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SECTION A: INDUSTRIAL SAFETY [PCA & CEN]

1. Which of the following is a consequence of accident? (A) Pain (B) Hazard (C) Loss (D) Injury
2. What type of hazard is Manual handling? (A) Physical (B) Chemical (C) Biological (D) None of the above
3. The acronym PTD in safety stands for (A) Partial Total Disability (B) Permanent Total Deformation (C)Partial Total Deformation (D) Permanent Total Disability
4. The cost safety seeks to reduce include all the following EXCEPT: (A) Cost of replacing damaged equipment (B) Cost of repairing damaged equipment (C) Cost of siting an additional new factory (D) Cost of medical treatment to injured operators.
5. To undertake a job labelled 3D in Risk Chart, we need a (A) SHOC card (B) LTI (C) PTW (D) PT(D)
6. Downtimes are occasioned by all the following EXCEPT (A) LTI (B) Damage of pivotal machinery (C) Industrial action (D) Industrial safety.
7. Causes of accidents include the following EXCEPT (A) Pain (B) Carelessness (C) Lack of training (D) All of the above.
8. Given A=Accident, N=Near-miss and I=Incident. Which of the following options is correct? (A) $\{N\} \cap \{A\} = \{I\}$ (B) $\{N\} \cup \{I\} = \{A\}$ (C) $\{A\} \cup \{N\} = \{I\}$ (D) $\{A\} \cap \{I\} = \{N\}$
9. The equipment one wears or holds to protect himself from risk is called _____ (A) personal safety device (B) personal risk protector (C) personal protective device (D)personal protective equipment
10. In protecting against risk to health, buoyancy aids serve as (A) head protector (B) protective clothing (C) hand protector (D) foot protector
11. To guard against impact from fixed objects, the _____ is protected (A) eye (B) hand (C) foot (D) head
12. _____ is the odd one out. (A) stop button (B) start button (C) fixed guard (D) stop switches
13. The type of accident that occur with damages done only to the property/machinery is known as (A) major accident (B) dangerous occurrence(C) minor accident (D) A, B & C
14. The aim of an isolator switch is to (A) isolate the machine (B) decorate the machine (C) protect the operator (D) stop the machine in an emergency
15. The colour blue in safety means (A) mandatory action (B) safe condition (C)caution (D) stop
16. _____ does not belong to this group (A) escape routes (B)emergency showers (C) rescue stations (D) prohibition signs

SECTION B: MACHINE SHOP WORK INCLUDING WORK HOLDING & AUTOMATION [USI, JUA, CPE, NAN]

17. Automation is the use of _____ and _____ reducing the need for human intervention. (A) control systems and industrialization (B) control systems and mechanization (C) automation and world economy (D) none of the above
18. Automation is a step beyond _____ (A) industrialization (B) ATM (C) mechanization (D) all of the above
19. In a fully automated facility, there are no _____ on the floor of production. (A) machines (B) humans (C) equipment (D) all of the above
20. The following are main advantages of the automated manufacturing EXCEPT; (A) higher consistency and quality (B) reduced lead times (C) simplification of production (D) none of the above
21. In automated manufacturing, CAD stands for (A) computer applied design (B) computer assisted design (C) computer associated design (D) computer aided design
22. In CAD _____ replaces the _____ and _____ traditionally used to visualize products and communicate information (A) computer graphics, sketches and engineering drawings (B) computer graphics, computer sketches and drawings (C) computer drawings, computer graphics and sketches (D) computer sketches, computer drawings and graphics
23. CAM stands for ; (A) computer attributed manufacturing (B) computer assembly manufacturing (C) computer assisted manufacturing (D) computer aided manufacturing
24. CAD is the use of computers in converting initial idea for a product into (A) detailed engineering design (B) exceptional engineering design (C) engineering drawing (D) engineering sketches
25. Typically CIM relies on _____ based on real-time input from sensors (A) closed-loop control processes (B) open-loop control processes (C) semi closed-loop control processes (D) all of the above
26. The parts labeled R and S are called (A) carriage and tool post (B) lead screw and feed rod (C) apron and tail stock (D) feed box and cross slide
27. The parts labelled G and M are called (A) spindle and tailstock (B) headstock and tailstock (C) compound rest and bed (D) chuck and dead centre
28. The parts labelled H and I are (A) tool rest and compound post (B) cutting die and tool box (C) tool post and compound rest-(D) cutting tool and compound post
29. The parts labelled Q and X denote (A) apron and cross slide (B) bed and chip pan (C) spindle and screw head (D) carriage and feed box
30. Which part is used to control the movement of carriage on bed? (A) W (B) X (C) Y (D) Z
31. The operations designated 1, 5 and 7 are (A) facing, tapping and reaming (B) turning, facing and boring (C) threading, turning and grinding (D) Knurling, turning and threading
32. The operations represented in 4, 6 and 8 are called (A) drilling, reaming and boring (B) boring, drilling and reaming (C) reaming, boring and drilling (D) threading, drilling and reaming
❖ A cylindrical job 100 mm diameter is to be turned at a cutting speed of 25 m/min, the feed being 1.5 mm/rev. If the length of the job is 150 mm. Use this information for questions 33-35.
33. What is the required spindle speed for the job? (A) 120.00 rev/min (B) 90.50 rev/min (C) 79.55 rev/min (D) 70.43 rev/min
34. What is the time required for the job? (A) 1.26 min (B) 1.50 min (C) 1.72 min (D) 0.25 min
35. Calculate the metal removal rate if the finished diameter is 80mm (A) 1250.5mm³/rev (B) 4714.3mm³/rev (C) 1725.8 mm³/rev (D) 2250.5 mm³/rev
36. Which of the following is not an element of jigs and fixtures? (A) The Body (B) Clamping Devices (C) Metering Devices (D) Locating Devices
37. Jigs are used for the following specific machining operations except (A) Drilling (B) Slotting (C) Reaming (D) Boring
38. The most important function of jigs and fixtures for mass production process is (A) Accuracy (B) Precision (C) Cost (D) Interchangeability
39. The primary purpose in the design of a gig is to provide the following except(A) Repeatability (B) Formability (C) Accuracy (D) Precision
40. Which of the following is a typical example of a fixture (A) Vices (B) Drill bits (C) Shapers (D) Lathe Machines

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Seafood veggie rice

(Contains fried snails & fish)

Medium pack - #1,300
Maxi pack - #1,700

Curry rice X tomato veggie sauce

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Maxi pack - #1,600

Premium coconut rice

Medium pack - #1,400
Maxi pack - #1,700

Proteins

Mini spicy pepper chicken - #700
Maxi spicy pepper chicken - #1,300
Medium sized beef - #600
Big sized beef - #800
Double beef - #1000
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Half spicy pepper turkey wings - #1000

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Plantains & Moi-Moi

A portion of plantain - #200
Moi-Moi - #500

Soups (comes with chicken & beef)

Afang Soup X fufu - #1,800
Egusi Soup X fufu - #1,800
Ofe Nsala Soup X fufu - #2,200

