

CBCS SCHEME

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18ME51

Fifth Semester B.E./B.Tech. Degree Examination, Jan./Feb. 2023 Management and Economics

Time: 3 hrs.

Max. Marks: 100

Note : 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Interest Factor table is permitted.

Module-1

- 1 a. Define Management and discuss its nature and characteristics. (06 Marks)
b. Discuss Fayol's principles of Administrative Management. (14 Marks)

OR

- 2 a. What is Planning? Explain different steps in Planning. (10 Marks)
b. What do you understand by term Planning Premises? Explain different types of Planning premises. (10 Marks)

Module-2

- 3 a. Briefly explain principles of Organisation. (10 Marks)
b. What is Recruitment? Explain sources of Recruitment. (10 Marks)

OR

- 4 a. List various Motivation theories. Explain Maslow need Hierarchy theory in brief. (10 Marks)
b. Explain requirements of a good control system. (10 Marks)

Module-3

- 5 a. Explain Laws of Supply and Demand using suitable sketch. (08 Marks)
b. With a neat sketch, explain Cash flow diagram. (04 Marks)
c. Determine the effective interest rate for nominal annual rate of 8% compounded.
i) Daily (Assume 365 days/yr) ii) Monthly iii) Quarterly iv) Semi-annually. (08 Marks)

OR

- 6 a. What is Law of Diminishing return? Write its limitations. (03 Marks)
b. Discuss terms : i) Price elasticity of demand ii) Income elasticity of demand. (08 Marks)
c. A person is planning for his retired life. He has 10 more years of service. He would like to deposit 20% of his salary, which is Rs 4000 in first year and thereafter he wishes to deposit amount with annual increase of Rs 500 for next nine years with an interest rate of 15%. What will be the maturity amount? (09 Marks)

Module-4

- 7 a. Following table gives initial outlay and annual revenue of a production firm using three various alternatives. Find the best alternative based on present worth if the rate of interest is 20% compounded annually. (09 Marks)

	Initial Outlay	Annual Revenue	Life (Years)
Alternative 1	13,00,000	4,00,000	10
Alternative 2	21,00,000	6,50,000	10
Alternative 3	23,00,000	8,60,000	10

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.

- b. Find the most economical alternatives from following on the basis of equivalent future worth at interest rate of 9.5% per year.

Alternative I : Initial purchase cost = Rs 15,00,000 , Annual operating cost = Rs 35,000 starting from end of second year till end of life , Annual revenue generated = Rs 340000 for first 4 yrs then Rs 320000 afterwards till end of useful life. Expected salvage value is Rs 430000 and useful life = 8 yrs.

Alternative II : Initial purchase cost = Rs 1800000 , Annual operating cost = Rs 2500 , Annual revenue generated = Rs 365000 , Salvage value = Rs 550000 , Useful life = 8 yrs.

(11 Marks)

OR

- 8 a. Explain IRR , ERR and MARR. Enlist the misconcepts of IRR. (08 Marks)
- b. A firm has identified three mutually exclusive investment proposals whose details are given below. The life of three investments is estimated to be five years with negligible salvage value. The minimum rate of return for the firm is 12%. Find the best alternative based on rate of return method of comparison. (12 Marks)

	Alternative		
	A ₁	A ₂	A ₃
Investment	1,50,000	2,10,000	2,55,000
Annual net income	45,570	58,260	69,000

Module-5

- 9 a. With a block diagram, explain how a selling price of a product is determined? (08 Marks)
- b. The expenditure incurred in manufacturing machine is as follows :
- 1) Material consumed = Rs 55,00,000
 - 2) Indirect factory wages = Rs 8,00,000
 - 3) Directors fees = Rs 3,00,000
 - 4) Cost of advertisement = Rs 1,00,000
 - 5) Net profit = Rs 1,20,000
 - 6) Depreciation on sales dept car = Rs 11,000
 - 7) Printing and stationery cost = Rs 2500
 - 8) Depreciation of plant = Rs 45,000
 - 9) Direct wages = Rs 6,50,000
 - 10) Factory rent = Rs 60,000
 - 11) Telephone and postage charges = Rs 15,000
 - 12) Gas and electricity = Rs 50,000
 - 13) Office salaries = Rs 2,10,000
 - 14) Office rent = Rs 50,000
 - 15) Show room rent = Rs 1,50,000
 - 16) Sales man commission = Rs 26,500
 - 17) Sales dept car expensed = Rs 15,000
- Determine i) Direct cost ii) Factory cost iii) Total cost of production
iv) Cost of sales v) Selling price. (12 Marks)

OR

- 10 a. What do you mean by Depreciation? Discuss various causes of depreciation. (10 Marks)
- b. A Company has purchased on equipment whose first cost is Rs 2,00,000 with an estimated life of eight years. Estimated salvage value is 40,000 at the end of its life. Determine the depreciation charges and book value at the end of second year by sum of year's digit method of depreciation. (10 Marks)

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CBCS SCHEME

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18ME52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Design of Machine Elements – I

Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Use of design data handbook is permitted.

