COVER PAGE

Electrical Appliances (788)

Marking Scheme

Class XII - 2018-19

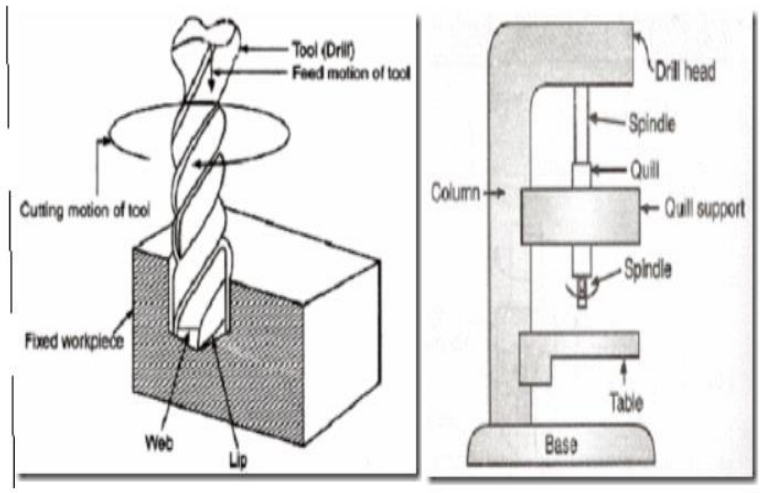
Time: 2 Hours **Total Marks: 40**

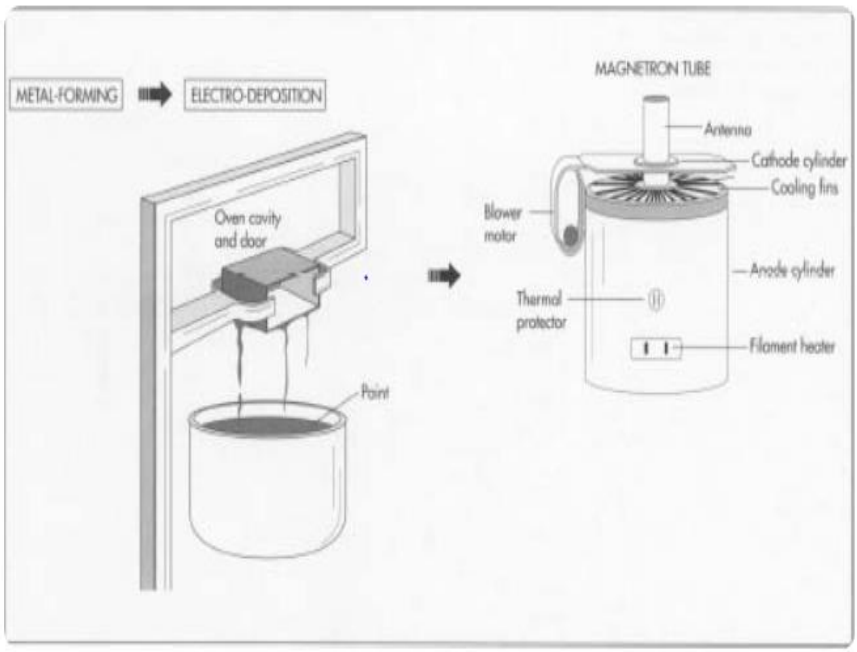
General Instructions:

1. *Marking Scheme is divided into two sections: Section-A and Section- B.*
2. ***Section–A:***
   - ***i.*** *Multiple choice question/Fill in the blanks/Direct Questions of 1 mark each. Answer any 10 questions out of the given 12 questions.*
   - ***ii.*** *Very Short Answer of 2 marks each. Answer any 5 questions from the given 7 questions.*
   - ***iii.*** *Short Answer of 3 marks each. Answer any 5 questions from the given 7 questions.*
3. ***Section–B:****Long/Essay type questions of 5 marks each. Answer any 3 questions from the given 5 questions.*
4. *All questions of a particular section must be attempted in the correct order.*
5. *Pleasecheck that this question paper contains 31 questions out of which 23 questions are to be attempted.*
6. *The maximum time allowed is* 2 *hrs.*
7. *The marking scheme carries only suggested value points for the answers. These are only guidelines and do not constitute the complete answers. The students can have their own expression and if the expression is correct, the marks be awarded accordingly.*

