**SAMPLE QUESTION BANK**

**Program: BE (Mechanical Engineering)**

Curriculum Scheme: **Rev 2016**

**BE Semester VIII**

Course Code:MEDLOC8041 and Course Name: Power Plant Engineering

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**MCQ- SAMPLE SET**

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| 1. | The correct sequence in the direction of the flow of water for installations in a hydropower plant is \_\_\_\_ |
| Option A: | a) Reservoir, Surge tank, Turbine, Penstock |
| Option B: | b) Reservoir, Penstock, Surge tank, Turbine |
| Option C: | c) Reservoir, Penstock, Turbine, Surge tank |
| Option D: | d) Reservoir, Surge tank, Penstock, Turbine |
|  |  |
| 2. | What is the name of leading hydroelectric power stations installed in India? |
| Option A: | Kundamkulam |
| Option B: | Kalapakkam |
| Option C: | Narora |
| Option D: | Bhakra Nangal |
|  |  |
| 3. | Which of the following is the essential requirement of peak load plant? |
| Option A: | It should run at high speed |
| Option B: | It should produce high voltage |
| Option C: | It should be small in size |
| Option D: | It should be capable of starting quickly |
|  |  |
| 4. | In a binary cycle, \_\_\_\_ cycles with \_\_\_\_ working fluid are coupled. |
| Option A: | three, different |
| Option B: | two, different |
| Option C: | two, same |
| Option D: | three, same |
|  |  |
| 5. | Compounding of steam turbine is done for |
| Option A: | reducing the work done |
| Option B: | increasing the rotor speed |
| Option C: | reducing the rotor speed |
| Option D: | balancing the turbine |
|  |  |
| 6. | What is the principle of operation of steam power plant? |
| Option A: | Carnot cycle |
| Option B: | Rankine cycle |
| Option C: | Brayton cycle |
| Option D: | Stirling cycle |
|  |  |
| 7. | In thermal power plant, turbine is placed |
| Option A: | before boiler |
| Option B: | in between boiler and generator |
| Option C: | after generator |
| Option D: | at any place |
|  |  |
| 8. | Which of the following is correct? |
| Option A: | load factor=utilization factor x capacity factor |
| Option B: | utilization factor =load factor x capacity factor |
| Option C: | capacity factor = load factor x utilization factor |
| Option D: | load factor=utilization factor + capacity factor |
|  |  |
| 9. | Base load of a power station stands for |
| Option A: | 12-24 hours per day |
| Option B: | 2 -4 hours /day |
| Option C: | 4 to 8 hours/day |
| Option D: | 8 -12 hours/day |
|  |  |
| 10. | A nuclear reactor is said to be critical when neutron population in reaction core is |
| Option A: | rapidly increasing leading to point of explosion |
| Option B: | decreasing from a specific value |
| Option C: | reduced to zero |
| Option D: | constant |
|  |  |
| 11. | The maximum demand of a consumer is 2 kW and the corresponding daily energy consumption is 30 units. The load factor is |
| Option A: | 0.05 |
| Option B: | 0.5 |
| Option C: | 0.625 |
| Option D: | 0.75 |
|  |  |
| 12. | Why is this tariff not applicable to domestic consumers? |
| Option A: | Low load factor. |
| Option B: | Lower energy consumption. |
| Option C: | Low maximum demand. |
| Option D: | Low power factor. |
|  |  |
| 13. | Following are the details of the plant where L ( load in MW) , η = thermal efficiency of plant, t = time in hrs. Calculate (i) Input (I) in MW if load is shared by single power plant, (ii) New Value of input I1 i.e saving in input if load is taken up by plant having η=0.32. L1 = 120 MW, η1 = 0.32, t1 = 8 hrs / L2 = 60 MW, η2 = 0.24, t2 = 2 hrs / L3 = 30 MW, η3 = 0.15, t3 = 4 hrs /L4 = 15 MW, η4 = 0.10, t4 = 6 hrs / L5 = 75 MW, η5 = 0.25, t5 = 4 hrs |
| Option A: | (i) 206.75 , (ii) 207.03 |
| Option B: | (i) 260.75 , (ii) 217.03 |
| Option C: | (i) 260.75 , (ii) 207.03 |
| Option D: | (i) 268.75 , (ii) 207.03 |
|  |  |
| 14. | Fast breeder reactors are best suited for India because of |
| Option A: | large thorium deposits |
| Option B: | large uranium deposits |
