

IIPUC EXAMINATION APRIL-MAY-2022

SCHEME OF VALUATION

SUBJECT: - AUTOMOBILE (63NS)

NO OF QUESTIONS:-43

NO OF PAGES:-10

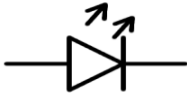
MAX MARKS:60


PART-A

Q.NO	ANSWERS	MARKS
A	CHOOSE THE CORRECT ANSWER	10
1)	d) Service manual	1
2)	b) Hardware	1
3)	a) Speed	1
4)	c) Crank case	1
5)	d) Small	1
6)	a) Gearbox and differential	1
7)	b) 1000	1
8)	d) Spring	1
9)	b) Silicone	1
10)	b) Generator	1

	<u>PART-B</u>	
B	ANSWER THE FOLLOWING QUESTIONS (ANSWER ANY 10)	10x2=20
11)	The manufacturers develops service manual which gives clear cut ideas of their product, like material used specification, service limit, span life of component, storage life and sequences to overhaul etc.	2
12)	A fastener is a hardware device that mechanically joins or affixes two or more objects together. Ex: Nut, bolt, rivets etc	2
13)	The measuring instruments, which do not require the help of other instruments for measuring, are called direct measuring instruments. ex: steel scale, tape.	2
14)	An automotive navigation system is a satellite navigation system designed for use in automobiles. Which give directions to other locations along roads also in its data base.	2
15)	Valve is usually known as poppet valve. A poppet valve is a valve typically used to control the timing and quantity of gas or vapour flow into an engine.	2
16)	A turbo charger or turbo is a forced induction device used to allow more power to be produced by an engine of a given size. The turbine forces more air (oxygen), and proportionately more fuel, into the combustion chamber than atmospheric pressure alone.	2
17)	ECM is also called processor because it collects all the data from sensor and process, take appropriate decision. Any sensor or actuator faults are stored in	2

	<p>ECM memory which can be recovered or read by diagnostic equipment.</p> <p style="text-align: center;">Or</p> <p>ECM is also called processor .The function of ECM is to receive signal from various sensors, manipulate the signals and send control signals to the actuators.</p>	
18)	<p>Reasons for Valve Leakage</p> <ul style="list-style-type: none"> • Excessive fuel consumption • No pickup • Engine do not take load • Hard starting • Valve sticks • Engine overheats <p style="text-align: right;">(Any 2=2x1)</p>	<p>1</p> <p>1</p>
19)	<ul style="list-style-type: none"> • Squeaking noise. • Enlarged hole of the yokes. • Worn out centre bearing and rubber cushion. • Worn out Universal Joint cross. • More play in the slip joint splines. <p style="text-align: right;">(Any 2=2x1)</p>	<p>1</p> <p>1</p>
20)	To engage and disengage the engine power to gear box or transmission.	2
21)	An automatic transmission or automatic gearbox is a type of motor vehicle transmission that can automatically change gear ratios as the vehicle moves, it helps freeing the driver from having to shift gears manually.	2
22)	<ul style="list-style-type: none"> • A leaf spring is a simple form of spring commonly used for the suspension in wheeled vehicles. • Leaf springs can serve locating and to some extent damping as well as springing functions. • The leaf spring acts as a linkage for holding the axle. • The inter-leaf friction between the leaf springs 	<p>1</p> <p>1</p>

	affects the riding comfort. (Any 2=2x1)	
23)	<ul style="list-style-type: none"> • jumper wires, • test lights, • voltmeters, • ammeters, and • ohmmeters <p style="text-align: right;">(Any 2=2x1)</p>	1 1
24)		2
25)	<p>Automobile cables can be classified into three main categories :</p> <ol style="list-style-type: none"> 1. Starting system cables 2. General purpose cables 3. High-tension cables. 	2
<u>PART-C</u>		
C	ANSWER THE FOLLOWING (ANSWER ANY SIX)	6x3=18
26)	<ul style="list-style-type: none"> • The manufacturers develop service manual. • Which gives clear cut ideas of their product, like material used specification, service limit, span life of component, storage life and sequences to overhaul etc. • The service manual helps to teach the technicians to work on the vehicle systematically to solve the problems as well as to provide service to maintain originality. 	1 1 1
27)	<p>Washers can be categorized into three types;</p> <ol style="list-style-type: none"> 1. Plain washers 2. Spring washers 	1 1