Catfish Peppersoup

2 piece of catfish pepper soup - #1,500

Medium size full catfish pepper soup - #2,500

Large size full catfish pepper soup - #3,000



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45. Which of the types of wear is associated with machining by the fracture of welded metal? (A) Diffusion (B) Corrosion (C) Adhesive wear
 46. The use of cutting fluids during machining helps to; (A) improve the physical and chemical properties of the machine tool. (B) Reduce thermal conductivity and lubricate the surface in action (C) Corrode the work piece and machine tool (D) Improve the electrical properties of the machine tool.
 47. The qualities of a good tool includes the following EXCEPT; (A) High hardness (B) High resistance to high temperature (C) High resistance to wear (D) High cutting speed
 48. What spindle speed would be required to turn a 150mm diameter cast iron component using cemented-tungsten-carbide tooling at a cutting speed of 160m/min? (A) 340rev/min (B) 350rev/min (C) 335rev/min (D) 240rev/min

SECTION C: AUTOMOBILE WORK [UM]

49. Some of these materials are used in making cutting tools except; (A) Tungsten (B) Silicon Carbide (C) Polyethene (D) Aluminum Oxide
SECTION C: AUTOMOBILE WORK [UM]
 50. Apart from the power stroke, the other three strokes are referred to as _____ strokes. (A) passive (B) active (C) idle (D) dormant
 51. Diesel engines operate by _____ ignition. (A) pressure (B) compression (C) stress (D) spark
 52. The engine consists of a fixed _____ and a moving _____. (A) drum, barrel (B) piston, cylinder (C) cylinder, barrel (D) cylinder, piston
 53. Gasoline or petrol engines operate by _____ ignition. (A) pressure (B) compression (C) stress (D) spark
 54. Running the engine beyond the safe limit on the tachometer is called: (A) red crossing (B) yellow crossing (C) red lining (D) red zoning
 55. The engine and drivetrain constitute the _____. (A) power stroke (B) power trust (C) power train (D) power drive
 56. The first and last processes in a four-stroke cycle engine are _____ and _____. (A) intake, exhaust (B) intake, compression (C) combustion compression (D) combustion, exhaust
 57. The internal diameter of the cylinder of an eight-cylinder engine is 9 cm while the distance moved by the piston between the BDC and TDC is 7.3 cm. What is the engine capacity? (A) 3751 cm³ (B) 3571 cm³ (C) 7531 cm³ (D) 3715 cm³
 58. The rotary motion of the _____ results from the reciprocating motion of the _____. (A) crankshaft, piston (B) crankshaft, barrel (C) shaft, piston (D) wheels, wipers
 59. The second and third processes in a four-stroke cycle engine are _____ and _____. (A) intake, exhaust (B) intake, compression (C) combustion, exhaust (D) compression, expansion

SECTION D: ELECTRICAL WORK [CO & CO]

60. A system of electric conductors, components and operators for conveying electric power from one source to the point of use is called _____. (A) Cable (B) Resistor (C) Electric circuit (D) Electric wiring
 61. The whole path along which an electric current may flow is called _____. (A) Cable (B) Voltage (C) Electric circuit (D) Electric wiring
 62. A length of a conductor which is usually insulated is called _____. (A) Wire (B) Insulator (C) Cable (D) Conductor
 63. _____ is NOT a component of an electric circuit. (A) Cable (B) generator (C) switch (D) Current
 64. _____ is NOT a component of a cable. (A) Conductor (B) Insulation (C) Outer sheath (D) Inner Sheath
 65. An overcurrent resulting from a fault is called _____. (A) Overcurrent (B) Isolation (C) Short circuit (D) High Voltage
 66. Wires and cables are generally called _____. (A) Capacitors (B) Cables (C) Conductors (D) Insulators
 67. The neutral of a single phase system is coloured _____. (A) Blue (B) Red (C) Black (D) Green and yellow
 68. _____ protects some cables against mechanical damage. (A) Conductor (B) Outer sheath (C) Insulation (D) Cloth
 69. Which of the following is a variable resistor (A) Capacitor (B) Resistance box (C) Potentiometer (D) Voltmeter
 70. A resistor is color-coded "grey-blue-red-gold". What is the value of the resistor? (A) 5K6M (B) 8K6J (C) 8R5K (D) 700Ω
 71. When the tolerance band is not present on a resistor, what percentage of tolerance is to be assumed? (A) ±20% (B) ±10% (C) ±5% (D) ±2%.
 72. In a four-band type colour code, the fourth band is known as the (A) first digit (B) multiplier (C) second digit (D) tolerance
 73. A 2000Ω resistor has a tolerance of ±5%; this means that the actual value is in the range of (A) 1800Ω to 2200Ω (B) 1900Ω to 2100Ω (C) 1900Ω to 2200Ω (D) 1700Ω to 2300Ω
 74. The letters F, G and M used as abbreviations for tolerance of a resistor represents (A) ±1%, ±2% and ±20% respectively (B) ±2%, ±5% and ±10% respectively (C) ±10%, ±2% and ±1% respectively (D) ±2%, ±10% and ±20% respectively.
 75. A resistor of resistance value 3500Ω with a tolerance of ±2%; how will this be printed on the component using standard practice? (A) 3M5F (B) 3K5G (C) 5F3M (D) 3500RG

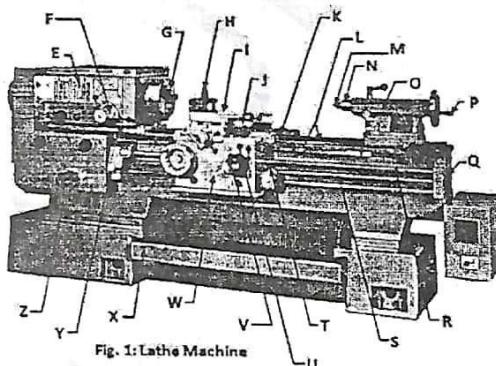


Fig. 1: Lathe Machine

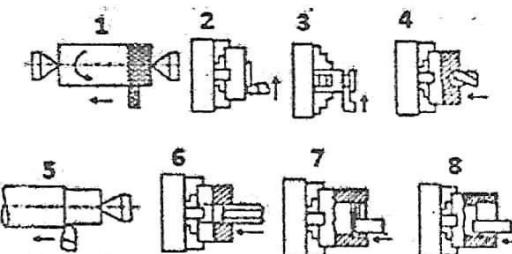


Fig. 2: Operations that can be performed on a lathe machine

END OF PAPER

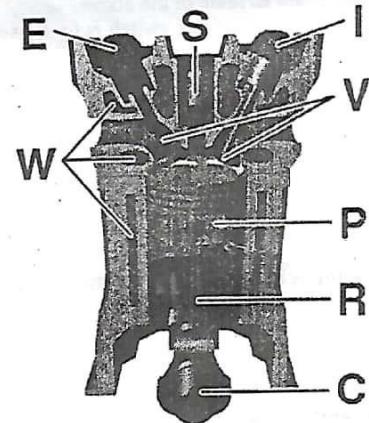
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36. Computer-aided design involves A. Creating computer models defined by geometrical parameters B. changing all the dimensions C. drawing D. fine art in engineering E. foundry processes
37. DNC stands for: A. Direct Net Course B. Dot Neutral Censor C. Do Not Cut D. Direct Numerical Control E. Design Numerical Control
38. CAD systems offer one of the following features: A. magnetic spectrum B. zoom C. edit after print out D. pencil and eraser E. phone technology
39. One of the following is true about computer models created with CAD: A. They can be altered using pencils and erasers B. They require the use of compasses C. They are only 2-dimensional D. They can be rotated on any axis E. They do not work with CAM systems
40. One of the key areas of development in CAD technologies include: A. interpretation of manual drawings B. description of drilling processes C. exclusion of CAM systems D. fused modelling E. simulation of performance
41. OBD system refers to A. On Board Diagnostic system B. On Built Depth system C. On Boot Drop system D. Odd Braking Degree system E. On Before Driving system
42. Automation in manufacturing refers to A. use of manual processes B. use of control systems and information technologies to reduce need for human work C. use of animal-driven machines for production D. Computer Aided Design E. MATLAB