| Option C: | large plutonium deposits |
| Option D: | less thorium deposits |
|  |  |
| 15. | The false statement is |
| Option A: | Alpha particles are helium nuclei |
| Option B: | Beta decay is accompanied by emission of neutrino and gamma radiation |
| Option C: | neutron is converted into proton in a positive beta decay |
| Option D: | gamma rays is emitted from nucleus while X-ray is emitted from atom |
|  |  |
| 16. | The conversion of old power plant into combined power plant is known as... |
| Option A: | Repowering. |
| Option B: | Reusing. |
| Option C: | Reforming. |
| Option D: | Renovating. |
|  |  |
| 17. | The In combined GT-ST plant effect of supplementary heating is... |
| Option A: | Overall efficiency diminishes. |
| Option B: | overall efficiency increases. |
| Option C: | the power output of steam cycle decreases. |
| Option D: | the efficiency of steam cycle decreases. |
|  |  |
| 18. | A Steam Power Station has an annual load factor of 45%. If the maximum demand is 25000 kW, then units generated in annum are |
| Option A: | 5.44\*105 kWh |
| Option B: | 9.86\*107 kWh |
| Option C: | 19.86107 kWh |
| Option D: | 10.92\*107 kWh |
|  |  |
| 19. | A fuel cell, in order to produce electricity, burns: |
| Option A: | Helium |
| Option B: | Nitrogen |
| Option C: | Hydrogen |
| Option D: | Oxygen |
|  |  |
| 20. | Which type of coal is having highest carbon content? |
| Option A: | lignite |
| Option B: | peat |
| Option C: | Anthracite |
| Option D: | bituminous |
|  |  |
| 21. | In Rankine cycle condensate which is fairly at \_\_\_\_\_\_\_\_\_temperature has an\_\_\_\_\_\_\_\_\_\_\_ mixing with boiler water and results in decrease of cycle efficiency. |
| Option A: | Low , irreversible |
| Option B: | Low , reversible |
| Option C: | High, irreversible |
| Option D: | High, reversible |
|  |  |
| 22. | Bleeding steam to reheat feed water to boiler \_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | decreases thermal efficiency of the cycle |
| Option B: | increases thermal efficiency of the cycle |
| Option C: | does not affect thermal efficiency of the cycle |
| Option D: | may increase or decrease thermal efficiency of the cycle depending upon the point of extraction of steam |
|  |  |
| 23. | Which type of coal is having highest carbon content? |
| Option A: | lignite |
| Option B: | peat |
| Option C: | Anthracite |
| Option D: | bituminous |
|  |  |
| 24. | The power output from a [hydro-electric power plant](https://www.mechanicaltutorial.com/hydro-electric-power-plant-or-hydro-electric-power-station) depends on \_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Head, type and dam of discharge |
| Option B: | Type of dam, discharge and type of catchment area |
| Option C: | Efficiency of the system, type of draft tube and type of turbine used |
| Option D: | Head, discharge and efficiency of the system |
|  |  |
| 25. | The following type of power plant has operating charges minimum for same power output. |
| Option A: | [Gas turbine plant](https://www.mechanicaltutorial.com/power-plant-gas-turbine-power-plant-objective-questions-and-answers) |
| Option B: | Hydel plant |
| Option C: | [Thermal plant](https://www.mechanicaltutorial.com/power-plant-thermal-power-plant-objective-questions-and-answers) |
| Option D: | [Nuclear plant](https://www.mechanicaltutorial.com/power-plant-nuclear-power-plant-objective-questions-and-answers) |
|  |  |
| 26. | \_\_\_\_ helps to prevent the water hammer phenomenon. |
| Option A: | Valves and Gates |
| Option B: | Draft tubes |
| Option C: | Spillway |
| Option D: | Surge Tank |
|  |  |
| 27. | Hydrograph on basis of per day indicates which of following thing? |
| Option A: | Idea about flood period during the month |
| Option B: | Idea of rainfall |
| Option C: | Idea of draught during the year |
| Option D: | Idea of scarcity of water in the upcoming year |
|  |  |