	3. 'locking washers' Or relative answers	1
28)	<ul style="list-style-type: none"> • Use hacksaw blade and dress the groove • Now use screw driver of thick snap and turn anticlockwise • This removes the screw, if it is not responded • Take a prick punch and hammer. Give light blow in anti clock wise direction. This loosen the screw • If it does not work then use drill machine of drill bit smaller than size of screw • Now drill it at the centre of screw, now 100% screw will be removed <p style="text-align: right;">(Any 3=3x1)</p>	1 1 1
29)	 <p style="text-align: right;">Diagram=3 marks</p>	3
30)	<ul style="list-style-type: none"> • Feeler gauges are used for checking the clearance between mating surfaces. • They are mainly used in adjusting the valve clearance and setting of spark plug gaps in automobiles. 	3
31)	<p>Common faults in cooling system</p> <ul style="list-style-type: none"> • Loose or broken water pump pulley belt • Low level of coolant • Faulty thermostat • Faulty water pump • Dirty or bend radiator fins • Broken water pump fan 	½ ½ ½ ½ ½ ½

	<ul style="list-style-type: none"> • Coolant leakage on cooling system • Defective cooling fan motor (Any six=6x1/2) • Plugged radiator • Faulty radiator cap • Improper ignition timing 	
32)	<ul style="list-style-type: none"> • Throttle body is very important part of air supply system to the engine. It should be regularly cleaned. • Due to carbon deposit inside the throttle valve and backfire. Throttle body (Butter fly) can be cleaned by carbo cleaner. 	3
33)	<p>Inspection of Clutch plate for oil leakage</p> <ol style="list-style-type: none"> 1. Check for the oil leakage on the clutch plate. 2. Check the thickness of clutch plate with vernier depth gauge, if it is out of permissible limit the replace it. 3. Check the cover assembly of clutch, if there is oil leakage then replaces the oil seal on gear box or from crankshaft. 4. Place the clutch plate on clutch shaft/input shaft. 5. Place the dial gauge on clutch plate and rotate the clutch shaft for checking the distortion of the clutch plate. (Any 3=3x1) 	1 1 1
34)	<ol style="list-style-type: none"> 1. Diaphragm clutch: In this type of clutch, diaphragm spring is used in place of coil spring. This type of clutch is called as diaphragm clutch. 2. Diaphragm clutch is small in size as compare to spring clutch and it transmits more torque as diaphragm exerts more pressure as compare to springs. 3. It is less affected by centrifugal force and it can withstand higher rotational speeds. 	1 1 1

	<p>4.Diaphragm acts as both clamping spring and release levers.</p> <p>5.This clutch requires less maintenance compare to other types of clutch. (Any 3=3x1)</p>	
35)	<p>Maintenance Tips for Suspension system</p> <ul style="list-style-type: none"> • Thoroughly clean the leaf spring set and its fittings, • Lubricate each leaf with graphite grease, • Tighten the u clamp bolts /nuts with specified torque, • Check the centre bolt, • Tighten the clamp nut bolt with specified torque, • Check the slackness of shackle and tighten the set • In case of two wheeler, tighten the swinging of nuts/bolts of front and rear wheels, • Avoid sudden acceleration and breaking. • Avoid overloading vehicle. (Any3=3x1) 	<p>1</p> <p>1</p> <p>1</p>
36)	<p>Inspection of battery,</p> <ul style="list-style-type: none"> • A cleaning solution of baking soda and water, or ammonia. • Stiff bristled cleaning brushes. • Terminal pliers and wrenches and perhaps a terminal spreader and puller. • Terminal and connector scraping and cleaning tools. • A battery carrier or lifting strap. • Protective coating for the battery terminals (jelly or spray) (Any 3=3x1) 	<p>1</p> <p>1</p> <p>1</p>