SECTION C: AUTOMOBILE WORK – 13 Questions [CSN & UM]

43. The over 15,000 separate parts which make up an average automobile are conveniently grouped into four basic _____.
- A. systems B. sub-systems C. assemblies D. categories E. none of the above.
44. The combination of both the engine and the drivetrain is called _____.
- A. engine train B. engine drive C. power train D. power drive E. drive power.
- ❖ Use the figure shown to answer questions 45 to 49.
45. E and I are _____. A. outlets B. inlets C. valves D. controls E. regulators.
46. S is the _____. A. lighter B. igniter C. spark plug D. sparker E. fire source.
47. P is called the _____. A. pistol B. pistol C. piston D. pistole E. pestle.
48. R is the _____. A. rod B. connector C. connecting rod D. ram E. ram rod.
49. C represents the _____. A. camshaft B. link shaft C. crankshaft D. crankcase E. connecting shaft.
50. The piston covers a distance known as _____ as it moves from TDC to BDC.
- A. strike B. stuck C. stroke D. stroll E. strove.
51. The internal diameter of the engine cylinder is called the _____. A. hole B. cavity C. bore D. capacity E. volume.
52. The capacity of an engine cylinder is called _____. (i) swept volume (ii) displacement volume (iii) evacuation volume A. (i) only B. (ii) only C. (i) and (ii) only D. none of the above E. all of the above.
53. An eight cylinder engine has bore of 90 mm and stroke of 73 mm. Determine the engine capacity in cubic centimetres. A. 3751 cm^3 B. 3571 cm^3 C. 3715 cm^3 D. 7351 cm^3 E. 7531 cm^3 .
54. What is the approximate engine capacity in litres for question 53? A. 3.751 litres B. 3.571 litres C. 3.7 litres D. 7.315 litres E. 7.531 litres.
55. Letting the engine speed reach or exceed the safe limit on the tachometer gauge is known as _____. A. reddening B. lining C. redlining D. red-gauging E. over speeding.



SECTION D: ELECTRICAL WORK – 5 Questions [UM]

56. A system of electric conductors, components and operators for conveying electric power from one source to the point of use, is called _____. A. wiring B. lining C. electric wiring D. transmission line E. distribution line.
57. A length of a conductor which is usually insulated is referred to as _____. A. wire B. conductor C. cable D. power conductor E. sheathed conductor.
58. To distinguish wires from each other, the insulation is normally _____. A. coded B. labelled C. coloured D. tagged E. coated.
59. The bigger the cable, the lesser the current it consumes. This statement is popularly known as the _____. A. law of wire B. law of circuit C. law of cable D. law of conductor E. law of wiring.
60. A 100Ω resistor with a 5% tolerance will have a value somewhere between _____ and _____. A. 90 and 110Ω B. 95 and 110Ω C. 95 and 105Ω D. 90 and 105Ω E. 90 and 100Ω

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1. 2. C 3.A 4.B 5.A 6.A 7.D 8. 9.D 10.C 11.C 12.D 13.D 14.A 15.E 16.A 17.C 18.D 19.B 20.B
- 21.C 22.D 23.B 24.A 25.E 26.C 27.E 28.D 29.B. 30.C 31.C 32.D 33.B 34.D 35.C 36.A 37.D 38.B
- 39.D 40. 41.A 42.B 43. 44.C 45. 46.C 47.C 48.C 49.C 50.C. 51.C 52.B 53.C 54.C 55.C 56.D 57.C
- 58.C 59.C 60.C



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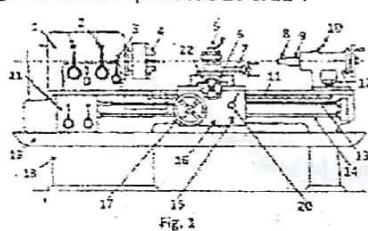
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(C) Use fig.3 to answer questions 10 & 11 .



