

## Maharashtra Engineering Training Academy, Nashik

Professional Exam Division

Practice Question for AE2/JE Exam - Set 18 - (23/08/2024)

Mechanical Practical

सदर सराव प्रश्न हे परीक्षार्थींच्या सोईसाठी व सरावासाठी देण्यात येत आहेत. परीक्षार्थींच्या वारंवार मागणीनुसार सदर प्रश्नांची उत्तरे उपलब्ध करून देण्यात येत आहेत. तरी या सराव प्रश्न व उत्तरे यांची खात्री परीक्षार्थींनी आपल्या स्तरावर तपासून पाहणे. या विषयीच्या कुठल्याही तक्रारीची दखल या कार्यालयामार्फत घेण्यात येणार नाही याची नोंद घ्यावी.

Sr. No.	Question	Correct Option	Option 1	Option 2	Option 3	Option 4
1	What does CNC stand for?	1	Computer Numerical Control	Computer Network Control	Computerized Numerical Calculation	Computerized Network Calibration
2	What does IC in IC engine stand for?	1	Internal Combustion	Integrated Circuit	Internal Cooling	Internal Combustion Chamber
3	What is the primary function of a crane?	3	To cut materials	To transport people	To lift and move heavy loads	To drill holes
4	What is the primary function of a lathe machine?	1	To cut materials into precise shapes	To heat treat metals	To drill holes	To grind surfaces
5	What is the primary function of a road roller?	2	To dig trenches	To compact soil, asphalt, and concrete	To lift heavy loads	To transport materials
6	What is the primary function of an excavator?	2	To transport materials	To dig and move earth	To lift heavy loads	To cut and trim trees
7	What is the primary purpose of welding?	2	To cut metal pieces	To join metal parts together	To clean metal surfaces	To polish metal surfaces
8	Who is credited with inventing the first commercially successful steam engine?	1	James Watt	George Stephenson	Thomas Newcomen	Richard Trevithick

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9	In lathe terminology, what does "chucking" refer to?	1	The process of securing the workpiece in the chuck	The process of cutting the workpiece	The process of changing the cutting tool	The process of adjusting the spindle speed
10	What does "compaction" refer to in the context of road rollers?	3	The process of spreading asphalt	The process of breaking up concrete	The process of increasing soil or asphalt density	The process of mixing materials
11	What is the main function of the radiator in an IC engine?	2	To cool the engine oil	To cool the engine coolant	To increase engine pressure	To filter the engine air
12	What type of electrode is used in Stick Welding (SMAW)?	1	Consumable Electrode	Non-Consumable Electrode	Tungsten Electrode	Carbon Electrode
13	Which component of a CNC machine is responsible for executing the instructions from the control software?	2	Servo Motor	Control Unit	Worktable	Cutting Tool
14	Which component of a crane is responsible for lifting and lowering the load?	1	Hoist	Counterweight	Boom	Outriggers
15	Which of the following best describes the term 'steam power'?	2	The energy produced by combustion	The mechanical work done by steam	The heat generated in a furnace	The pressure created by steam
16	Which of the following is a key safety feature on an excavator?	1	Rearview camera	Automatic transmission	GPS system	Air conditioning
17	In a four-stroke engine, during which stroke does the fuel-air mixture ignite?	3	Intake Stroke	Compression Stroke	Power Stroke	Exhaust Stroke
18	What does the term "flux" refer to in the welding process?	1	A type of electrode coating that protects the weld	A method of cooling the weld	A type of shielding gas	A cleaning agent for metal surfaces

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19	What is the primary advantage of a “mini excavator” compared to a standard excavator?	3	Greater digging depth	Increased lifting capacity	Enhanced maneuverability in tight spaces	Higher fuel efficiency
20	What type of crane is commonly used in warehouses for moving heavy materials along a fixed track system?	4	Gantry Crane	Mobile Crane	Jib Crane	Overhead Crane
21	Which innovation by James Watt significantly improved the efficiency of steam engines?	2	Double-acting cylinder	Separate condenser	Rotary motion conversion	High-pressure steam
22	Which lathe machine feature allows for the automatic feeding of the cutting tool along the workpiece?	2	Gearbox	Feed Mechanism	Tailstock	Tool Post
23	Which of the following is a key advantage of CNC machines over manual machines?	1	Higher accuracy and repeatability	Increased manual labor	Reduced tool life	Lower setup time
24	Which type of roller is typically used for compacting cohesive soils like clay?	1	Sheepsfoot Roller	Pneumatic Roller	Vibratory Roller	Static Roller
25	What does the term "turning" refer to in lathe operations?	1	The process of rotating the workpiece while cutting it	The process of grinding the workpiece	The process of drilling holes in the workpiece	The process of polishing the workpiece
26	What does the term “feed rate” refer to in CNC machining?	1	The speed at which the cutting tool moves through the material	The rate at which the workpiece is fed into the machine	The speed of the spindle rotation	The rate at which material is added to the workpiece
27	What feature helps a “vibratory roller” achieve effective compaction?	3	Its heavy weight	Its ability to move at high speeds	Its vibrating drums	Its wide tires

