**Question paper set -1**

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| **Q.1** | **(a)** | Define following terms: - side of thread, depth of thread, base of thread. | **03** |
|  | **(b)** | State and explain the basic factors upon which the unconventional processes are | **04** |
|  |  | classified. |  |
|  | **(c)** | Write difference between unconventional machining processes and conventional | **07** |
|  |  | machining processes. |  |
| **Q.2** | **(a)** | List out various work holding equipment used in capstan and turret lathe. | **03** |
|  | **(b)** | Explain bar stock feed mechanism of automatic lathe. | **04** |
|  | **(c)** | Explain in brief the steps for preparing a tool layout on turret lathe. | **07** |
|  |  | **OR** |  |
|  | **(c)** | Explain the essential parts of turret lathe. How does it differ from conventional | **07** |
|  |  | lathe? |  |
| **Q.3** | **(a)** | Write a short note on gear testing. | **03** |
|  | **(b)** | Classify the gear and write an application of gear. | **04** |
|  | **(c)** | Explain the production of screw threads by thread rolling with neat sketch. | **07** |
|  |  | **OR** |  |
| **Q.3** | **(a)** | Write a general application of screw thread. | **03** |
|  | **(b)** | Explain gear hobbing with neat sketch. | **04** |
|  | **(c)** | Explain finishing and production of screw threads by grinding with neat sketch. | **07** |
| **Q.4** | **(a)** | Explain internal and external thread chasers. | **03** |
|  | **(b)** | Discuss the thread cutting by hand operated tools. | **04** |
|  | **(c)** | On which principle the Electron Beam Machining process works? Describe | **07** |
|  |  | EBM with relative merits, demerits and field applications. |  |
|  |  | **OR** |  |
| **Q.4** | **(a)** | Explain sunderland method using rack type cutter. | **03** |
|  | **(b)** | Explain the various gears finishing process. | **04** |
|  | **(c)** | In which unconventional process Ruby Rod is used? Describe the process in | **07** |
|  |  | detail with neat sketch. |  |
| **Q.5** | **(a)** | Write dissimilarities of ECM and EDM. | **03** |
|  | **(b)** | Write a field application of LBW, PAW, EBM and ECG. | **04** |
|  | **(c)** | Explain wire cut EDM with neat sketch and also write demerits of wire cut | **07** |
|  |  | EDM. |  |
|  |  | **OR** |  |
| **Q.5** | **(a)** | Explain the fourth state of matter. | **03** |
|  | **(b)** | Explain the working principle of water jet machining. | **04** |
|  | **(c)** | Describe laser beam machining with neat sketch. Enumerate critical parameters | **07** |
|  |  | of laser beam machining. |  |

**Question paper set -2**

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| **Q.1** | **(a)** | Explain the working principle of USM. | **03** |
|  | **(b)** | Distinguish between conventional and unconventional manufacturing | **04** |
|  |  | processes used in industries. |  |
|  | **(c)** | List the unconventional processes. State the basic factors upon which the | **07** |
|  |  | unconventional processes are classified. Explain. |  |
| **Q.2** | **(a)** | Give a brief classification of automatic lathe machine. | **03** |
|  | **(b)** | Explain the factors considered while deciding turret lathe tooling layout. | **04** |
|  | **(c)** | Write a different type of turret lathe and explain the vertical turret lathe. | **07** |
|  |  | **OR** |  |
|  | **(c)** | With the help of neat diagram, explain the Bar feed mechanism for automats. | **07** |
| **Q.3** | **(a)** | Draw the gear terminology. | **03** |
|  | **(b)** | Write a short note on “Rack Planning Process.” | **04** |
|  | **(c)** | Why gear is to be “Finished” before putting it into a service? Explain Gear | **07** |
|  |  | grinding process in detail. |  |
|  |  | **OR** |  |
| **Q.3** | **(a)** | Classify the methods of gear cutting. | **03** |
|  | **(b)** | Explain functional check and analytical check in concerned to gear inspection | **04** |
|  |  | with suitable example. |  |
|  | **(c)** | What purposes are served by the gears? Enumerate various methods of making | **07** |
|  |  | gears in brief. |  |
| **Q.4** | **(a)** | Enlist various type of chasers and draw the neat sketch of any one of them. | **03** |
|  | **(b)** | Enlist the methods of thread grinding and explain any one of them. | **04** |
|  | **(c)** | Explain Thread Tapping in detail with neat sketch. | **07** |
|  |  | **OR** |  |
| **Q.4** | **(a)** | Define following terms: - side of thread, depth of thread, base of thread. | **03** |
|  | **(b)** | Describe advantage of producing threads by rolling and also discuss the | **04** |
|  |  | limitations. |  |
|  | **(c)** | Which instruments are useful for thread inspection? How the screw threads | **07** |
|  |  | can be inspected? |  |
| **Q.5** | **(a)** | What do you understand by fourth state of matter? | **03** |
|  | **(b)** | What are functions and requirements of dielectric fluid used in EDM? | **04** |
|  | **(c)** | On which principle the Electron Beam Machining process works? Explain the | **07** |
|  |  | process with relative merits, demerits and applications. |  |
|  |  | **OR** |  |
| **Q.5** | **(a)** | Explain MRR in ECM. | **03** |
|  | **(b)** | Explain principle of operation of ECG with neat sketch. | **04** |
|  | **(c)** | In which unconventional process Ruby Rod is used? Explain the process in | **07** |
|  |  | Detail with neat sketch. |  |