Module-1

- 1 a. Discuss the factors influencing the selection of suitable material for machine element. (08 Marks)
b. Determine the safe load that can be carried by a bar of rectangular cross section shown in Fig.Q1(b). Limiting the maximum stress to 130 MPa taking stress concentration into account and assume thickness of bar as 10 mm.

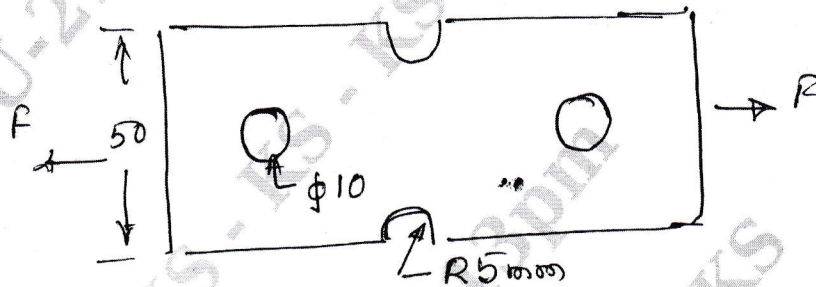


Fig.Q1(b)

(12 Marks)

OR

- 2 a. Explain the following theories of failure :
(i) Maximum normal stress theory
(ii) Maximum shear stress theory
(iii) Distortion energy theory (10 Marks)
b. A machine element made of C45 steel is subjected to a system of loads, following stresses are induced at critical point:
 $\sigma_x = 150$ MPa, $\sigma_y = 100$ MPa and $\tau_{xy} = 50$ MPa
Find the factor of safety according to:
(i) Maximum normal stress theory
(ii) Maximum shear stress theory
(iii) Distortion energy theory (10 Marks)

Module-2

- 3 a. Derive Soderberg's equation. (06 Marks)
b. A hot rolled steel rod is subjected to torsional load that varies from +330 N-m clockwise to 110 N-m counter clockwise and an applied bending moment varies from +440 N-m to -220 N-m. The rod is of uniform cross section. Determine the required diameter rod. The material has an ultimate tensile strength of 550 MPa and yield strength of 410 MPa. Assume a factor of safety 1.5. Take the endurance limit as half of the ultimate strength. (14 Marks)

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OR

- 4 a. List and explain the various factors effecting the endurance limit of the material. (08 Marks)
- b. An unknown weight falls through 20 mm to a collar rigidly attached to the lower end of a vertical bar 2 meter long and 500 mm² section. If the maximum instantaneous extension is 2 mm. What is the corresponding stress and the value of unknown weight? Take $E = 200$ GPa. (06 Marks)
- c. A cantilever beam of span 800 mm has a rectangular cross section of depth 200 mm. The free end of beam is subjected to a transverse load of 1 kN that drops on to it from a height of 40 mm. Selecting C40 steel as material and a factor of safety 2. Determine the width of rectangular cross section. Assume $E = 200$ GPa. (06 Marks)

Module-3

- 5 A commercial shaft 1 metre long supported between bearings has a pulley of 600 mm diameter weighing 1 kN, driven by a horizontal belt drive keyed to the shaft at a distance of 400 mm to the left of the right bearing and receives 25 KW at 1000 rpm. Power from the shaft is transmitted from the 20° spur pinion of a pitch circle diameter 200 mm which is mounted at 200 mm to the right of the left bearing to a gear such that tangential force on gear acts vertically upwards. Take the ratio of the belt tension is 3. Determine the standard size of the shaft based on maximum shear stress theory. Assume $C_m = 1.75$, $C_t = 1.25$. (20 Marks)

OR

- 6 a. Compare weight, strength and stiffness of hollow shaft of same external diameter of that solid shaft. The inside diameter being half the external diameter. Both the shafts have same material and length. (06 Marks)
- b. Design a cast iron flanged coupling for a steel shaft transmitting 100 KW at 250 rpm. Take the allowable shear stress for the shaft as 40 N/mm². The angle of twist is not to exceed 1° in a length of 20 diameters. Allowable shear stress for the bolts is 13 MPa. The allowable shear stress in the flange is 14 MPa for the key is 40 MPa. Allowable compressive stress in key is 80 MPa. (14 Marks)

Module-4

- 7 a. Explain in detail various possible modes of failure of riveted joint. (06 Marks)
- b. Design a double riveted butt joint with two equal cover plates for the longitudinal seam of a boiler shell 1.5 m in diameter subjected to a steam pressure of 0.95 N/mm². Assume an efficiency of 75% allowable tensile stress in the plate of 90 N/mm², allowable crushing stress of 140 N/mm² and an allowable shear stress in the rivet of 50 N/mm². (14 Marks)

OR

- 8 a. A bracket having a load of 15 kN is to be welded as shown in Fig.Q8(a). Find the size of weld required, if allowable shear stress is not to exceed 80 N/mm².

