

OMTC



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Note:

- 1) IAMI EK Question papers covered from 2017-2024.
- 2) The content included in this file is only for reference purposes and not for commercial gain.



1. MOTORS**MAR 2023/MAY 2023/OCT 2022/JULY 2022/OCT 2021/MAY 2018/JUL 2017**

Q 7) With reference to the testing and maintenance of large electric motors:

- (a) State the minimum satisfactory value of insulation resistance. (2)
- (b) State the instrument AND the voltage to be used for the insulation resistance test. (4)
- (c) State the regular maintenance that is necessary for good electric motor operation. (10)

JULY 2021/AUG 2020/OCT 2018

Q 7)

- (a) Describe how you would overhaul an electric motor that has been flooded with seawater. (8)
- (b) Explain how to check the insulation resistance of the motor, stating the minimum acceptable value. (8)

OCT 2017

Q 7) With reference to a small 3-phase electrical motor driving a transfer pump that is not used on a regular basis fail to rotate when the start button is pressed:

- (a) Outline the procedure to determine the possible cause. (8)
- (b) Explain the procedure to remove the motor should it be faulty and require changing. (8)

DEC 2021

Q 7) With reference to electrical motors:

- (a) List FOUR maintenance actions that are necessary for good operation. (8)
- (b) Describe how to test for electrical faults within an electrical motor. (8)

DEC 2019/JULY 2018

Q 7) With reference to electrical motors:

- (a) State the routine maintenance that is necessary. (8)
- (b) Describe the tests carried out to prove good electrical condition. (8)



2. GENERATOR & CIRCUIT PROTECTION**FEB 2024/FEB 2018**

Q 6)

- (a) With reference to earth faults on a ship's electrical system. State how they are indicated. (4)
- (b) Describe how the location is found. (6)
- (c) State the safety precautions necessary in order to carry out repairs. (6)

MAR 2023

- Q 7) State the effect and consequences if EACH of the following faults occurs on a Generator but the protection devices fail to operate
- (a) Short circuit. (4)
- (b) AVR Failure. (4)
- (c) Loss of excitation. (4)
- (d) Overload. (4)

DEC 2023

- Q 6) With reference to main distribution systems fitted with preference trips:
- (a) State why the preference trip is fitted. (2)
- (b) Explain the operation of a THREE-stage trip. (8)
- (c) State THREE circuits that cannot be connected to the preference trip, giving a reason for EACH. (6)



JULY 2022/MAR 2018

Q 6)

- (a) State the conditions that must be satisfied before paralleling an a.c. generator with the main electrical switchboard. (6)
- (b) For EACH condition stated in (a) explain EACH of the following:
- (i) How it is monitored. (4)
- (ii) How it is adjusted. (6)

DEC 2022/FEB 2020/OCT 2019/JULY 2018

- Q 6) Describe how to manually couple a second auxiliary generator to the main switchboard and balance out the load. (16)

AUG 2020/JULY 2019/MAY 2019

Q 6)

- (a) State the requirements for connecting an incoming alternator to live busbars. (6)
- (b) State the possible consequences of incorrect paralleling. (4)
- (c) Explain how the main circuit breaker for an alternator that is not running is prevented from being accidentally connected to live busbars. (6)

OCT 2020/DEC 2019/MAY 2018

Q 6)

- (a) List FIVE protective devices fitted to a main electrical switchboard. (10)
- (b) Explain the meaning of the term Earth Fault and state why it is undesirable in electrical installations. (6)

OCT 2022/FEB 2019/DEC 2018

Q 6) With reference to the electrical distribution system, describe:

- (a) the routine testing of the emergency generator. (8)
- (b) how an earth fault is indicated. (8)



FEB 2020

- Q 6) Describe how to manually couple a second auxiliary generator to the main switchboard and balance out the load. (16)

MAY 2019/AUG 2020/JULY 2019

- Q 6)
- (a) State the requirements for connecting an incoming alternator to live busbars. (6)
 - (b) State the possible consequences of incorrect paralleling. (4)
 - (c) Explain how the main circuit breaker for an alternator that is not running is prevented from being accidentally connected to live busbars. (6)

MAR 2017/DEC 2017

- Q 7) Explain the procedure to be taken in EACH of the following circumstances in order to prepare a large electrical generator set for maintenance:
- (a) Taking the a.c. generator off electrical load. (6)
 - (b) Isolating the machine in order that work may be safely carried out. (10)



3. BATTERIES & E'MCY POWER SUPPLIES**FEB 2024/ OCT 2023/DEC 2020/JULY 2019**

- Q 7) With reference to the emergency generator:
- (a) State the checks required prior to starting the engine. (6)
 - (b) Describe the routine testing. (10)

MAR 2023/DEC 2017/FEB 2017

- Q 7) Explain why EACH of the following protective devices are fitted to a main electrical switchboard:
- (a) Reverse power. (4)
 - (b) Under voltage. (4)
 - (c) Main circuit breaker overcurrent. (4)
 - (d) Preference trips. (4)

DEC 2023

- Q 7) With reference to storage batteries used on Ships:
- (a) Explain the meaning of the term Gel cell. (2)
 - (b) State how the measure of charge of a conventional Lead Acid battery is established. (2)
 - (c) List FOUR advantages of Alkaline batteries. (4)
 - (d) State how the measure of charge of an Alkaline battery is established. (4)
 - (e) Outline the dangers associated with Lithium-Ion batteries. (4)

OCT 2022/DEC 2018/FEB 2019

- Q 6) With reference to the electrical distribution system, describe:
- (a) The routine testing of the emergency generator. (8)
 - (b) How an earth fault is indicated. (8)



DEC 2022/MAY 2021/OCT 2020/MAY 2019/FEB 2019/DEC 2018/FEB 2017

Q 7) with reference to large capacity secondary cell batteries:

- (a) State the two types. (4)
- (b) State four applications onboard ship. (4)
- (c) Describe the maintenance required. (8)

OCT 2019/FEB 2018

Q 7)

- (a) Name ONE publication dealing with the storage of ships batteries. (2)
- (b) List SEVEN precautions that should be taken when working in an area where batteries are stored. (14)



4. ELECTRICAL SAFETY & MAINTENANCE**FEB 2023/OCT 2023/MAY 2023/DEC 2021/JULY 2021/DEC 2020/OCT 2018**

Q 6)

- (a) State FOUR different causes of earth faults. (8)
- (b) For EACH cause stated in (a), explain how the fault is rectified. (8)

MAY 2021/JULY 2017

Q 6)

- (a) State THREE underlying causes of electrical equipment failure. (6)
- (b) State the precautions to be taken before working on the switchboard. (10)

OCT 2021/OCT 2017/MAR 2017

- Q 6) State the procedure to be carried out if you found someone you suspected of having received an electric shock. (16)

FEB 2020/MAR 2018/MAY 2017

Q 7)

- (a) List FIVE precautions that should be taken before any work is carried out on electrical equipment. (10)
- (b) Identify THREE additional precautions to those in (a), if it has become essential to work near to live equipment. (6)