**Question paper set -3**

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| **Q.1** | **(a)** | Write the need of unconventional machining processes. | **03** |
|  | **(b)** | Give brief classification of unconventional machining processes. | **04** |
|  | **(c)** | How unconventional machining processes differ from conventional machining | **07** |
|  |  | processes? |  |
| **Q.2** | **(a)** | Differentiate between turret lathe and Engine lathe. | **03** |
|  | **(b)** | Give a brief classification of automatic lathe machine. | **04** |
|  | **(c)** | What is Automation? Compare the similarities and differences of Capstan | **07** |
|  |  | Lathe and Turret Lathe. |  |
|  |  | **OR** |  |
|  | **(c)** | With the help of neat diagram, explain the Bar feed mechanism for automats. | **07** |
| **Q.3** | **(a)** | Differentiate between forming and generating of gear manufacturing. | **03** |
|  | **(b)** | Explain the principle of gear shaper with neat sketch. | **04** |
|  | **(c)** | Why gear is to be “Finished” before putting it into a service? Explain Gear | **07** |
|  |  | Burnishing process in detail. |  |
|  |  | **OR** |  |
| **Q.3** | **(a)** | List the factors on which the selection of material for gear depends. | **03** |
|  | **(b)** | Explain axial hobbing and radial hobbing with neat sketch. | **04** |
|  | **(c)** | What is the purpose of use of Gears? Discuss general applications of Gears. | **07** |
|  |  | Explain Gear Testing. |  |
| **Q.4** | **(a)** | Define following terms:- side of thread, depth of thread, base of thread. | **03** |
|  | **(b)** | Describe advantage of producing threads by rolling and also discuss the | **04** |
|  |  | limitations. |  |
|  | **(c)** | Enlist various Thread manufacturing methods and discuss any Two of them. | **07** |
|  |  | **OR** |  |
| **Q.4** | **(a)** | Sketch and label a solid tap. | **03** |
|  | **(b)** | Explain ‘‘Three wire method’’ for checking pitch diameter of thread. | **04** |
|  | **(c)** | State and draw various standard thread forms. Explain Thread chasing on a | **07** |
|  |  | Turret Lathe with neat sketch. |  |
| **Q.5** | **(a)** | Explain the working principle of USM. | **03** |
|  | **(b)** | Compare the similarities and dissimilarities of PAM and LBM. | **04** |
|  | **(c)** | Describe a process where a jet of water is used for manufacturing. | **07** |
|  |  | **OR** |  |
| **Q.5** | **(a)** | Explain the working principle of AJM. | **03** |
|  | **(b)** | Compare the similarities and dissimilarities of ECM and EDM. | **04** |
|  | **(c)** | What is a dielectric? Explain the process in which it is used. | **07** |

**Question paper set -4**

**Q.1** **Short Questions: [each carries equal marks]** **14**

1. What is the reason for using unconventional or advanced machining processes?
2. Complex surfaces (B) High accuracy and surface finish
3. High strength alloys (D) All of the above
4. In Electrical Discharge Machining (EDM) process the metal removal is carried out by

(A) Electrolysis (B) melting and vaporization

(C) Due to impact of grains(D) none of the above

1. Which of the following process has highest rate of metal removal?
   1. Electric Discharge Machining (EDM)
   2. Electro-Chemical Machining (ECM)
   3. Ultrasonic Machining (USM)
   4. Laser Beam Machining (LBM)
2. In which of the following type of lathe, lead screw is provided for thread cutting?