| 28. | Direct runoff constitutes of \_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Surface runoff and infiltration |
| Option B: | Rainfall and evapotranspiration |
| Option C: | Surface runoff and prompt inter flow |
| Option D: | Overland flow |
|  |  |
| 29. | The value of Overall efficiency of steam power plant is as same as which of the following efficiency? |
| Option A: | Thermal efficiency |
| Option B: | Generation efficiency |
| Option C: | Multiplication of thermal and generation efficiency |
| Option D: | Ratio of thermal and generation efficiency |
|  |  |
| 30. | \_\_\_\_\_\_\_\_\_ are most widely used in modern thermal power plant. |
| Option A: | Surface condensers |
| Option B: | Low level counter flow type jet condenser |
| Option C: | High level counter flow type jet condenser |
| Option D: | Parallel flow type jet condenser |
|  |  |
| 31. | \_\_\_\_\_\_\_\_\_\_\_ is a part of air and fuel gas circuit. |
| Option A: | Condenser |
| Option B: | Economizer |
| Option C: | Cooling tower |
| Option D: | Air preheater |
|  |  |
| 32. | What value of energy conversion efficiency is achieved by superposing a high temperature power plant as a topping unit to the steam plant? |
| Option A: | higher |
| Option B: | lower |
| Option C: | maximum |
| Option D: | minimum |
|  |  |
| 33. | A cogeneration plant is used to produce \_\_\_\_\_\_. |
| Option A: | power |
| Option B: | process heat |
| Option C: | maximum efficiency |
| Option D: | both power and process heat |
|  |  |
| 34. | The method of converting old power plant into combined power plant is \_\_. |
| Option A: | Repowering |
| Option B: | Reusing |
| Option C: | Reforming |
| Option D: | Renovating |
|  |  |
| 35. | In nuclear power plant heads such as taxes and insurance are taken as \_\_\_\_\_\_\_. |
| Option A: | operating cost |
| Option B: | maintenance cost |
| Option C: | capital cost |
| Option D: | fixed cost |
|  |  |
| 36. | \_\_\_\_\_\_\_\_ is bombarded on heavy nucleus of nuclear fuel. |
| Option A: | Electron |
| Option B: | Proton |
| Option C: | Neutron |
| Option D: | Photon |
|  |  |
| 37. | Which statement about fast reactor is true? |
| Option A: | These reactors are big in size so not easier to shield |
| Option B: | Fast reactors can convert fertile materials to fissile materials |
| Option C: | Fast reactors are easy to control |
| Option D: | Heat transfer and cooling is very easy and simple |
|  |  |
| 38. | The load factor is \_\_\_\_\_\_\_\_\_\_ |
| Option A: | always less than unity |
| Option B: | less than or greater than 1 |
| Option C: | always greater than 1 |
| Option D: | less than zero |
|  |  |
| 39. | \_\_\_\_\_\_\_\_\_\_ is termed as cold reserve. |
| Option A: | Reserve capacity available and ready for use |
| Option B: | Generating capacity connected to bus and ready to take load |
| Option C: | Capacity in service in excess of peak load |
| Option D: | Reserve capacity available but not ready for use |
|  |  |
| 40. | A load curve is a plot of\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Load versus current |
| Option B: | Load versus cost of power |
| Option C: | Load versus time |
| Option D: | Load versus generation capacity |
|  |  |
| 41. | Which processes do occur in the Brayton cycle? |
| Option A: | two reversible adiabatic processes and two reversible isochoric processes |
| Option B: | two reversible adiabatic processes and two reversible isobaric processes |
| Option C: | two reversible adiabatic processes and two reversible isothermal processes |
| Option D: | two reversible adiabatic processes and two reversible isentropic processes |
|  |  |
| 42. | In a binary cycle, \_\_\_\_ cycles with \_\_\_\_ working fluid are coupled. |
| Option A: | three, different |
| Option B: | two, different |
| Option C: | two, same |
| Option D: | three, same |
|  |  |
| 43. | A simple Brayton cycle has a pressure ratio of 5 and a maximum temperature of 900 K. Air enters the compressor at 100 kPa, 300 K. Based upon cold-air standard analysis assumptions, the back-work ratio of this cycle is? |