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28	What is the role of the camshaft in an IC engine?	2	To regulate the fuel-air mixture	To control the opening and closing of the valves	To drive the water pump	To increase engine speed
29	What type of engine typically powers most modern excavators?	1	Diesel engine	Gasoline engine	Electric motor	Hydraulic motor
30	What type of engine was primarily used for early locomotives?	1	Beam Engine	Vertical Engine	Compound Engine	High-pressure Engine
31	Which crane type is characterized by a rotating arm that can move around the base?	1	Jib Crane	Gantry Crane	Tower Crane	Floating Crane
32	Which welding process uses a high-temperature flame to melt the metal and a filler rod to create the weld?	3	MIG Welding	TIG Welding	Oxy-Acetylene Welding	Arc Welding
33	How does a "pneumatic roller" contribute to road construction?	2	By using vibrations to compact materials	By applying uniform pressure through multiple tires	By crushing and grinding materials	By providing a static weight for compaction
34	In a CNC machine, what does the term "zero point" or "origin" refer to?	1	The starting reference point for the machine's axes	The point at which the tool changes	The maximum range of the machine's movement	The point where the machine stops
35	In a steam engine, what does the term 'stroke' refer to?	1	The distance the piston travels	The speed of the flywheel	The pressure of the steam	The amount of fuel used
36	In which welding process is the heat generated by an electric arc formed between a consumable electrode and the workpiece?	4	Plasma Arc Welding	TIG Welding	MIG Welding	Stick Welding

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37	What does a crane's "load chart" provide?	2	Information on the crane's fuel efficiency	Details on the maximum lifting capacity at various boom angles and lengths	The crane's speed limits	Maintenance schedules
38	Which of the following components is responsible for stabilizing an excavator during operation?	2	The bucket	The counterweight	The cab	The tracks
39	Which type of cooling system is commonly used in IC engines?	2	Air Cooling	Water Cooling	Oil Cooling	Gas Cooling
40	Which type of lathe uses a computer to control its movements and operations?	1	CNC Lathe	Turret Lathe	Bench Lathe	Engine Lathe
41	What does the term "hydraulic system" refer to in the context of an excavator?	2	The system that provides power to move the tracks	The system that powers the lifting and digging actions	The system that controls the excavator's rotation	The system that manages the engine's cooling
42	What is the primary safety equipment used to protect a welder's eyes and face from the intense light produced during welding?	2	Welding Gloves	Welding Helmet	Safety Glasses	Face Shield
43	What is the purpose of the "carriage" on a lathe machine?	1	To move the cutting tool along the length of the workpiece	To support the tailstock	To rotate the workpiece	To adjust the spindle speed
44	What is the purpose of the piston rings in an IC engine?	1	To seal the combustion chamber and prevent leakage	To enhance fuel injection	To increase engine speed	To control the valve timing

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45	What is the typical purpose of a “sheepsfoot roller” in road construction?	2	To compact asphalt layers	To stabilize and compact clayey or silty soils	To smooth out surfaces	To clean the construction site
46	What was the primary advantage of steam engines over water mills?	1	Ability to operate in any location	Lower operating costs	Higher speed	Simpler design
47	Which type of CNC machine uses a wire to cut through material?	1	CNC Wire EDM (Electrical Discharge Machining)	CNC Mill	CNC Lathe	CNC Router
48	Which type of crane is mounted on tracks for stability and is suitable for uneven ground?	1	Crawler Crane	Mobile Crane	Tower Crane	Overhead Crane
49	What does the term “compression ratio” refer to in an IC engine?	3	The ratio of air to fuel in the mixture	The ratio of the engine's power output to its displacement	The ratio of the cylinder's volume when the piston is at the bottom of the stroke to the volume when the piston is at the top of the stroke	The ratio of the engine's weight to its power output
50	What is a “tool changer” in a CNC machine used for?	1	To switch between different cutting tools automatically	To adjust the spindle speed	To move the workpiece to different positions	To calibrate the machine
51	What is the typical use of an excavator's “clamshell bucket” attachment?	3	For digging deep trenches	For lifting and moving heavy materials	For grabbing and sorting loose materials	For breaking up concrete