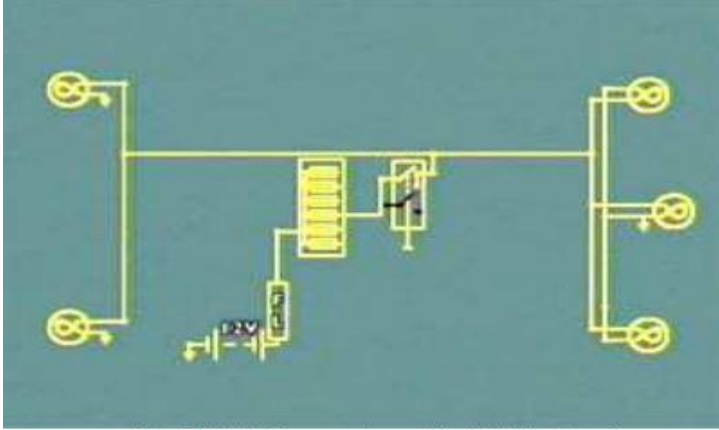
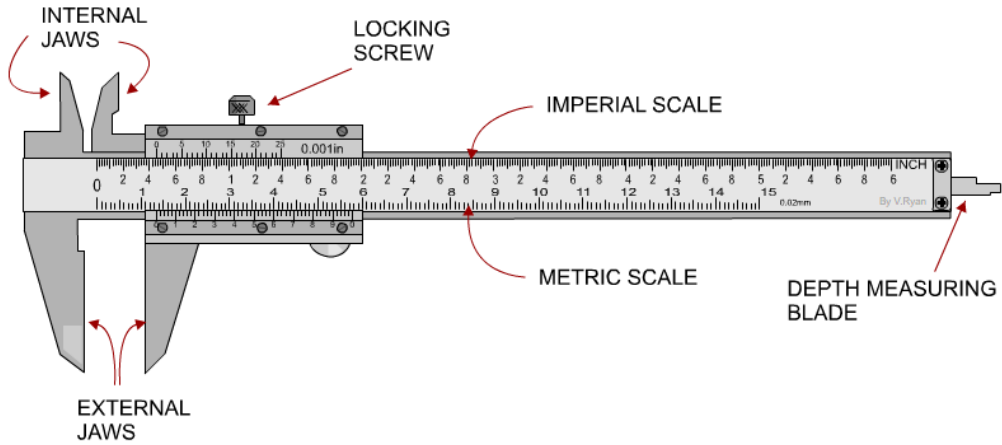
37)	 <p>1. This is the park and tail light circuit.</p>	3
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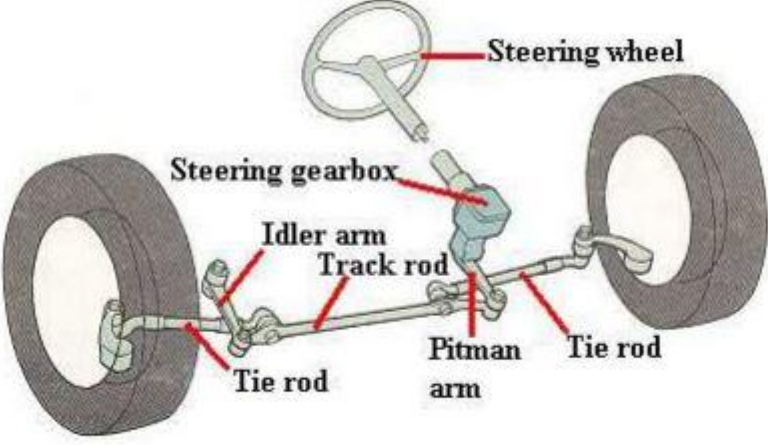
fig-3 marks