27.are pieces of gadgets put in place to ensure safety of operators/machinery (a) health aids (b) personal protective equipment (c) safety devices (d) machine devices (e) b & d
28. The color Blue in safety means (a) Prohibited action (b) Mandatory action (c) Safe action (d) Warning notice (e) Stop notice
29. The color Green in safety can be used in (a) escape routes (b) emergency showers (c) low passages (d) emergency stops (e) a & b
30. The chemistry of fire include (a) heat (b) oxygen (c) combustible materials (d) b&c (e) a&b
31.is not a class of fire (a) B (b) F (c) E (d) A (e) C
32. Freely burning fires fuelled by wood can be extinguished by (a) application of water (b) use of wet chemical (c) application of foam (d) application of CO₂ extinguisher (e) c & d
33. A workshop operation designated 2D in the consequence-probability chart is.....operation (a) low risk (b) moderate risk (c) high-consequence risk (d) extreme risk (e) c & d
34. Using appropriate route instead of shortcut while moving in the workshop is a precaution against accident from (a) hand tools (b) housekeeping (c) machinery (d) manual lifting (e) c 7 d
35. The controls put in place to prevent a hazardous event from happening or escalating represents (a) precaution (b) near-miss (c) bow-tie (d) threat (e) risk analysis and control
36. Pick the odd one out (a) effective ventilation (b) suitable lighting (c) medical unit (d) adequate sanitary accommodation (e) toxic substances
37. Acoustic panels are used to screen an operator from (a) dust (b) fumes (c) chemicals (d) metal vapour (e) none of the above
38.is the skilled application of accepted principles of treatment on the occurrence of injury/sudden illness before the arrival of..... (a) precaution/ambulance (b) employer/employee (c) precaution/doctor (d) first aid/doctor (e) safety/hospital
39. To control fumes, we do the following (i) use wet methods (ii) use properly designed exhaust system (iii) total enclosure of the system (iv) use appropriate respiration (a) (ii), (iii) and (iv) (b) (ii) and (iv) (c) (i), (ii) and (iv) (d) (i), (iii) and (iv) (e) (i), (ii), (iii) and (iv)
40. Metal-fume fever is associated with (a) trichloroethylene (b) toxic substances (c) nickel (d) zinc (e) chemicals
41. "Pay attention to warning notices" is a precaution to which of the following hazards? (a) dust and fumes (b) metal vapours (c) industrial dermatitis (d) toxic substances (e) noise
42. In the risk chart, which of the following is the odd one? (a) 4B (b) 4D (c) 3C (d) 3D (e) 3B
- A blind hole of 8mm diameter is to be drilled in a workpiece of thickness 5inches. If the revolution per minute of the drill press spindle is 500rpm and the feed is 3×10^{-4} m/rev. Use the information above for question 43 – 49.
43. The diameter of the drill used in the drilling operation is about (a) 2inches (b) 7mm (c) 5mm (d) 4.5mm (e) 8mm
44. Calculate the cutting speed of the drilling machine (a) 12.75m/min (b) 25.7mm/min (c) 12.57m/min (d) 25.4m/min (e) 12.75mm/min
45. What is the thickness of the workpiece in mm (a) 50.0mm (b) 50.2mm (c) 50.4mm (d) 50.6mm (e) 50.8mm
46. Calculate the feed in mm/sec (a) 150mm/sec (b) 2.5mm/sec (c) 50mm/sec (d) 120mm/sec (e) 5.5mm/sec.
47. How many revolutions did the spindle complete if it took 45secs to drill the hole? (a) 250rev (b) 300rev (c) 325rev (d) 350rev (e) 375rev
48. What is the depth of the hole made in the drilling operation? (a) 78.4mm (b) 102.5mm (c) 112.5mm (d) 115.5mm (e) 120.5mm
49. Determine the thickness of the remaining part of the workpiece that was not drilled? (a) 12.5mm (b) 13.5mm (c) 14.5mm (d) 15.5mm (e) 16.5mm
50. When the chisel edge breaks through, it can no longer guide the drill and keep it central, and the drill will wobble and bounce in its own hole, an occurrence known as (a) drill dancing (b) drill bit displacement (c) drill bouncing (d) wobbling (e) chatter
51. Which of the following is not a drilling allied operation? (a) spot facing (b) reaming (c) boring (d) spinning (e) counter-sinking
52. Only materials that are available in.....form can be easily spun (a) foil (b) plate (c) sheet (d) slab (e) bar
53. The column of a drill press supports (a) a base, a powerhead and a worktable (b) a powerhead, a worktable and a base (c) a powerhead, a spindle and a worktable (d) a spindle, a powerhead and a base (e) a base, a spindle and a powerhead
- A cylindrical job 100mm diameter is to be turned at a cutting speed of 25m/min, the feed being 1.5mm/rev and the length of the job is 15mm, use the information above for questions 54 – 55
54. What is the required rpm for the job? (a) 120rev/min (b) 90rev/min (c) 80rev/min (d) 70rev/min (e) 85rev/min
55. What is the time required for the job? (a) 1.25min (b) 1.5min (c) 1.72min (d) 0.25min (e) 1.76min
56. The diameter of the largest workpiece that can be rotated on the spindle without hitting the bed is called (a) swing over carriage (b) distance between centres (c) swing over bed (d) swing over tray (e) swing through hole diameter
57. Cutting tool can be made from these materials except (a) cubic boron nitride (b) sintered ceramics (c) diamond (d) plain carbon steel (e) cemented carbide
58. Typically, CIM relies on.....based on real-time input from sensors (a) closed-loop control processes (b) open-loop control processes (c) semi closed loop control processes (d) all of the above
59. Automated manufacturing refers to the....to produce things in the factory way (a) application mechanization (b) application of industrialization (c) application of machines (d) application of automation
60. In automated manufacturing, the combination of CAI, CAE and CAM is described as (a) CEM (b) CAC (c) CIM (d) CEE

1. E	2. A	3. B	4. C	5. A
6. D	7. C	8. D	9. B	10. C
11. B	12. D	13. B	14. C	15. E
16. C	17. D	18. B	19. D	20. A
21. B	22. C	23. B	24. D	25. B
26. D	27. B	28. B	29. E	30. E
31. C	32. E	33. B	34. B	35. A
36. C	37. E	38. D	39. A	40. D
41. D	42. E	43. B	44. C	45. B
46. B	47. D	48. C	49. A	50. D
51. D	52. C	53. B		

$$54. Cs = \frac{\pi d N}{1000} \Rightarrow N = \frac{1000 Cs}{\pi d} = \frac{1000 \times 25}{3.142 \times 100}$$

N = 80 rev/min....C

$$55. \text{Time} = \frac{\text{length of job}}{\text{feed} \times \text{spindle speed}} = \frac{15}{1.5 \times 80} = 0.125 \text{min} \dots \text{A}$$

56. C 57.B 58.A 59.D 60.C

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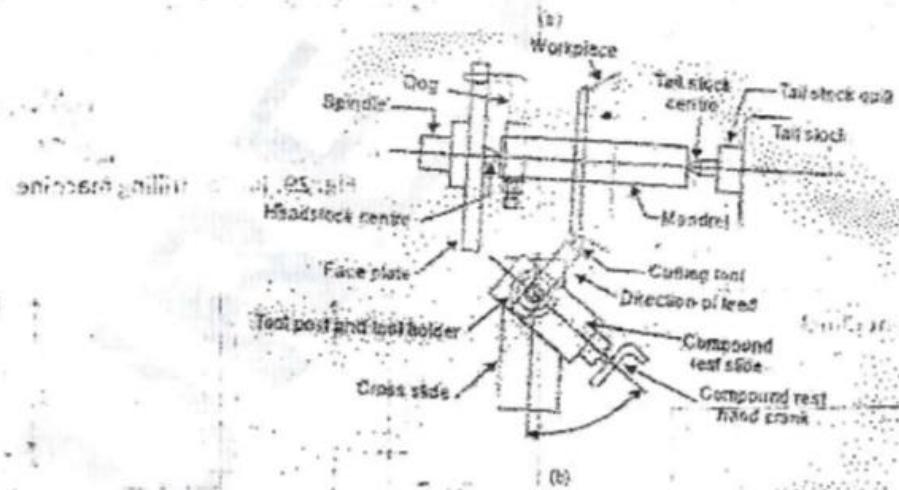
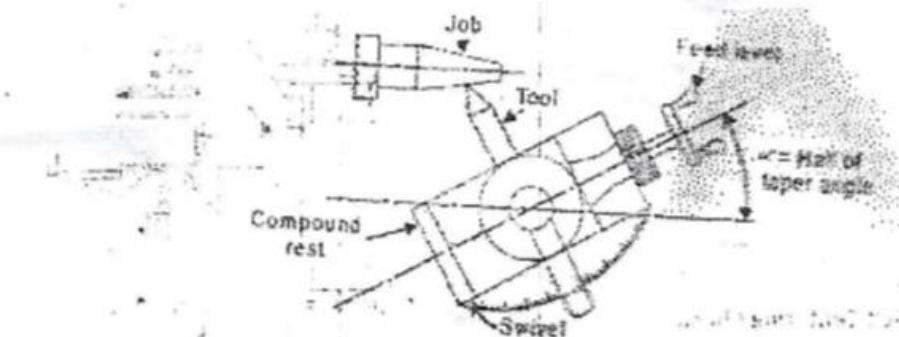


Fig 40: (a) Taper turning by swiveling compound rest (b) Swiveling compound rest set-up



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DEPARTMENT OF MATERIALS AND METALLURGICAL ENGINEERING
RAIN SEMESTER 2011/2012 EXAMINATIONS