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52	What safety feature prevents a crane from lifting more than its rated capacity?	2	Emergency Stop Button	Load Indicator	Safety Valve	Speed Limiter
53	Which component of a lathe machine allows for the adjustment of the cutting tool's height?	1	Tool Post	Cross Slide	Compound Rest	Tailstock
54	Which of the following is an advantage of MIG welding over other welding methods?	2	Requires minimal training	Produces minimal spatter	Is suitable for all types of metals	Does not require a shielding gas
55	Which term describes a steam engine that has a piston that moves back and forth in a single cylinder?	4	Simple engine	Compound engine	Rotary engine	Double-acting engine
56	Which type of roller is most effective for initial compaction of asphalt?	2	Pneumatic Roller	Tandem Roller	Sheepsfoot Roller	Vibratory Roller
57	Which crane type is particularly suited for lifting loads in confined spaces with limited height?	1	Jib Crane	Tower Crane	Gantry Crane	Mobile Crane
58	What type of crane uses a rotating base and a telescopic boom to move loads?	1	Mobile Crane	Tower Crane	Gantry Crane	Floating Crane
59	In crane operations, what is the purpose of the "hoisting mechanism"?	3	To extend the crane's boom	To move the crane horizontally	To lift and lower the load	To balance the crane
60	What feature is essential for a crane to safely operate on an uneven surface?	2	Mobile Base	Outriggers	Counterweight	Hoist System
61	What was the primary purpose of the steam engine during the Industrial Revolution?	4	Transportation	Manufacturing	Mining	All of the above
62	Which component of a lathe machine holds and rotates the workpiece?	4	Tailstock	Cross Slide	Carriage	Chuck
63	Which of the following is a common attachment used with excavators for digging?	2	Grapple	Bucket	Hammer	Auger
64	Which of the following is NOT a common type of CNC machine?	4	CNC Mill	CNC Lathe	CNC Router	CNC Printer
65	Which of the following is the most common type of IC engine used in automobiles?	1	Diesel Engine	Gas Turbine Engine	Stirling Engine	Steam Engine

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66	Which type of crane is commonly used on construction sites for lifting materials vertically and horizontally?	1	Tower Crane	Gantry Crane	Overhead Crane	Mobile Crane
67	Which type of road roller is commonly used for compacting asphalt surfaces?	2	Pneumatic Roller	Vibratory Roller	Sheepsfoot Roller	Static Roller
68	Which welding process uses an electric arc between an electrode and the workpiece to melt the metals?	3	MIG Welding	TIG Welding	Stick Welding	Plasma Cutting
69	Which type of crane is used for heavy lifting on large construction projects and can lift extremely heavy loads?	2	Gantry Crane	Tower Crane	Mobile Crane	Crawler Crane
70	What safety feature is commonly used to prevent the crane's boom from moving beyond a safe range?	1	Boom Angle Sensor	Load Indicator	Safety Lock	Emergency Stop Button
71	Which crane type uses a fixed structure and has a horizontal arm that can move loads from side to side?	1	Jib Crane	Gantry Crane	Overhead Crane	Mobile Crane
72	In which crane type is the load typically supported by a frame or gantry that runs along tracks?	1	Gantry Crane	Crawler Crane	Tower Crane	Jib Crane
73	What is the primary advantage of a "hydraulic crane" over a conventional crane?	2	Greater lifting capacity	Enhanced mobility and versatility	Improved stability on rough terrain	Faster operation speed
74	What is a "lifting eye" used for in crane operations?	2	To stabilize the crane during lifting	To attach lifting slings or hooks for securing the load	To measure the load's weight	To control the crane's movement
75	In MIG welding, what does the acronym MIG stand for?	1	Metal Inert Gas	Metal Ion Gas	Manual Inert Gas	Metal Internal Gas