Q.NO.	Expected Answer/Value Points	Marks	Total Marks
1	Vacuum cleaners (a)	1	1
2	300 μ F (c)	1	1
3	Electronic timer (b)	1	1
4	Rectifier(c)	1	1
5	Nichrome(c)	1	1
6	Electromagnet. (c)	1	1
7	Helium gas. (d)	1	1
8	Capacitor run (b)	1	1
9	Shaded pole induction motor(b)	1	1
10	Oil impregnated paper (a)	1	1
11	Increase(a)	1	1
12	Turbulence (b)		
13	I. Desert coolers are usually kept on the window and suck air from the outside and the fan in this unit is used as an exhaust while room coolers are kept inside and the room, recirculating the air in the room. II. Desert coolers are usually provides better cooling. The room cooler on the other hand is less powerful than a desert cooler.	2	2
14	A mixer is a kitchen utensil which uses a gear-driven mechanism to rotate a set of beaters in a bowl containing the food to be prepared. Operation: With a supply of power to the motor and the beaters inserted, an on/off switch is moved or pressed to the first position. The beaters begin to turn at the slowest speed. The switch is then moved to a higher speed or back into the off position. Older mixers controlled the speed through the use of a sensitive governor switch.The rapid rotation of the motor armature activates a thrust rod, which repeatedly opens and closes the switch contacts to maintain precise speed control." Modern mixers do this with a electronic circuit board instead.	2	2

15	I. Power supply cord. II. Blown fuses. III. Problem in thermostat. It could either be stuck, gone loose or may have become faulty.	**2**	**2**
16	Pneumatic thermostats. A pneumatic thermostat is a thermostat that controls a heating or cooling system via a series of air-filled control tubes. This "control air" system responds to the pressure changes (due to temperature) in the control tube to activate heating or cooling when required.	**2**	**2**
17	Testing of OTG|: 1. Connect to 15A mains connection and switch on power 2. Set temp to highest temperature. 3. Select dual heating point and Power on OTG for 5 sec and turn it off.Touch the tube for checking heat. 4. Check the rotation tube for the same process. 5. Check the FAN.	**2**	**2**
18	I. The vacuum cleaner brush does not spin due to problems related with the belts that are used in the construction of the appliance II. A cleaner belt may break when solid dirt particles such as lint, string, or hair are trapped. III. vacuum cleaner noises tend to emanate from the location of the drive motor. This is caused when dirt enters the motor area and causes blockages. IV. If your vacuum cleaner appears to be dead, it could indicate that there is a problem with the mains flex.	**2**	**2**
19	I. Check his breathing and heartbeat. If the person is not breathing, begin mouth-to-mouth resuscitation. II. Treat the victim for shock. Keep him lying down. III. Do not move the victim if you suspect neck or spine injury. IV. Treat burn by immersing in cold water. Do not apply grease or oil.	**2**	**2**
20	The drilling machine or drill press is one of the most common and useful machine employed in industry for producing forming and finishing holes in a workpiece. The unit essentially consists of: 1. A spindle which turns the tool (called drill) which can be advanced in the workpiece either automatically or by hand. 2. A work table which holds the workpiece rigidly in position.	**3**	**3**

	 Working principle: The rotating edge of the drill exerts a large force on the workpiece and the hole is generated. The removal of metal in a drilling operation is by shearing and extrusion. Common Faults: I. Wrong usage of length that results in lesser leverage. II. Substituting pliers for wrench. III. Used as chisel or scraper. IV. Used despite broken handles. V. Replace blade that are not sharp enough. .		
21	Steps for Repairing Washing Machine: I. Replace the water hoses. Check hoses regularly for bulging, cracking, fraying, and leaks around the ends. Replace the hose if a problem is found or every three to five years as part of a proactive maintenance program. II. Check that there are at least four inches between your washing machine and the wall. This prevents hoses from kinking. III. Clean the lint filter. Depending on your machine, the lint collector may be located in the agitator tube, which is the center column of most machines, or near the top of the washtub. Keep it clean to help your washer run efficiently. IV. Check the motor. V. Check the Panel of switches.	**3**	**3**

22	 Microwave is consumer item used to heat , grill or defrost food item. Construction: . The oven's various electronic motors, relays, and control circuits are located on the exterior casing, to which the oven cavity is bolted. A front panel allows the user to program the microwave, and the door frame has a small window to enable the cook to view the food while it is cooking. Near the top of the steel oven cavity is a magnetronan electronic tube that produces high-frequency microwave oscillations which generates the microwaves. The microwaves are funneled through a metal waveguide and into a stirrer fan, also positioned near the top of the cavity. The fan distributes the microwaves evenly within the oven	**3**	**3**
23	1. **Poor flow of air** One of the most common heater problems is poor flow of air or insufficient heat. If this problem or the filter is not checked or left as it is, then this could lead to damaging of the limit switch. 2. F**requent cycling** Another one of the common heater problems includes frequent cycling. If your heater keeps turning on and then going off repeatedly without really heating your home up then this may indicate a problem. This could be because of a bigger underlying problem and is something that a professional may be able to help you with. **3. Bad thermostat**. If you are facing problems with your thermostat and it doesn't turn or change the heat mode, then it may have gone bad. **4. Grating noise coming from the heater** These days, most of the heater models available are silent and do not make any noise. Thus if you notice a certain sound or a grating noise coming	**3**	**3**

