**Machine Design Question Bank**

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| **S. No** | **Question** | **Blooms Taxonomy Level** | **Course Outcome** |
| 1 | Sektch the conventional representation of the following materials:(a).Metals, (*b*).Glass, (c) Packing (*d*).Insulating material  (e).Liquids, (*f*). Wood, (g).Concrete | Application, Synthesis | 1 |
| 2 | Sketch the conventional representation of the following:  (*a*)Splined shafts (*b*) Interrupted (*c*) leaf spring with eyes, (*d*) Cylindrical compression spring, (e)Cylindrical tension spring | Application | 1 |
| 3 | Sketch the conventional representation of the following:  (a).Spur gear and (b) helical gear.(c).Bevel gear (d) Worm wheel (e) Worm and (f).Straight knurling | Application | 1 |
| 4 | Sketch the following thread profiles for a pitch 30 mm and give their applications: (a).BSW thread, (*b*) Buttress thread (*c*) Square thread,(*d*)  ACME thread and (*e*) Worm thread. | Comprehension  , Application | 1 |
| 5 | Give the proportions of a hexagonal nut, in terms of the nominal diameter  of the bolt of 20 mm. | Application | 1 |
| 6 | Draw the three views of a hexagonal headed bolt of nominal diameter 25  mm and length 100 mm; with a hexagonal nut and washer. | Comprehension  , Application | 1 |
| 7 | Following foundation bolts of diameter 25 mm: (a).eye foundation bolt,  **(b).** Bent foundation bolt, (c). Rag foundation bolt and (*d*) Lewis foundation bolt. | Comprehension  , Application | 1 |
| 8 | Draw the sectional view from the front, and view from the side of a cotter | Comprehension | 1 |

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|  | joint with sleeve used to connect two rods of 30 mm diameter each. | , Application |  |
| 9 | Draw the half sectional view from the front, with top half in section and  the view from the side of a cotter joint with socket and spigot ends, to connect two rods of 30 mm diameter each. | Application, Synthesys | 1 |
| 10 | Draw the half sectional view from the front, with top view knuckle joint , to  connect two rods of 30 mm diameter each | Comprehension  , Application | 1 |
| 11 | Sketch the sectional view from the front and view from the side of a butt- muff coupling; indicating proportions for connecting two shafts, each of  diameter 30 mm. | Application | 1 |
| 12 | Draw (*a*) half sectional view from the front, top half in section and (*b*) half sectional view from the side, left half in section, of a split-muff coupling,  indicating proportions to connect two shafts, each of diameter 50 mm. | Comprehension  , Application | 1 |
| 13 | Draw (*a*) half sectional view from the front, top half in section and (*b*) view from the side of a rigid flange coupling to connect two shafts, each of  diameter 30 mm | Comprehension  , Application | 1 |
| 14 | Draw (*a*) half sectional view from the front, top half in section and (*b*) view from the side of a bushed pin type flange coupling, indicating proportions  to connect two shafts, each of diameter 30 mm. | Comprehension  , Application | 1 |
| 15 | Draw (*a*) sectional view from the front and (*b*) view from the side of a universal coupling, indicating proportions, to connect two shafts, each of  diameter 30 mm. | Application, Synthesys | 1 |
| 16 | Sketch the required views of (*a*) ldham coupling and (*b*) cushion  coupling, indicating proportions, used to connect two shafts, each of diameter 30 mm. | Application | 1 |
| 17 | Draw the following views of a plummer block, suitable for supporting a shaft of diameter 50mm:   1. half sectional view from the front, with left half in section, 2. sectional view from the side, and view from above. | Comprehension  , Application | 1 |
| 18 | Sketch the necessary views of a foot-step bearing, for supporting a shaft of  diameter 50mm. Give all important proportionate dimensions. | Comprehension  , Application | 1 |
| 19 | Giving proportionate dimensions, sketch any four forms of commonly used  rivet heads, choosing the rivet diameter as 10 mm. | Comprehension  , Application | 1 |
| 20 | Draw (*a*) sectional view from the front and (*b*) view from above, of the following riveted joints, to join plates of thickness 10 mm: (i).Single riveted lap joint, (*ii*) double riveted chain lap joint, (*iii*) double riveted zig-  zag lap joint, | Application, Synthesys | 1 |
| 21 | Draw (*a*) sectional view from the front and (*b*) view from above, of the following riveted joints, to join plates of thickness 10 mm:  (*i*) single riveted, single strap butt joint, (*ii*) single riveted, double strap butt  joint (ii*i*) double riveted, double strap, chain butt joint and (i*v*) double riveted, double strap, zig-zag butt joint. | Application, Synthesys | 1 |
| Part – **B** | | | |

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| 1 | Assemble all parts of the stuffing box for a vertical steam engine, shown in Fig. 1 and draw its,(*i*) half sectional view from the front, with left half in section, (*ii*) half sectional view from the right and (*iii*) view from above.    Figure 1: STUFFING BOX | Comprehension, Evaluation | 3 |

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| 2 | The details of a crosshead of a steam engine are shown in Fig. 2. Assemble the parts and draw, (*i*) half sectional view from the front, showing top half in section and (*ii*) the view from the left.    fig:2;DETAILS OF A CROSSHEAD | Evaluation, Application | 3 |

