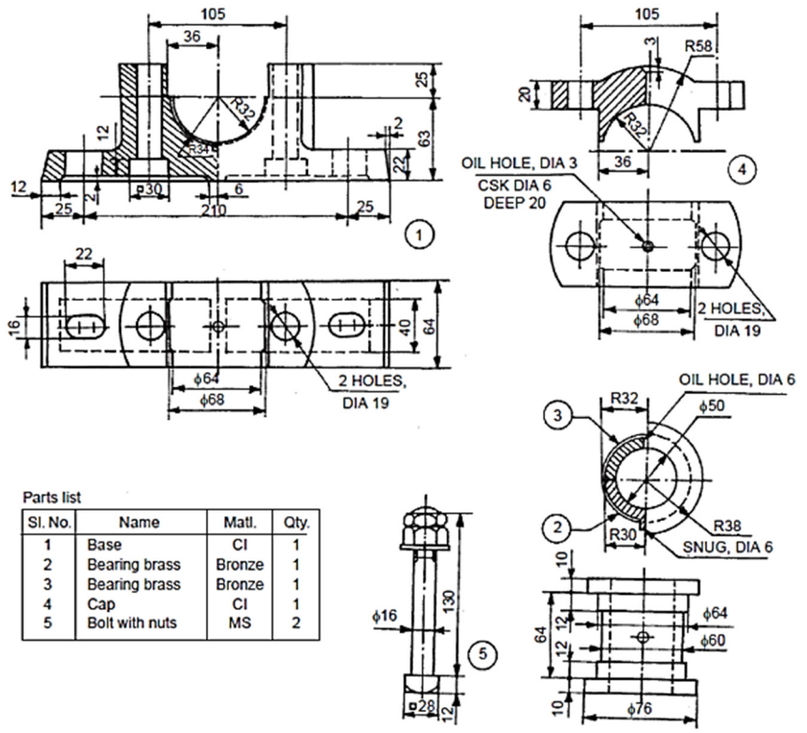
iii. What do you understand by lay? Draw various type of lay with their symbols. **5**

OR iv. Sketch neatly, a sectional front view and top view of a double riveted butt joint with chain riveting for two 8 mm thickness plates and diameter of rivet 14 mm, using two butt-straps. Show all dimension on your sketch. **5**

Q.3 i. Show any two methods of fixing pulley on a shaft rigidly by sketches. **2**

ii. Draw the sectional front view (left half in section) of Plummer block assembly shown in figure 1. **8**



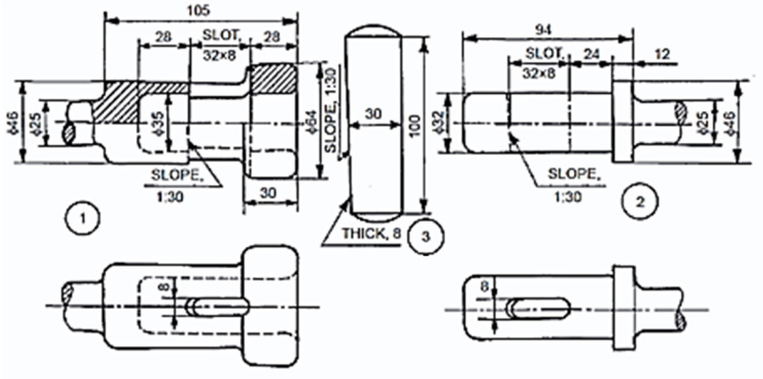



Parts list

| Sl. No. | Name | Matl. | Qty. |
|---|---|---|---|
| 1 | Base | CI | 1 |
| 2 | Bearing brass | Bronze | 1 |
| 3 | Bearing brass | Bronze | 1 |
| 4 | Cap | CI | 1 |
| 5 | Bolt with nuts | MS | 2 |

Figure 1

OR iii. Draw the full sectional front view and top view of cotter joint assembly shown in figure 2. **8**




Parts list

| Sl. No. | Name | Matl. | Qty. |
|---|---|---|---|
| 1 | Socket end | MS | 1 |
| 2 | Spigot end | MS | 1 |
| 3 | Cotter | HCS | 1 |

Figure 2

P.T.O.