COURSE: ENG 102 – WORKSHOP PRACTICE II

(A) Use the machine shop terms below and fig. 3 to answer questions 1–5

[i] = Tool post; [ii] = compound rest [iii] = faceplate [iv] = headstock [v] = tailstock [vi] = dead centre [vii] = chuck [viii] = live centre [ix] = tool post slide [x] = lead screw rod [xi] = bed [xii] = carriage [xiii] = tray

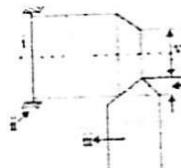


Fig 1

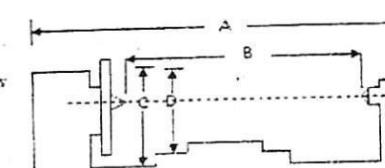


Fig 2

DATE: SEPT, 2012

TIME: 1HR

(B) Use the machine tool terms listed below and fig. 2 to answer questions 6 and 7

[i] = length of bed [ii] = distance between centres [iii] = diameter of the work that can be turned over the ways [iv] = diameter of the work that can be turned over the cross slide

[C] Use fig 1 to answer questions 20 and 23

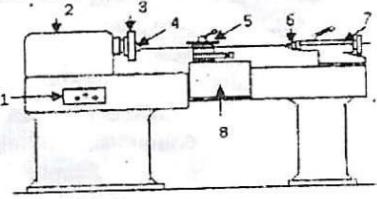


Fig 3

1. The assembly that moves the tool post and cutting tool along the ways is A. 2 B. 4 C. 7 D. 8 E. 1
2. The parts labeled 2 and 3 are called A. (iv & viii) B. (xi & iii) C. (x & viii) D. (i & ii) E. (iv & iii)
3. The numbers 4 and 6 denote A. (iv&iii) B. (iv & vii) C. (viii & vi) D. (iv & vi) E. (iv & iii)
4. The numbers describing compound rest and tool post are A. 5&9 B. 9 & 6 C. 9 & 5 D. 3 & 6 E. 5 & 7
5. The part that mainly transmits power to the different parts of a lathe is A. 1 B. 2 C. 3 D. 8 E. 4
6. The parts numbered A and D are A. (i&iv) B. (i&ii) C. (ii&iv) D. (iv&i) E. (iii&i)
7. The letters B and C as used denote A. (ii&iv) B. (ii&iii) C. (iv&ii) D. (iv&i) E. (i&ii)
8. The average cutting speed, V_{av} for cylindrical turning can be written as A. $\pi f d_c N d_m$ B. $\pi N(d_w+d_m)/2$ C. $\pi(d_w+d_m)/2$ D. $\pi f N d_w/2$
9. In drilling operation, the time during which the cutting edge of the drill cuts the chips off is referred to as A. cutting time B. facing time C. revolution time D. turning time E. machining time
10. If $t_m = [l+0.3d]/[Feed \times N]$ for drilling operation, how long will it take to drill a hole of 10mm diameter in a mild steel plate of 50mm thickness when the feed is 0.15mm/rev and r.p.m is 955 A. 0.73 B. 0.27 C. 0.39 D. 0.31 E. 0.31
11. Cutting tool should have all the following characteristics except A. high hardness B. high ductility C. high toughness D. high elastic modulus E. high hardness temperature
12. The following factors affect the cutting speed except A. shape of cutting tool B. cutting time C. cutting tool material D. kind of material being cut E. type of cutting fluid being used
13. A twist drill has the following parts except A. tang B. flute C. land D. heel E. chuck
14. Which one of the options is not common with drilling machine? A. reaming B. lapping C. boring D. turning E. drilling

15. Which one of the lathe attachments is used to drive a job when it is held between two centres? A. reamer B. dog C. chuck D. borg
16. All of the options are lathe accessories except A. catch plates B. collets C. mandrels D. centres E. feed rod
17. Cutting tool can be made from these materials except A. HSS B. ceramics C. diamonds D. mild steel E. carbides
18. The process of removing metal from the end of a workpiece to produce a flat surface is called A. knurling B. turning C. facing D. reaming E. grinding
19. Which of the options is out of order A. swiveling the compound rest B. offsetting tailstock C. form tool D. twist drill E. A&B
20. The parts labeled i and ii are A. live centre and direction B. rest and feed C. chuck and tool D. live centre and tool E. chuck and feed
21. Carrying out loose tools in the pocket is.....A. unsafe act B. unsafe condition C. type of hazard D. an accident E. a bow-tie
22. Don't use shortcuts when moving in the workshop is precaution on.....A. machinery B. drainage of floors C. manual handling D. housekeeping E. fire
23. The physics of fire include A. heat B. light C. electricity D. A and B E. A and C
24. The safety acronym FAR stands for.....A. first aid review B. fatal accident report C. first aid rate D. fatal accident review E. fatal accident rate
25. When an operator loses one of the eyes in the course of discharging his duties, it is a case of..... A. HFE B. TRC C. PPD D. PTD E. HAZID
26. Which of the following is/are correct with regard to fire safety A. DCP is a smothering agent B. foam is a smothering agent C. foam is a cooling agent D. A and B E. A, B and C
27. The extinguisher directed on top of burning substance is A. DCP B. foam C. CO₂ D. A and B E. A, B and C

- education D. enforcement E. engineering
29. An operation labeled 2B in the consequence probability chart has..... A. high risk B. moderate risk C. extreme risk D. low risk E. no risk at all
30. PTW is needed for..... A. project design B. non-routine jobs C. high risk job D. A and B E. B and C
31. The colour blue in safety means A. prohibited action B. safe action C. cautionary notice D. B or C
32. "Support the affected part with splint/bandages" is a first aid for..... A. severe bleeding B. eye injury C. fractures D. burns E. all wounds
33. An incident that could have caused injury or harm under slightly different circumstances but no consequence is called..... A. accident B. bowtie C. unsafe act D. near miss E. incident
34. Which is the odd one out: A. provision of facilities B. protection of people C. protection of property/machinery D. reduction of costs E. continuity of operations
35.can be absorbed into the human body through physical contact, inhalation or ingestion A. chemicals B. toxic substances C. cyanide salts D. A&C E. B&C
36. A properly designed hood/exhaust system is used to control A. dust B. dust and fumes C. fumes D. wet methods E. toxic substances
37. Isolation of process/system is..... A. hazard precaution B. hazard control method C. accident prevention method D. a method of re-designing a process E. a safety measure
38. Injuries associated with manual handling include all except A. cuts B. burns C. back strains D. blindness E. fractures
39. The features of industrial dermatitis include all except A. itching B. vomiting C. redness of the skin D. A&C E. A,B&C
40. CO₂ extinguisher is recommended for fighting fire on electrical equipment because A. it does not support combustion B. it does not conduct electricity C. it is not destructive D. B&C E. A&B
41. In automated manufacturing CAE stands for A. computer applied engines B. computer aided engines C. computer aided engineering D. computer added engineering
42.is not one of the main advantages of automation A. replacing human in tasks that should be done in dangerous environments B. undertaking tasks that are beyond human capabilities C. replacing machines with human abilities D. replacing human operators in tasks that involve hard physical or monotonous work
43. Automated manufacturing refers to the.....to produce things in the factory way A. application of automation

- | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. D | 2. A | 3. C | 4. C | 5. B | 6. A | 7. B | 8. C |
| 16. E | 17. B | 18. C | 19. D | 20. E | 21. A | 22. A | 23. D |
| 31. B | 32. C | 33. D | 34. E | 35. B | 36. B | 37. C | 38. B |
| 46. C | 47. A | 48. A | 49. D | 50. E | 51. C | 52. C | 53. B |

MANUFACTURING B. APPLICATION OF MACHINES

44. In automated manufacturing, the combination of CAE and CAM is described as A. CEM B. CAC C. CIM CEE
45.is a common example of an automated system A. robot B. ATM C. ATC D. ITC
46. We use SHOC card when dealing with A. injuries hazards C. chemicals D. PPE E. accidents
47. HAZOP is used during A. project design B. project execution C. hazard operation D. first aid E. part disability
48. Electrical fires do not include a class of fire because electricity is A. a product of fire B. an element of fire C. a chemistry of fire D. a physics of fire E. a source of fire
49. Fire caused by spirits can be extinguished using A. C. B. foam C. DCP D. water E. a, b and c
50. Which of the following is/are correct about heat with regards to fire. It is A. source of fire B. element of fire C. product of fire D. a and b E. b and c
51. During the fettling of metal castings, the operator must compulsorily wear A. eye protector B. ear protector C. hand gloves D. safety boots E. helmet
52. Pick out the odd one: A. kick bars B. guards C. hand tools D. stop buttons E. isolators switch
53. Electric shock is..... A. a type of hazard B. a class of workshop accident C. a serious danger in the workshop D. a common safety term E. all of the above
54. Enforcement of safety rules is the responsibility of..... A. employer B. employee C. government D. everybody E. none of the above
55. The safety device common in centre lathe is..... A. foot brake B. foot pressure C. isolator switch D. fixed guards E. none of the above
56. Ensuring that guards are correctly fitted in position is a precaution against accidents caused from..... A. hand tools B. machinery C. housekeeping D. safety device E. all of the above
57. When an operator is loaded with work, the hazard associated with this situation is..... A. human factor B. physical C. chemical D. psycho-social E. biological
58. Acoustic panels are used to shield operators from..... A. rotating parts of machines B. toxic substances C. noise D. fumes E. dust
59. When file scrappers and screw drivers are not fitted with handles, the situation is..... A. an unsafe act B. an unsafe condition C. a type of hazard D. called accident E. the duty of employers
60. Pick out the odd one; A. suitable lighting B. continuity of operations C. cleanliness D. effective ventilation E. medical unit

ANSWERS

- | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|
| 9. A | 10. D | 11. B | 12. B | 13. E | 14. D | 15. B |
| 24. E | 25. D | 26. A | 27. E | 28. A | 29. D | 30. E |
| 39. D | 40. E | 41. C | 42. C | 43. A | 44. C | 45. B |
| 54. D | 55. E | 56. B | 57. D | 58. C | 59. C | 60. E |



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 RAIN SEMESTER 2010/2011 EXAMINATIONS

COURSE: ENG 102 – WORKSHOP PRACTICE II

1. In....., computer graphics replace the sketches and engineering drawings traditionally used to visualize products and communicate design information A. CAM B. CAD C. CAE D. CIM
2. CAE stands for.....A. computer aided engineering B. computer advanced engineering C. computer aided engineering D. computer accepted engineering
3. In a fully automated system, workers do not operate equipment that does the labour A. true B. false C. A and B D. A or B
4.is the next computer aided process after CAD A. CAM B. CIM C. CAE D. CAD
5.is the use of computer software to solve engineering problems A. CAM B. CIM C. CAE D. CAD
6.is the use of computer software to control machine tools and related manufacturing of workpieces A. CIM B. CAM C. CAD D. CAD
7. FDM stands for A. functional development machine B. fully developed machine C. flexible design and machine D. flexible design and manufacturing
8. Historically,.....was done entirely by hand A. automation B. mechanization C. industrialization D. manufacturing
9. Automation is the use of.....and.....reducing the need for human intervention A. industrialization and mechanization B. automated teller machines and information technologies C. mechanization and automation D. information technologies and control systems
10.is the manufacturing approach of using computers to control the entire production process A. CAD B. CAE C. CIM D. CAM
11. Automation increases the risk of work-place injuries A. true B. not so true C. false D. none of the above

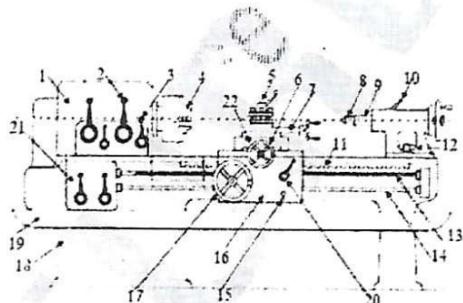


Fig 1

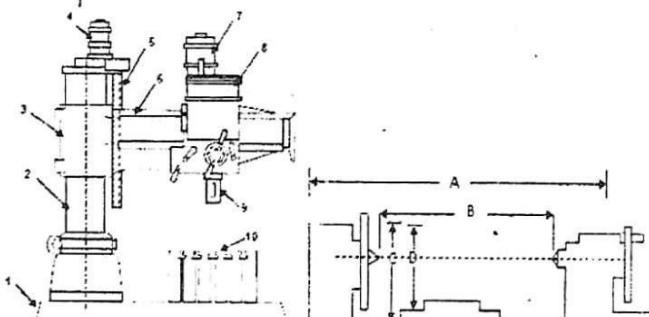


Fig 2

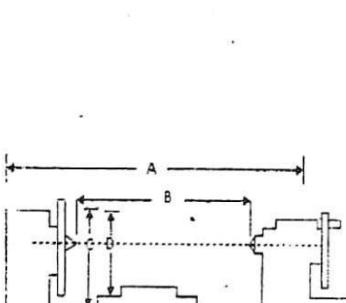


Fig 3

15. The assembly that moves the tool post and cutting tool along the ways is A. xix B. xi C. ix D. xvi E. i
16. The parts labeled 13 and 4 are called A. (xi&xvii) B. (xi&xv) C. (xx&xviii) D. (xx&ii) E. (xx&xv)
17. The numbers 5 and 22 as used in fig.1 denotes A. (iv&iii) B. (iv&xxii) C. (i&iii) D. (iv&vi) E. (v&vi)

18. The numbers describing tray and bed are A. 11 & 19 B. 19&18 C. 11&1 D. 1&16 E. 14&16
19. The part that mainly transmit power to different parts of a lathe is A. 14 B. 13 C. 2 D. 3 E. 4
20. Fig 2 and number 3 denote A. (xi&viii) B. (x&i) C. (xi&iv) D. (vii&ix) E. (xi&xxi)