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| 3 | Assemble the parts of the piston, shown in Fig. 3 and draw the following views:(*i*) Sectional view from the front,(*ii*) Half sectional view from the left, and (*iii*) Sectional view from above.    Fig.3:PISTON | Comprehension  , Application | 3 |

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| 4 | The details of an eccentric are shown in Fig. 4. Assemble the parts and draw, (*i*) half sectional view from the front, with top half in section, (*ii*) view from the right and (*iii*) view from above.    FIG.4: ECCENTRIC | Evaluation , Application | 3 |

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| 5 | Assemble the parts of a lathe single tool post, shown in Fig.5 and draw. (*i*) half sectional view from the front and (*ii*) view from the right.    FIG 5:LATHE SINGLE TOOL POST | Application | 3 |

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| 6 | Figure 6, shows the details of a lathe tail-stock. Assemble the parts and draw to a suitable scale, (*i*) sectional view from the front and (*ii*) view from the left.  .    Fig 6: LATHE TAIL-STOCK | Analysis, Application | 3 |

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| 7 | Fig.7 shows the details of a machine vice. Assemble the parts and draw, (*i*) sectional view from the front, (*ii*) view from above and (*iii*) view from the left. Use suitable scale.    Fig.7:MACHINE VICE | Evaluation , Application | 3 |

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| 8 | The part drawings of a non-return valve are shown in Fig.8.Assemble the parts and draw, (*i*) half sectional view from the front, (*ii*) view from the left and (*iii*) view from above.    Fig.8: NON-RETURN VALVE | Application , Evaluation | 3 |

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| 9 | The details of an air cock are shown in Fig.9. Assemble the parts and draw,  (*i*) half sectional view from the front, (*ii*) view from the right and (*iii*) the view from above.    Fig 9: AIR COCK | Application | 3 |

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| 10 | .Assemble the parts of the feed check valve, shown in Fig. 10 and draw, (*i*) sectional view from the front, (*ii*) view from the right and (*iii*) view from above.    Fig.10: FEED CHECK | Application | 3 |

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| 11 | Assemble the parts of a spring loaded relief valve, shown in Fig. 11 and draw the following views:(*i*) Sectional view from the front, and(*ii*) View from the right.    Fig.11: SPRING LOADED RELIEF VALVE | Evaluation , Application | 3 |

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| 12 | Assemble the parts of the plummer block, shown in Fig. 12 and draw the following views: (*i*) Half sectional view from the front, with left half in section, and (*ii*) View from above.    FIG.12: PLUMMER BLOCK, | Application | 3 |

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| 13 | Assemble the parts of a foot-step bearing, shown in Fig. 13 and draw, (*i*) sectional view from the front and (*ii*) view from above.    Fig.13:FOOT-STEP BEARING, | Analysis, Application | 3 |

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| 14 | Assemble all parts of the screw jack, shown in Fig. 14 and draw the following views: (*i*) Half sectional view from the front, and (*ii*) View from above.    Fig.14:SCREW JACK, | Evaluation , Application | 3 |

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| 5 | Draw the sectional view from the front, and view from the side of a cotter joint with sleeve used to connect two rods of 30 mm diameter each. | Comprehensio n, Application | 1 |
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| 7 | Draw (*a*) sectional view from the front and (*b*) view from the side of a universal coupling, indicating proportions, to connect two shafts, each of diameter 30 mm. | Application, Synthesys | 1 |
| 8 | Draw (*a*) sectional view from the front and (*b*) view from above, of the following riveted joints, to join plates of thickness 10 mm: (i).Single riveted  lap joint, (*ii*) double riveted chain lap joint, (*iii*) double riveted zig-zag lap joint, | Application, Synthesys | 1 |
| 9 | Draw (*a*) sectional view from the front and (*b*) view from above, of the following riveted joints, to join plates of thickness 10 mm:  (*i*) single riveted, single strap butt joint, (*ii*) single riveted, double strap butt joint (ii*i*) double riveted, double strap, chain butt joint and (i*v*) double riveted, double strap, zig-zag butt joint. | Application, Synthesys | 1 |

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| **S. No** | **Question** | **Blooms Taxonomy Level** | **Course Outcome** |
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| 2 | Figure 6, shows the details of a lathe tail-stock. Assemble the parts and draw to a suitable scale, (*i*) sectional view from the front and (*ii*) view from the left.  .    Fig 6: LATHE TAIL-STOCK | Analysis, Application | 3 |

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| 3 | Fig.7 shows the details of a machine vice. Assemble the parts and draw, (*i*) sectional view from the front, (*ii*) view from above and (*iii*) view from the left. Use suitable scale.    Fig.7:MACHINE VICE | Evaluation , Application | 3 |

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| 4 | The part drawings of a non-return valve are shown in Fig.8.Assemble the parts and draw, (*i*) half sectional view from the front, (*ii*) view from the left and (*iii*) view from above.    Fig.8: NON-RETURN VALVE | Application , Evaluation | 3 |

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| 5 | .Assemble the parts of the feed check valve, shown in Fig. 10 and draw, (*i*) sectional view from the front, (*ii*) view from the right and (*iii*) view from above.    Fig.10: FEED CHECK | Application | 3 |