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76	What does the term "boom" refer to on an excavator?	1	The long arm that extends from the base	The part that houses the engine	The component that rotates the excavator	The hydraulic system for the bucket
77	What does the term "vibratory roller" refer to?	1	A roller that uses vibration to enhance compaction	A roller that operates at high speeds	A roller designed for soft soils	A roller that only moves in reverse
78	What is a key feature of a mobile crane?	1	It is mounted on a truck for mobility	It is fixed in one location	It operates only in a vertical plane	It uses a rail system for movement
79	What is the main purpose of a CNC machine in manufacturing?	2	To increase manual labor	To automate and control machining processes	To reduce machine efficiency	To replace manual measurement tools
80	What is the primary function of the spark plug in a gasoline engine?	2	To inject fuel into the combustion chamber	To ignite the air-fuel mixture	To control the engine temperature	To exhaust gases from the engine
81	What is the purpose of the "tailstock" on a lathe machine?	1	To support the workpiece during turning	To hold the cutting tool	To control the speed of the spindle	To measure the diameter of the workpiece
82	Which component of the steam engine converts steam pressure into mechanical work?	3	Boiler	Cylinder	Piston	Flywheel
83	In a four-stroke engine, which stroke is responsible for drawing in the air-fuel mixture?	3	Compression Stroke	Power Stroke	Intake Stroke	Exhaust Stroke
84	The 'Watt's Engine' is known for which significant improvement over earlier steam engines?	2	Introduction of the rotary motion	Increased efficiency	Use of high-pressure steam	Simplicity of design
85	What is the purpose of the "stick" or "dipper arm" on an excavator?	1	To connect the boom to the bucket	To stabilize the machine during operation	To rotate the excavator body	To lift the machine off the ground

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86	What type of road roller is characterized by its use of large, heavy steel drums?	2	Pneumatic Roller	Tandem Roller	Sheepsfoot Roller	Static Roller
87	What type of software is typically used to create programs for CNC machines?	2	CAD (Computer-Aided Design)	CAM (Computer-Aided Manufacturing)	FEA (Finite Element Analysis)	ERP (Enterprise Resource Planning)
88	Which part of a lathe machine is responsible for moving the cutting tool in the vertical direction?	2	Tool Post	Cross Slide	Compound Rest	Carriage
89	Which type of crane uses a horizontal beam that can move along rails to lift and move loads?	1	Gantry Crane	Jib Crane	Tower Crane	Floating Crane
90	Which type of welding uses a tungsten electrode and an inert gas to shield the weld area?	3	Stick Welding	MIG Welding	TIG Welding	Flux-Cored Arc Welding
91	In a lathe machine, what does the "tool post" do?	1	Holds the cutting tool in place	Supports the workpiece	Moves the workpiece horizontally	Controls the spindle speed
92	What component of a crane provides stability by extending outward from the base?	2	Counterweight	Outriggers	Boom	Hoist
93	What component of an IC engine converts the reciprocating motion of the pistons into rotational motion?	2	Camshaft	Crankshaft	Flywheel	Timing Belt
94	What is the function of the "cab" on an excavator?	3	To house the hydraulic pump	To store the excavator's tools	To provide a space for the operator	To support the excavator's tracks
95	What is the function of the filler material in the welding process?	2	To protect the weld area from contamination	To add strength to the weld joint	To remove impurities from the surface	To cool down the welded area
96	What was the main fuel used in early steam engines?	1	Coal	Wood	Oil	Natural Gas
97	Which axis on a CNC machine is typically considered the horizontal movement axis?	1	X-axis	Y-axis	Z-axis	A-axis
98	Which type of road roller is best suited for compacting granular soils and gravels?	2	Pneumatic Roller	Sheepsfoot Roller	Vibratory Roller	Static Roller