| Option A: | 0.36 |
| Option B: | 0.48 |
| Option C: | 0.23 |
| Option D: | 0.53 |
|  |  |
| 44. | Which of the following is a disadvantage of most of the renewable energy sources? |
| Option A: | Highly polluting |
| Option B: | High waste disposal cost |
| Option C: | Unreliable supply |
| Option D: | High running cost |
|  |  |
| 45. | The following is dry type dust collectors |
| Option A: | Spray type |
| Option B: | Packed type |
| Option C: | Impingement type |
| Option D: | Cyclone separator |
|  |  |
| 46. | What is the principle of operation of steam power plant? |
| Option A: | Carnot cycle |
| Option B: | Rankine cycle |
| Option C: | Brayton cycle |
| Option D: | Stirling cycle |
|  |  |
| 47. | To obtain best thermal efficiency the working fluid in vapour power cycle should be... |
| Option A: | Toxic and corrosive |
| Option B: | Chemically unstable |
| Option C: | At high critical temperature |
| Option D: | With high specific heat |
|  |  |
| 48. | Which one of the following pairs of materials is used as moderator in nuclear reactors? |
| Option A: | Heavy water and zirconium |
| Option B: | Zorconium and beryllium |
| Option C: | Cadmium and beryllium |
| Option D: | Beryllium and heavy water |
|  |  |
| 49. | What type of hydropower plant does not use a dam: |
| Option A: | Impoundment |
| Option B: | Run off river |
| Option C: | Pumped storage |
| Option D: | No storage |
|  |  |
| 50. | The maximum demand of a consumer is 2 kW and the corresponding daily energy consumption is 30 units. The load factor is |
| Option A: | 0.05 |
| Option B: | 0.5 |
| Option C: | 0.625 |
| Option D: | 0.75 |
|  |  |
| 51. | A Steam Power Station has an annual load factor of 45%. If the maximum demand is 25000 kW, then units generated in annum are |
| Option A: | 5.44\*105 kWh |
| Option B: | 9.86\*107 kWh |
| Option C: | 19.86107 kWh |
| Option D: | 10.92\*107 kWh |
|  |  |
| 52. | Which of the following statement about economizer of steam power plant is wrong? |
| Option A: | Economizer increases the Boiler Efficiency |
| Option B: | It uses the heat of flue gases used by boiler going to the chimney |
| Option C: | Economizer increases the temperature of intake air |
| Option D: | It requires regular maintenance and cleaning |
|  |  |
| 53. | Which statement about hydroelectric power plant is wrong? |
| Option A: | Efficiency of hydroelectric power plant does not reduce with age |
| Option B: | Its construction coast is very high and takes a long time for erection. |
| Option C: | It is very neat and clean plant because no smoke or ash is produced. |
| Option D: | Meeting rapidly changing load demands is not possible in hydroelectric power plant. |
|  |  |
| 54. | The overall efficiency of two cycles coupled in series.... |
| Option A: | is greater than the sum of the individual efficiencies minus their product |
| Option B: | is less than the sum of the individual efficiencies minus their product |
| Option C: | is multiple of the sum of the individual efficiencies minus their product |
| Option D: | is equal to the sum of the individual efficiencies minus their product |
|  |  |
| 55. | Load shedding is done to |
| Option A: | improve power factor |
| Option B: | run the equipment efficiently |
| Option C: | reduce peak demand |
| Option D: | repair the machine |
|  |  |
| 56. | Uranium 238 is represented by 92U238. What does it imply? |
| Option A: | It has 92 protons and 146 neutrons |
| Option B: | It has 146 protons and 92 electrons |
| Option C: | It has 92 protons and 238 neutrons |
| Option D: | It has 92 neutrons and 238 protons |
|  |  |
| 57. | Which energy of water is used to drive the turbine |
| Option A: | Potential |
| Option B: | Kinetic |
| Option C: | Mechanical |
| Option D: | Electrical |
|  |  |
| 58. | IGCC means |
| Option A: | Integrated Gasification Combined Cycle |
| Option B: | Inert Gas Coal Cycle |