- C. (viii&ix) D. (vi&v) E. vii&v)
22. The motor for driving drill spindle and guide ways are labeled A. 4&5 B. 7&6 C. 3&8 D. 4&6 E. 7&3
 23. The parts numbered A and D in fig 3 are A. (xiv&xvii) B. (vi&vii) C. (viii&ix) D. (vi&v) E. (viii&x)
 24. The letters B and C as used in fig 3 denote A. (xv&xvi) B. (xiv&xx) C. (xiv&xvii) D. (xv&xvi) E. (xvi&xvii)
 25. The average cutting speed V_{av} for cylindrical turning is A. $\pi f d_c N d_m$ B. $\pi N(d_w+d_m)/2$ C. $\pi(d_w+d_m)/2$ D. $\pi f N d_w$
 26. In turning operation, when the depth of cut d is small compared to the diameter d_m , the metal removal rate is approximately equal to A. $\pi D^2 N f / 2$ B. $\pi D^2 N f / 4$ C. $(f/2)\sin K_T$ D. $\pi N(d_w+d_m)/2$ E. $\pi f d_c N d_m$
 27. The undeformed thickness in turning operation is given as A. $\pi D^2 N f$ B. $\pi D^2 N f / 2$ C. $f \sin K_T$ D. $f \cos K_T$ E. $f N \cos K_T$
 28. In facing operation, the maximum cutting speed is equal to A. $\pi N d_w$ B. $\pi D^2 N$ C. $\pi N d_m$ D. $\pi D N / 4$ E. $\pi / d_m d_w$
 29. The metal removal rate for a drilling process is given as A. $(f/2)\sin K_T$ B. $f N \sin K_T$ C. $\pi D^2 N f / 2$ D. $f \sin K_T$ E. $\pi D^2 N / 4$
 30. In drilling operation, the time during which the cutting edge of the drill cuts the chips off is referred to as A. cutting time B. facing time C. revolution time D. turning time E. machining time
 31. If $t_m = [(l+0.3d)] / [\text{Feed} \times N]$ for drilling operation, how long will it take to drill a hole of 10mm diameter in a mild steel plate of 50mm thickness when the feed is 0.15mm/rev and r.p.m is 955 A. 0.73 B. 0.27 C. 0.39 D. 0.37 E. 0.31
 32. Cutting tool should have all the following characteristics except A. high hardness B. high ductility C. high toughness D. high elastic modulus E. high hardness temperature
 33. The various types of drilling machine are the following except A. portable B. sensitive C. upright D. radial E. column
 34. The following factors affect the cutting speed except A. shape of cutting tool B. cutting time C. cutting tool material D. kind of material being cut E. type of cutting fluid being used
 35. A twist drill has the following parts except A. tongue B. flute C. land D. heel E. chuck
 36. Which one of the options is not common with drilling machine? A. reaming B. lapping C. boring D. turning E. drilling
 37. Which one of the lathe attachments is used to drive a job when it is held between two centres? A. reamer B. dog C. chuck D. bore
 38. All of the options are lathe accessories except A. catch plates B. collets C. mandrels D. centres E. feed rod
 39. Which one of the these operations is performed by holding the work with a chuck or a faceplate or an angle plate? A. undercutting B. facing C. knurling D. tapping E. spotting
 40. Cutting tool can be made from these materials except A. HSS B. ceramics C. diamond D. mild steel E. carbides
 41. The process of removing metal from the end of workpiece to produce a flat surface is called A. knurling B. turning C. facing D. reaming E. grinding
 42. Which of the options is out of order? A. swiveling the compound rest B. offsetting tailstock C. form tool D. twist drill E. A&B
 43. High rotating speed of the drill and hand feed are the major features of A. sensitive B. upright C. radial D. automatic E. drilling machine
 44. The parts labeled 2 and 3 in fig 4 are called A. land and heel B. tang and recess C. flute and tang D. helix and shank E. neck and land
 45. In fig 4, the heel and flute are denoted by the numbers A. 1&2 B. 5&4 C. 2&3 D. 6&2 E. 5&1
 46. The principal parts of fig 4 are A. drill point B. body C. shank D. A&B E. A,B&C
 47. The tools for facing and parting operations in fig 5 are A. 1&2 B. 1&3 C. 2&3 D. 5&1 E. 4&7
 48. In fig 5, the numbers 7&4 denote A. knurling & profile B. boring & facing C. parting & boring D. profile & facing tools
 49. CIM is also known as A. flexible design and manufacturing B. flexible development and manufacturing C. flexible design and development D. flexible manufacturing and utilization
 50. Automation is the use ofand reducing the need for human intervention A. industrialization and mechanization B. industrialization and control systems C. control systems and information technologies D. control systems and mechanization
 51.is a typical example of automation A. use of tractors B. mechanization C. automated teller machine D. assess line
 52. In the scope of industrialization, automation is a step beyond A. world economy B. control systems C. industrialization D. mechanization
 53. In automation CAD stands for A. classified advancement and development B. computer added design C. computer aided design D. computer advanced design
 54.greatly reduces the need for human sensory and mental requirements in manufacturing A. estimation B. process C. mechanization D. automation
 55. Historically, manufacturing was done entirely by A. hand B. machines C. experts D. all of the above
 56. In automation, CIM stands for A. computer integrated manufacturing B. computer influenced manufacturing C. computer interconnected manufacturing D. computer international manufacturing
 57. In a fully automated facility, there are noon the production floor A. machines B. humans C. computers D. all of the above
 58. The main advantages of automated manufacturing include A. high consistency and quality of products B. reduced lead times C. reduced product handling D. all of the above
 59.is the use of computers to convert engineering designs into finished products A. CAM B. CAD C. CAE D. CIM

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RAIN SEMESTER 2009/2010 EXAMINATIONS

COURSE: ENG 102 – WORKSHOP PRACTICE II

DATE: 14/09/2010 TIME: 1HR

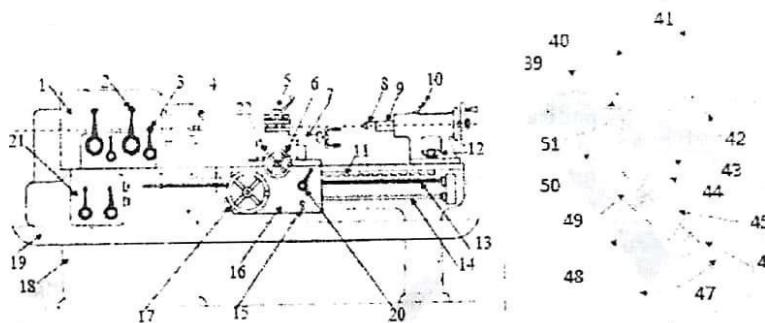
(A) Use the machine shop terms below an fig 1 to answer questions 1 to 4.