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99	What does G-code refer to in CNC machining?	3	The control code for tool movements	The material specification code	The programming language for CNC machines	The safety protocol for machine operation
100	What is the purpose of the "water tank" on a road roller?	2	To cool the engine	To clean the roller's drums	To provide weight for additional compaction	To keep the tires and drums lubricated
101	What type of fuel is commonly used in a diesel engine?	3	Gasoline	Natural Gas	Diesel Fuel	Ethanol
102	Which component of a lathe machine controls the movement of the carriage along the bed?	1	Lead Screw	Tailstock	Chuck	Tool Post
103	Which component of an excavator allows it to rotate 360 degrees?	3	The undercarriage	The tracks	The swing motor	The bucket
104	Which crane type is designed to operate on water or floating platforms?	3	Tower Crane	Gantry Crane	Floating Crane	Overhead Crane
105	Which engine did Richard Trevithick develop that was one of the first to use high-pressure steam?	2	The Cornish Engine	The Puffing Devil	The Newcomen Engine	The Watt Engine
106	Which welding process is best suited for welding thin materials and produces a clean, precise weld?	2	MIG Welding	TIG Welding	Stick Welding	Oxy-Acetylene Welding
107	In a crane, what is the function of the counterweight?	2	To increase the crane's lifting capacity	To balance the crane and prevent tipping	To extend the reach of the crane	To control the crane's speed
108	In which welding process is a shielding gas used to protect the weld area from atmospheric contamination?	2	Stick Welding	MIG Welding	Resistance Welding	Gas Metal Arc Welding
109	In which year did James Watt patent his improved steam engine?	3	1765	1776	1781	1794

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110	What is the primary function of the spindle on a CNC machine?	3	To hold the workpiece	To control the machine's speed	To rotate the cutting tool	To move the worktable
111	What type of excavator is specifically designed for underwater or submerged operations?	3	Mini Excavator	Long Reach Excavator	Amphibious Excavator	Hydraulic Excavator
112	What type of lathe is specifically designed for turning large, heavy workpieces?	4	Bench Lathe	Toolroom Lathe	Engine Lathe	Heavy-Duty Lathe
113	Which of the following is a key difference between a two-stroke and a four-stroke engine?	3	Number of pistons	Number of crankshafts	Number of strokes in the power cycle	Type of fuel used
114	Which type of roller is equipped with pneumatic tires for compaction?	1	Pneumatic Roller	Vibratory Roller	Tandem Roller	Sheepsfoot Roller
115	In a diesel engine, what is the purpose of the turbocharger?	2	To increase engine temperature	To boost air intake for better combustion	To reduce engine noise	To improve fuel economy
116	In CNC machining, what does the term "toolpath" refer to?	1	The route the cutting tool follows to create a part	The path taken by the workpiece during machining	The programming code for machine operation	The design of the cutting tool
117	In excavator terminology, what does "reach" refer to?	1	The distance the excavator can dig horizontally	The height the excavator can lift materials	The angle of the bucket	The depth the excavator can dig vertically
118	What is the main advantage of a compound steam engine over a single-cylinder engine?	2	Higher speed	More fuel efficiency	Greater power output	Easier maintenance
119	What is the primary advantage of a "static roller" compared to a "vibratory roller"?	3	Greater compaction depth	Higher operational speed	Lower vibration, suitable for thin layers	Increased maneuverability

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120	What is the primary shielding gas used in MIG welding?	4	Argon	Oxygen	Helium	Carbon Dioxide
121	Which type of crane is best suited for indoor operations and uses a track system for horizontal movement?	1	Overhead Crane	Mobile Crane	Tower Crane	Crawler Crane
122	Which type of lathe is commonly used for precision work and is typically found in machine shops?	1	Engine Lathe	Turret Lathe	CNC Lathe	Bench Lathe
123	What does the term "boom" refer to in crane operations?	2	The vertical support structure	The horizontal beam that extends the crane's reach	The counterweight system	The mechanism for moving the crane
124	What is a "thumb" attachment used for on an excavator?	1	To help in gripping and holding materials	To extend the reach of the bucket	To increase digging depth	To rotate the excavator body
125	What is the function of the "compound rest" on a lathe machine?	1	To hold the cutting tool at various angles	To rotate the workpiece	To control the spindle speed	To measure the workpiece diameter
126	What is the primary function of the condenser in a steam engine?	2	To increase steam pressure	To convert steam into water	To heat the steam	To reduce mechanical friction
127	What type of CNC machine would you typically use for cutting and shaping wood?	1	CNC Router	CNC Lathe	CNC Mill	CNC Wire EDM
128	Which engine component controls the timing of the valve openings and closings?	1	Camshaft	Crankshaft	Pistons	Connecting Rod
129	Which of the following is a key feature of a "tandem roller"?	1	Two sets of large, heavy drums	Pneumatic tires	Adjustable drum pressure	High speed operation

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130	Which welding technique involves applying pressure to weld metal parts together without melting them?	1	Spot Welding	Arc Welding	Forge Welding	Electron Beam Welding