| Option C: | Ideal Gasification Combined Cycle |
| Option D: | Integrated Gasification Coal Cycle |
|  |  |
| 59. | What will be effect if steam pressure increased on efficiency of steam power plant? |
| Option A: | Does not changes |
| Option B: | Increases linearly |
| Option C: | Decreases linearly |
| Option D: | Increases nonlinearly |
|  |  |
| 60. | The annual depreciation of a hydro power plant is about |
| Option A: | 0.5% to 1.5% |
| Option B: | 10% to 15% |
| Option C: | 15% to 20% |
| Option D: | 20% to 25% |
|  |  |
| 61. | In a thermal power plant, coal from the coal handling plant is moved to the boiler bunker through a |
| Option A: | Belt conveyor |
| Option B: | Bucket conveyor |
| Option C: | Fork lift truck |
| Option D: | Overhead crane |
|  |  |
| 62. | The most practical fuel for a thermonuclear reactor, both from economical and nuclear consideration is |
| Option A: | Plutonium |
| Option B: | Uranium |
| Option C: | Deuterium |
| Option D: | Thorium |
|  |  |
| 63. | National Thermal Power Corporation was incorporated in \_\_\_\_\_\_ |
| Option A: | November – 1975 |
| Option B: | November – 1976 |
| Option C: | November – 1977 |
| Option D: | November – 1974 |
|  |  |
| 64. | In hydroelectric power, what is necessary for the production of power throughout the year? |
| Option A: | High amount of air |
| Option B: | High intense sunlight |
| Option C: | Nuclear power |
| Option D: | Dams filled with water |
|  |  |
| 65. | Which element of hydroelectric power plant prevents the penstock from water hammer phenomenon? |
| Option A: | Valves and Gates |
| Option B: | Surge Tank |
| Option C: | Spillway |
| Option D: | Draft tubes |
|  |  |
| 66. | The annual depriciation of a hydro power plant is about...... |
| Option A: | 15% to 20% |
| Option B: | 0.5% to 1.5% |
| Option C: | 10% to 15% |
| Option D: | 20% to 25% |
|  |  |
| 67. | In high head hydro power plant the velocity of water in penstock is about..... |
| Option A: | 4 m/s |
| Option B: | 1 m/s |
| Option C: | 12 m/s |
| Option D: | 7 m/s |
|  |  |
| 68. | What is the effect of increasing steam temperature of thermal power plant on its thermal efficiency? |
| Option A: | Decreases |
| Option B: | Increases nonlinearly |
| Option C: | Increases linearly |
| Option D: | It does not depends on temperature |
|  |  |
| 69. | Gas and Steam turbine combined power plant produces more electricity than traditional power plants by how much percent? |
| Option A: | 50 |
| Option B: | 40 |
| Option C: | 70 |
| Option D: | 25 |
|  |  |
| 70. | What happens to the availability in a combined cycle plant? |
| Option A: | Increases |
| Option B: | Decreases |
| Option C: | remains same |
| Option D: | cannot say |
|  |  |
| 71. | Which of the following is not a type of Combined Plant? |
| Option A: | Gas turbine-Steam turbine plant |
| Option B: | Thermoelectric steam plant |
| Option C: | Thermionic steam plant |
| Option D: | Sodium- mercury-Potassium plant |
|  |  |
| 72. | The overall efficiency of thermal power plant is equal to |
| Option A: | Regenerative cycle efficiency |
| Option B: | Rankine cycle efficiency |
| Option C: | Carnot cycle efficiency |
| Option D: | Boiler efficiency x turbine efficiency x generator efficiency |
|  |  |
| 73. | The most commonly used moderator in nuclear plants is |
| Option A: | heavy water |
| Option B: | graphite and concrete |
| Option C: | Graphite |
| Option D: | Deuterium |
|  |  |
| 74. | One gram of uranium will produce energy equivalent to approximately |
| Option A: | 10 tones of high-grade coal |
| Option B: | 4.5 tones of high-grade coal |
| Option C: | 1000 tones of high grade coal |
| Option D: | 100 tonnes of high-grade coal |
|  |  |
| 75. | The breeding gain in case of thermal breeder reactor as compared to fast breeder reactor is |
| Option A: | Higher |
| Option B: | Higher/lower depending on the size of reactor |
| Option C: | Unity |
| Option D: | Lower |
|  |  |