(A) Centre (B) Turret(C) Capstan(D) All of the above

1. Multiple turning head is mainly used on
   1. Centre lathe(B) Turret lathe(C) Capstan lathe(D) All of the above
2. In cutting Right hand threads, the spindle and lead screw rotates in the
   1. Same direction
   2. Opposite direction
   3. Same or Opposite direction
   4. Spindle rotates but lead screw does not rotate
3. The following is also known as Tool rest

(A) Saddle(B) Cross slide (C) Compound rest(D) Tool post

1. The time required to create a new thread in an existing process is
   1. greater than the time required to create a new process
   2. less than the time required to create a new process
   3. equal to the time required to create a new process
   4. none of the mentioned
2. A thread rolling process can be

(A) single threaded (B) multithreaded

(C) both (a) and (b)(D) none of the mentioned

1. The following acts as driving shaft in Lathe.

(A) Countershaft(B) Spindle shaft(C) Lead screw(D) None of the above

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1. A desired speed of \_\_\_\_\_ can be obtained by selecting the suitable change gears having proper number of teeth.
   1. Lead screw(B) Countershaft(C) Spindle(D) Feed gear box
2. Principle of laser is
   1. spontaneous absorption (B) simulated emission

(C) induced emission (D) both b and c

1. Which of the following processes is generally applied for dentistry work like to drill fine holes of particular shape in teeth?
   1. Electrical Discharge Machining (EDM)
   2. Electron Beam Machining (EBM)
   3. Laser Beam Machining (LBM)
   4. Ultrasonic Machining (USM)
2. Define:Gear Hobbing

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| **Q.2** | **(a)** | What do you mean by tool layout? Explain in brief. | **03** |
|  | **(b)** | What is the difference between Turret Lathe and an Engine Lathe? | **04** |
|  | **(c)** | Describe the steps for preparing a tool layout on turret lathe. | **07** |
|  |  | **OR** |  |
|  | **(c)** | Describe the essential parts of turret lathe. How does it differs from Engine | **07** |
|  |  | lathe? |  |
| **Q.3** | **(a)** | What are the methods used for rolling thread? | **03** |
|  | **(b)** | How screw thread micrometer differs from ordinary micrometer? | **04** |
|  | **(c)** | Give a brief classification of automatic lathe machine. | **07** |
|  |  | **OR** |  |
| **Q.3** | **(a)** | Explain Three wire methods for thread inspection. | **03** |
|  | **(b)** | Describe advantage of producing threads by rolling and also discuss the | **04** |
|  |  | limitations. |  |
|  | **(c)** | When will you adopt a thread milling for manufacturing of thread? Explain | **07** |
|  |  | thread milling with neat sketch. |  |
| **Q.4** | **(a)** | Explain “Parkinson Gear Tester” with neat sketch. | **03** |
|  | **(b)** | What is the difference between L.H. thread and R.H. thread? | **04** |
|  | **(c)** | Explain the “Hot Rolling” method of gear manufacturing. | **07** |
|  |  | **OR** |  |
| **Q.4** | **(a)** | Explain following with reference to EDM. | **03** |
|  |  | (i) TWR (ii) spark gap (iii) DielectricFluid. |  |
|  | **(b)** | Discuss the various gears finishing process. | **04** |
|  | **(c)** | What are different form cutter methods for gear manufacturing? Explain any | **07** |
|  |  | One in detail. |  |
| **Q.5** | **(a)** | Compare ECM with ECG. | **03** |
|  | **(b)** | Which Unconventional machining process is best suited for machining of | **04** |
|  |  | brittle material? Explain its principle, area of application. |  |
|  | **(c)** | Explain Plasma Arc Machining (PAM) with neat sketch. List characteristics of | **07** |
|  |  | PAM processes. |  |

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|  | **OR** |  |
| **Q.5 (a)** | Compare AJM with WJM. | **03** |
| **(b)** | Explain the necessity of unconventional manufacturing processes. | **04** |
| **(c)** | Explain laser beam machining with neat sketch. Give critical parameters of | **07** |
|  | laser beam machining. |  |