[i] = Tool post [ii] = compound rest [iii] = cross slide [iv] = saddle [v] = feed change lever [vi] = face plate [vii] = apron [viii] = headstock [ix] = tailstock [x] = dead centre [xi] = offsetting screw [xii] = feed box [xiii] = bed ways [xiv] = gear box control [xv] = chuck [xvi] = live centre [xvii] = rack [xviii] = tool post slide [xix] = cross slide hand wheel [xx] = lead screw rod [xxi] = bed [xxii] = carriage [xxiii] = tray

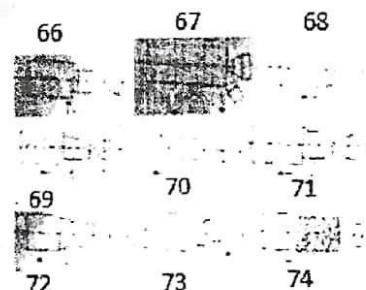
(B) Use the machine shop terms below to answer questions 5 to 8

[i] = workpiece; [ii] = facing tool; [iii] = cross slide; [iv] = tool holder; [v] = saddle; [vi] = spindle; [vii] = knurling; [viii] = facing; [ix] = reaming; [x] = boxing; [xi] = threading; [xii] = drilling; [xiii] = taper turning; [xiv] = radius turning; [xv] = dog; [xvi] = faceplate; [xvii] = mandrel; [xviii] = cutting tool; [xix] = compound rest slide; [xx] = shoulder turning; [xxi] = straight turning; [xxii] = parting off; [xxiii] = chuck

(C) Use the figures below to answer some of the questions



1. The assembly that moves the tool post and a cutting tool along the ways is A. xix B. xi C. ix D. xxii E. ii
2. The parts labeled 13, 4 and 7 are called A. xx, xvi & xviii B. xviii, xi & xv C. ix, xx & xviii D. xxii, xx & ii E. xx, xv & xviii
3. The numbers 5, 21 and 22 as used in the figures denote A. iv, xxii & iii B. iv, xii & xxii C. i, xii & iii D. iv, xii & vi E. v, xxii & vi
4. The numbers describing cross slide handwheel, tray and bed are A. 17, 11&19 B. 6, 19&18 C. 12, 11&1 D. 4,1&16 E. 6,14&16
5. The operations 66, 74 and 67 are A. xiii, xxii & x B. xxii, xx & xxi C. xxii, xi & ix D. xxii, xx & ix E. viii, xi & xx
6. The operations described in fig 2 and number 70 are A. xiv & ix B. viii & ix C. vii&x D. xiii&xiv E. x&xi
7. The parts numbered 40, 50 and 45 are A. xvi, xv & vi B. xv, vi & xvii C. xv, xvi & xix D. xxii, vi & v E. xxii, vi & vi
8. In fig 2, the numbers 42, 48 and 41 are A. xvii, iii & i B. xiv, v & xvii C. i, iii & v D. xvii, xix & i E. ii, iv & vi
9. The average cutting speed V_{av} for cylindrical turning is A. $\pi f d_c N d_m$ B. $\pi N(d_w+d_m)/2$ C. $\pi(d_w+d_m)/2$ D. $\pi f N d_w$



10. In turning operation, when the depth of cut d is small compared to the diameter d_m , the metal removal rate is approximately equal to A. $\pi D^2 N f / 2$ B. $\pi D^2 N f / 4$ C. $(f/2) \sin K_T$ D. $\pi N(d_w+d_m)/2$ E. $\pi f d_c N d_m$
11. The undeformed thickness in turning operation is given as A. $\pi D^2 N f$ B. $\pi D^2 N f / 2$ C. $f \sin K_T$ D. $f \cos K_T$ E. $f N \cos K_T$
12. In facing operation, the maximum cutting speed is equal to A. $\pi N d_w$ B. $\pi D^2 N$ C. $\pi N d_m$ D. $\pi D N / 4$ E. $\pi / d_m d_w$
13. The diameter of the largest workpiece that can be rotated on the spindle without hitting the bed is called A. swing over carriage B. distance between centres C. swing over bed D. spindle through hole-diameter
14. Cutting should have all the following characteristics except A. high hardness B. high ductility C. high toughness D. high elastic moduli E. high harness temperature
15. The metal removal rate for a drilling process is given as A. $(f/2) \sin K_T$ B. $f N \sin K_T$ C. $\pi D^2 N f / 2$ D. $f \sin K_T$ E. $\pi D^2 N / 4$
16. The provision of safety training is the responsibility of A. employer B. employee C. safety officer D. A and C E. A and B

17. The space marked 3D in the consequence – probability chart represents one of the following A. high – consequence risk B. low risk C. extreme risk D. moderate risk E. A or C
18. Major causes of fire include the following except A. ignorance B. flammable liquid C. carelessness D. A & B E. A & C
19. The principles of extinction are A. cooling, smothering, starvation B. heat, fuel, oxygen C. heat, oxygen, starvation D. starvation, smothering, foaming E. B and C
20. What is the colour of a fire extinguisher that contains a cooling agent? A. red B. yellow C. blue D. black E. cream white
21. When do we use HAZOP? A. during project execution B. during job hazard analysis C. anytime we use PTW D. at the design stage of a project E. in identifying hazard
22. DCP extinguishes fire by..... A. cooling B. starvation C. burning out D. attacking the base of the fire E. smothering
23. Heat is a.....of fire A. product B. element C. source D. A&C E. A&B
24. "Use appropriate barrier creams" is a precaution to operators exposed to.....A. noise B. dust & fumes C. chemicals D. toxic substances E. cyanide
25. An unwanted occurrence that has caused or is capable of causing injury is called..... A. accident B. incident C. hazard D. risk E. unsafe act
26. Toxic substances can be absorbed through.....A. inhalation B. swallowing C. contact with the skin D. A & B E. A,B & C
27. When doing routine jobs with high risk, we need..... A. FAC B. PPE C. MOHO D. PTW E. SHOC
28. Which of the following fire extinguishers has both a cooling effect and a smothering effect? A. CO₂ B. H₂O C. foam D. DCP E. electrical equipment fire extinguisher
29. Electricity is a source of..... A. heat B. fume C. fuel D. A&C E. A&B
30. When an operator loses a finger while working at the workshop, it is a case of A. HAZOP B. PTD C. PPD D. ALARP E. FAC
31. Mouth-to-nose resuscitation is a first aid given to a victim of.....A. fracture B. electric shock C. severe bleeding D. eye injuries E. A&C
32. Reporting accidents/incidents is the obligation of the..... A. employer B. safety department C. first aider D. employee E. all of the above
33. Dissatisfaction over work is an example of.....hazard A. physical B. ergonomic C. psycho-social D. chemical E. biological
34. Steam can cause one of the following injuries A. electric shock B. eye injuries C. nose injuries D. bleeding E. scald
35. An operation labeled 3B in the risk chart has A. low risk B. moderate risk C. high consequence D. low probability E. extreme risk
36.is the manufacturing approach of using computers to control the entire production process A. CAD B. CAE C. CIM D. CAM E. none of the above
37. Automation is the use of.....and.....reducing the need for human intervention A. mechanization and automation B. industrialization and mechanization C. automated teller machine and information technologies D. control systems and information technologies E. information technologies and mechanization
38. In the scope of industrialization.....is a step beyond..... A. CAE and CAD B. mechanization and CAE C. mechanization and automation D. automation and mechanization E. CIM and CAD
39. In automation in manufacturing processes, CAM stands for..... A. computer assisted manufacturing B. computer aided manufacturing C. computer automated manufacturing D. computer added manufacturing E. all of the above
40. Historically.....was done entirely by hand A. manufacturing B. automation C. mechanization D. industrialization E. labour

ANSWERS

1. D	2. E	3. C	4. B	5. E	6. D	7. C	8. A	9. B	10. C	11. C	12. C	13. B	14. B	15. E
16. A	17. C	18. B	19. A	20. A	21. D	22. E	23. E	24. D	25. B	26. E	27. D	28. A	29. C	30. B
31. B	32. E	33. B	34. E	35. C	36. C	37. D	38. D	39. B	40. A					

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