| 76. | Superheated steam is generated in following reactor |
| Option A: | gas cooled |
| Option B: | pressurized water |
| Option C: | boiling water |
| Option D: | Liquid metal cooled reactor |
|  |  |
| 77. | For economic load division which parameter of energy supplying units should be equal |
| Option A: | Load factor |
| Option B: | Efficiency |
| Option C: | Incremental rate |
| Option D: | Heat Rate |
|  |  |
| 78. | The coolant used in boiling water reactor is |
| Option A: | liquid metal |
| Option B: | Mercury |
| Option C: | pressurized water |
| Option D: | mixture of water and steam |
|  |  |
| 79. | Hopkinson’s Demand rate is |
| Option A: | Four -Part tariff Method |
| Option B: | Single part tariffs Method |
| Option C: | Three-part tariffs Method |
| Option D: | Two-part tariffs Method |
|  |  |
| 80. | For smaller dust particles in the range of 1 micron which type of method is suitable |
| Option A: | cyclone separators |
| Option B: | Electrostatic precipitators |
| Option C: | Pulse jet bag house dust collectors |
| Option D: | gravitational separators |

**Descriptive SAMPLE SET**

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| Q1. | Air enters the compressor of a gas turbine plant operating on air standard cycle at 100 kPa & 300 K with volumetric flow rate 5 m3/s . The compressor pressure ratio is 10. The turbine inlet temperature is 1400 K. The turbine and compressor each has an isentropic efficiency of 80%. Calculate (a) thermal efficiency of cycle. (b) net power developed in kW. |
| Q2. | **Comment and discuss the issue of energy crisis in developing countries like India.** |
| Q3. | What are the advantages of Fluidized Bed combustion? Explain PFBC with neat sketch. |
| Q4. | The data of monthly flow for hydel plant at a site for 12 months is given below. Find the size of reservoir and possible rate of available flow.   |  |  |  |  | | --- | --- | --- | --- | | Month | Flow (m3/sec) | Month | Flow (m3/sec) | | 1 | 6 | 7 | 1.2 | | 2 | 4 | 8 | 4.5 | | 3 | 5.4 | 9 | 8 | | 4 | 2 | 10 | 4 | | 5 | 1.5 | 11 | 3 | | 6 | 1 | 12 | 2 | |
| Q5. | Explain CANDU reactor & dust collection system. |
| Q6. | Explain tariff? Explain block meter rate, Hopkinson demand rate & Doherty rate of tariff. |
| Q7. | Explain CANDU reactor with neat sketch. |
| Q8. | Explain ash handling systems |
| Q9. | Explain fluidized bed combustion with neat sketch. |
| Q10. | The runoff data of a river at a particular site is tabulated as below :   |  |  | | --- | --- | | Month | Mean Discharge per month ( millions of cu m) | | January | 40 | | February | 25 | | March | 20 | | April | 10 | | May | 0 | | June | 50 | | July | 75 | | August | 100 | | September | 110 | | October | 60 | | November | 50 | | December | 40 |   i) Draw hydrograph and find the mean flow.  ii) Draw the flow duration curve  iii) Find the power in MW available at mean flow if the head available is 80 m and overall efficiency of generation is 85%.  Take each month of 30 days |
| Q11. | Explain various types of tariff methods. |
| Q12. | Discuss Rankine cycle with the help of T-s and h-s diagram? Write the expression for efficiency, work ratio and heat rejected. |
| Q13. | Describe various methods to improve performance of gas turbine power plant. |
| Q14. | What are the points taken into consideration while selecting site for steam power plant? |
| Q15. | Explain pumped storage power plant with neat sketch. |
| Q16. | What is PWR and how it differs from BWR? |
| Q17. | Explain:   * Connected load * Diversity load * Plant capacity load * Plant use factor * Demand factor |
| Q18. | The run off data of a particular river site is tabulated below as shown in table :   |  |  |  |  | | --- | --- | --- | --- | | Month | Mean Discharge per month (Millions of Cu. M) | Month | Mean Discharge per month (Millions of Cu. M) | | Jan | 40 | July | 75 | | Feb | 25 | Aug | 100 | | Mar | 20 | Sep | 110 | | April | 10 | Oct | 60 | | May | 0 | Nov | 50 | | June | 50 | Dec | 40 |   i)Draw hydrograph and find the mean flow.  ii)Draw the flow duration curve  iii)Find the power in MW available at mean flow if the available is 95 m and overall efficiency of generation is 87 %.  Take each month of 30 days. |