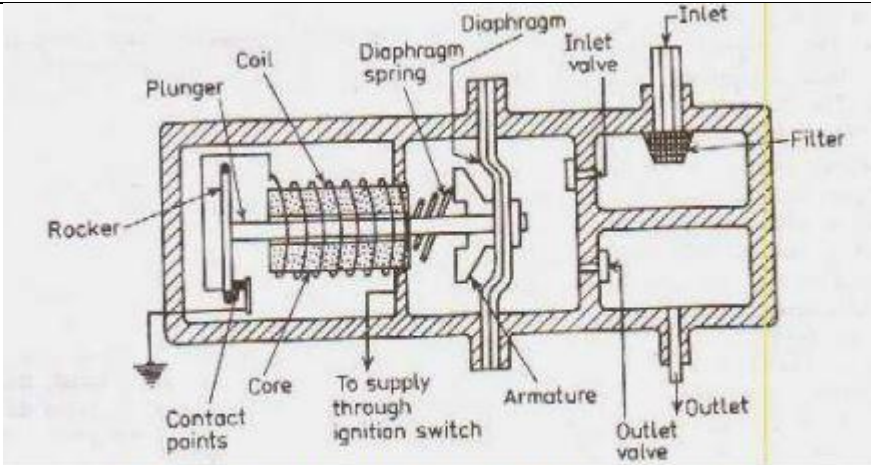
PART-D

D	ANSWER THE FOLLOWING (ANSWER ANY 2)	2x6=12
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38)	<p>Vernier caliper</p>  <p>Diagram-5mark ,Parts-1 mark</p>	6
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39)	<ul style="list-style-type: none"> • Place the vehicle on level ground. • Remove the negative terminal of the battery. • Keep a tray below the engine. • Remove the piston from engine <p>Piston Clearance:</p> <ul style="list-style-type: none"> • Take the piston out from the respective cylinder. • Place the piston in the respective cylinder bore with feeler gauge. • Use micrometer to measure the feeler gauge thicknes. 	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
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	<ul style="list-style-type: none"> The measured thickness is known as piston clearance. 	
40)	<p>40) Servicing of the drive shaft</p> <ol style="list-style-type: none"> 1. Remove the engine cover. 2. Use appropriate spanner and remove the drive shaft nut and washer. 3. Drain the transmission oil from engine/gear box. 4. Using large screw drivers, pullout the driving shaft joint, 5. Disconnect stabilizer joint form suspension arm. 6. Remove cotter pin and nut from the steering knuckle 7. Disconnect tie rod ends from steering knuckle. 8. Disconnect the lower arm from the steering knuckle. 9. By using a plastic hammer, drive out the drive shaft joint 10. Cover the drive shaft boot with cloth to protect it from damage. <p>(Any 6=6x1)</p>	<p>1 1 1 1 1 1</p>
41)	 <p>Fig 7: Steering Linkage</p> <p>Diagram-5 marks, Parts-1 marks</p>	6

42)	 <p>Fig.: Electric Fuel Pump (Diaphragm type)</p>	6
Diagram-6 marks		
43)	<p>a).Yellow Cables :-These are used for the generator circuit. The cable is used from the generator terminal to the corresponding control-box terminal and to the ignition warning light.</p> <p>b).Green Cables :-These cables are used for all the auxiliary circuits which are fed through the ignition switch but are protected by the fuses. Examples of these circuits are the brake stop lamps, the fuel gauge, the windscreen wipers, the direction indicators, etc.</p> <p>c).Blue Cables :-These cables are used for the headlamp circuits. These cables are used for the side and tail lamp circuits. It is also used for fog lamps, panel lights and other lamps which are only used when the side lamps are in operation.</p>	2 2 2