| | | | |
|---|---|---|---|
| Q.5 | i. | Sketch two different methods of fixing a crank pin to a crank. | **4** |
| | ii. | Sketch a full section view of a two stroke 100 cc SI Engine, show all the necessary parts on the diagram. | **6** |
| OR | iii. | Draw neatly, showing principal dimensions and necessary views (Front view & Side view), A disc crank having 100 mm radius. | **6** |
| Q.6 | | Attempt any two: | |
| | i. | What is computer aided drafting? Explain four edit command used in drafting. | **5** |
| | ii. | Draw a neat sketch of single plate clutch and prepare a bill of material for the sketch. | **5** |
| | iii. | Write down the assembly procedure of footstep bearing by using 3D software. | **5** |

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[5]

| | | | |
|---|---|---|---|
| Q.5 | i. | Sketch two different methods of fixing a crank pin to a crank. | **4** |
| | ii. | Sketch a full section view of a two stroke 100 cc SI Engine, show all the necessary parts on the diagram. | **6** |
| OR | iii. | Draw neatly, showing principal dimensions and necessary views (Front view & Side view), A disc crank having 100 mm radius. | **6** |
| Q.6 | | Attempt any two: | |
| | i. | What is computer aided drafting? Explain four edit command used in drafting. | **5** |
| | ii. | Draw a neat sketch of single plate clutch and prepare a bill of material for the sketch. | **5** |
| | iii. | Write down the assembly procedure of footstep bearing by using 3D software. | **5** |

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## Marking Scheme
## AU3CO12 Automotive Component Drawing

| | | | |
|---|---|---|---|
| Q.1 | i. | The thread angle in Acme thread is-<br>(b) 29$^o$ | **1** |
| | ii. | It indicates the average departure of a machined surface over standard sampling length (Usually 0.8 mm to 2.5 mm)-<br>(c) Surface roughness number | **1** |
| | iii. | In this coupling muff is made in two semi-cylindrical halves which are joined together my means of bolts and nuts-<br>(c) Split Muff coupling | **1** |
| | iv. | A pivot bearing in which the lower end of the vertical shaft is supported-<br>(c) Footstep bearing | **1** |
| | v. | What is the function of gudgeon pin?<br>(c) Connects piston to connecting rod | **1** |
| | vi. | Which of the following parts of piston act as bearing for connecting rod side thrust?<br>(d) Piston skirt | **1** |
| | vii. | Energy is stored in a flywheel in the form of-<br>(c) Kinetic energy | **1** |
| | viii. | In a four stroke IC engine cam shaft rotates at-<br>(c) Half the speed of crankshaft | **1** |
| | ix. | Command is useful for creating a parallel copy of a drawing entity which can be a line, circle, or polyline.<br>(d) Offset | **1** |
| | x. | Which of the following is the incorrect statement?<br>(d) Scale command is used to draw plain scales | **1** |
| | | | |
| Q.2 | i. | Define Unilateral 1 mark<br>Bilateral limit systems. 1 mark | **2** |
| | ii. | Any three types of welded joints with their symbolic representations.<br>1 mark for each | **3** |
| | iii. | Lay and type of lay with their symbols.<br>1 mark for each | **5** |
| OR | iv. | Sectional front view 2 marks<br>Top view 2 marks<br>Dimension 1 mark | **5** |
| | | | |
| Q.3 | i. | Any two methods of fixing pulley on a shaft rigidly by sketches.<br>1 mark for each | **2** |
| | ii. | Assembly 4 marks<br>Accuracy corrections 3 marks<br>Dimensions 1 mark | **8** |
| OR | iii. | Front view 3 marks<br>Sectioning 1 mark<br>Top view 3 marks<br>Dimensions 1 mark | **8** |
| | | | |
| Q.4 | i. | Functions of the piston 2 marks<br>Name of the materials 1 mark | **3** |
| | ii. | Full section front view and top view 6 marks<br>Dimensions 1 mark | **7** |
| OR | iii. | Assembly left half 3 marks<br>Assembly right half 3 marks<br>Dimensions 1 mark | **7** |
| | | | |
| Q.5 | i. | Two different methods of fixing a crank pin to a crank.<br>2 marks for each method | **4** |
| | ii. | Full section view of a two stroke 100 cc SI Engine 5 marks<br>Labelling of all the necessary parts on the diagram 1 mark | **6** |
| OR | iii. | Front view 2.5 marks<br>Side view 2.5 marks<br>Dimensions 1 mark | **6** |
| | | | |
| Q.6 | | Attempt any two: | |
| | i. | Computer aided drafting 1 mark<br>Four edit command used in drafting. 4 marks | **5** |
| | ii. | Single plate clutch<br>Drawing of parts 3 marks<br>Accuracy 1 mark<br>Correction of steps 1 mark | **5** |
| | iii. | Assembly process and at least five steps.<br>1 mark for each | **5** |

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