| Q19. | Prove that efficiency of power plant will be maximum at load where heat rate is equal to incremental heat rate. |
| Q20. | Explain construction and operation of different components of hydroelectric power plant with neat diagram. |
| Q21. | State the points to be considered in locating the site of hydro power plant. |
| Q22. | Explain overfeed stokers with sketch. |
| Q23. | Explain classification of energy resources in India. |
| Q24 | The following proposals are under consideration for an industry which has maximum demand of 45 MW and a load factor of 0.45  i) A steam power plant having an initial cost of Rs.1200/kW and maintenance cost of Rs. 2.4 paise/kWh. The coal of CV of 2550 kJ/N is used The overall efficiency of plant is 24%.  ii) An hydro plant having a capital cost of Rs. 3600 /kW and a running cost of 0.6 paise/kWh.  Assuming interest and depreciation rate of 10% for steam power plant and 8% for hydro plant, determine the price of coal above which steam station is uneconomical. |
| Q25. | Following data relates to combined gas and steam cycle.  Gas turbine: Pressure ratio for compressor and turbine = 10.  Inlet temperature of air = 27°C  Inlet temperature to turbine = 827°C  Isentropic efficiency of compressor = 0.85  Isentropic efficiency of turbine = 0.90  Mass flow rate of air = 100 kg/sec  C.V of fuel = 44500 kJ/kg  Steam turbine :-  Inlet conditions to turbine = 20 bar, 250°C  Condense pressure = 0.1 bar  Temperature of gas leaving to the chimney from HRSG = 200°C  Find the following  1. Power output and gas turbine cycle efficiency.  2. Mass flow rate of fuel and A:F ratio  3. Amount of stem generated in kg/hr  4. Rankine cycle power output and efficiency.  5. Overall power output and efficiency of combined plant.  Assume Cpg = Cpa = 1.05 kJ/.kg, γ = 1.4 both for air and gas. |
| Q26. | Write short note on closed cycle gas turbine system. |
| Q27. | Comment and discuss the issue of energy crisis in developing countries like India? |
| Q28. | Write short note on   1. Run off & rain fall measurement systems. 2. Surge tank |
| Q29. | Explain nuclear waste disposal. |
| Q30. | Explain working of pulverized coal system with its advantages and disadvantages. |
| Q31. | What is depreciation? Explain any one method to calculate depreciation cost. |
| Q32. | Give advantages of gas turbine power plant over diesel and thermal power plant. |
| Q33. | Write short notes on ( any two):  i) Half-life period and radioactive decay  ii) Hazards of radiation from nuclear power plants and precautions.  iii)Electrostatic precipitator  iv) Advantages of hydropower plant. |
| Q34. | What are the parameters to be considered for choosing site for a coal fixed thermal power station? |
| Q35. | What are the points taken in to account while selection of power plant |
| Q36. | Explain Run-off River plant |
| Q37. | Explain the Parameters affecting thermodynamics efficiency of combined cycle |
| Q38. | Write a short note on nuclear waste disposal |
| Q39. | Explain Modified Rankine cycle |
| Q40. | Explain PFBC systems |
| Q41. | The data for a weekly flow at a particular site is given by 12 weeks   |  |  | | --- | --- | | Week | Weekly Flow m3/ sec | | 1 | 3000 | | 2 | 2000 | | 3 | 2700 | | 4 | 1000 | | 5 | 750 | | 6 | 500 | | 7 | 600 | | 8 | 2250 | | 9 | 4000 | | 10 | 200 | | 11 | 1500 | | 12 | 1000 |  1. Draw hydrograph and Mas 2. Find the size of the reservoir and the possible rate of flow available after reservoir has been built. |
| Q42. | Explain Sodium Graphite Reactor with advantages and disadvantages. |
| Q43. | Note on fast breeding reactor |
| Q44. | Note on India’s 3 stage nuclear Power Programme |
| Q.45 | Note on coal mills with their advantages and disadvantages |