	from yours, then this could be an indication of a fault. A loud grinding noise means that some part of the heater has gone loose. This could also mean that the blower wheel is damaged. **5. Constant blowing** One of the common heater problems includes constant blowing. If your heater's blower runs constantly without shutting off then this could be due to a bad limit switch. You must remember that the blower must never run continuously and should get breaks in between		
24	A toaster, or a toast maker, is an electric small appliance designed to toast sliced bread by exposing it to radiant heat, thus converting it into toast. The most common household toasting appliances are the pop-up toaster and the toaster oven. Bread slices are inserted into slots in the top of a pop-up toaster, which make toast from bread in one to three minutes by using electric heating elements. Toasters have a control to adjust how much the appliance toasts the bread. Automatic toaster automatically pop out bread slices and the chances of burning the bread is removed.		**3**
25	The purpose of artificial ventilation is to provide a method of air exchange until natural breathing is established. Artificial ventilation should be given only when natural breathing has stopped; BACK PRESSURE ARM LIFT.—This method is an alternate technique used when other methods are not possible. Place the victim on the stomach, face to one side, neck hypo-extended, with hands under the head. Quickly clear the mouth of any foreign matter. Kneel at the victim's head and place your hands on the victim's back so that the heels of the hands lie just below a line between the armpits, with thumbs touching and fingers extending downward and outward. Rock forward, keeping your arms straight, and exert pressure almost directly downward on the victim's back, forcing air out of the lungs. Then rock backward, releasing the pressure and grasping the arms just above the elbows. Continue to rock backward, pulling the arms upward and inward (toward the head) until resistance and tension in the victim's shoulders are noted. This expands the chest, causing active intake of air (inspiration). Rock forward and release the victim's arms. This causes passive exiting of air (expiration). Repeat the cycle of *press, release, lift,* and *release* 10 to 12 times a minute until the victim can breathe naturally.	**3**	**3**
26	Voltage stabilization is a method of stabilizing the voltage against voltage fluctuations. This is achieved using voltage stabilizer. It is an electrical appliance that feeds constant voltage to a load during over and	**3**	**3**

	under voltage conditions. This device detects these voltage conditions and correspondingly brings the voltage to desired range. Voltage stabilizers provide a means to regulate the supply voltage to the load. The voltage regulation is required for two distinct purposes; over voltage and under voltage conditions. The process of increasing voltage from under voltage condition is called as boost operation, whereas reducing the voltage from overvoltage condition is called as buck operations.These two main operations are essential in each and every voltage stabilizer.		
27	Exhaust fans work by sucking hot or humid air out of a small, localised area, allowing fresh air to enter from elsewhere (perhaps a doorway or vent) in order to replace it. The warm air that's drawn out using an exhaust fan is then pulled through a ducting system and expelled outside. How effective are exhaust fans? As these fans are only really effective in smaller rooms, one that is capable of moving approximately 2 cubic metres per second usually provides sufficient ventilation. For larger areas, a larger ventilation system may be more appropriate. **Installation of exhaust fan:** 1. Drill a reference hole and mark the ceiling. 2. Cut the intake-port hole. 3. Put the fan in position. 4. Secure the fan to the joists. 5. Find a suitable exit point for the duct pipe. 6. Attach the vent cap. 7. Wire the connections in the housing unit. 8. Attach the grille	**5**	**5**
28	**Costruction:** • The thermostat is at the top left. • The heat (wattage) selector switch is at the top right. • The switch at the bottom is a normally open switch that serves as	5	5

	a "tipover switch" safety device: as long as the heater is standing upright, the switch is engaged and the circuit is closed. • The grip for the power cord is at the bottom right. **Principle:** Electric fan heaters work by running a current through a resistive heating coil, which converts electric energy into heat energy. Air is then drawn in over this resistive heating coil using a fan where it's rapidly warmed and propelled out into the room. Because of the way they work, electric fan heaters also dry out the air and can circulate dust, which in turn can cause dry eyes and sore throats, or create problems for those with allergies or respiratory issues. Electric fan heaters normally feature a thermostat which allows you to control the amount of heat being produced, and often also feature speed controls for the fan. Most of portable fan heaters also double as regular portable fans, simply deactivating the heating element when it's not needed.		