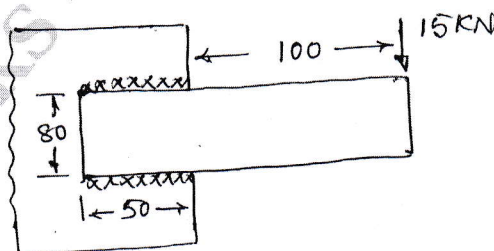


Fig.Q8(a)

(10 Marks)

- b. Determine the size of rivets required for the bracket shown in Fig.Q8(b). Take allowable shear stress of rivet material as 100 N/mm^2 .

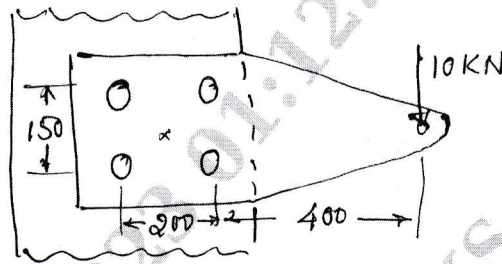


Fig.Q8(b)

(10 Marks)

Module-5

- 9 a. Obtain an expression for torque required to lift the load on a square threaded screw. (08 Marks)
- b. Design a socket and Spigot type cotter joint to sustain an axial load of 100 kN. The material selected for the joint has the following design stresses $\sigma_t = 100 \text{ N/mm}^2$, $\sigma_c = 150 \text{ N/mm}^2$ and $\tau = 60 \text{ N/mm}^2$. (12 Marks)

OR

- 10 a. Explain self locking and overhauling of power screw. (06 Marks)
- b. The cotter of a broaching machine is pulled by square threaded screw of 55 mm external diameter and 10 mm pitch. The operating nut takes the axial load of 400 N. On a flat surface of 60 mm and 90 mm internal and external diameters respectively. If the coefficient of friction is 0.15 for all contact surfaces, determine the power required to rotate the nut when the cutting speed is 6 m/min. Also find the efficiency of the screw. (14 Marks)

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18ME53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Dynamics of Machines

Time: 3 hrs.

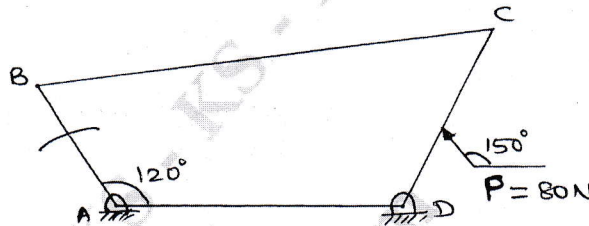
Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 A four bar mechanism with the following dimensions is acted upon by a force 80N, 150° on the link DC. Determine the input torque on the link AB for the static equilibrium of the mechanism for the given configuration Fig. Q1. AB = 400mm, BC = 1000mm, CD = 750mm and DE = 350mm, AD = 500mm. (20 Marks)

Fig. Q1



OR

- 2 a. State the condition of equilibrium of a body subjected to a system of
i) Two force ii) Three force iii) Two force and a torque. (06 Marks)
b. In a vertical engine, the length of connecting rod is 4.5 times the crank. The mass of reciprocating parts is 120kg and the crank length is 220mm. The engine runs at 250 rpm. The load on the piston due to steam pressure is 25 kN, when the crank has turned through an angle of 120° from the top dead centre. Determine i) Net effective driving force on the piston ii) Thrust on connecting rod iii) Thrust on the bearings iv) Turning moment on the crank shaft. (14 Marks)

Module-2

- 3 a. Explain Static and Dynamic balancing of rotating masses. (04 Marks)
b. Four masses A, B, C and D carried on a shaft at radii 100mm, 125mm, 200mm and 150mm respectively. The planes at which masses are rotating are placed 600mm apart. The mass B, C and D are 10kg, 5kg and 4kg respectively. Find the mass of A and relative angular position of the four masses so that the shaft will be in equilibrium. (16 Marks)

OR

- 4 The firing order in a six cylinder four stroke in line engine is 1 - 4 - 2 - 6 - 3 - 5. The piston stroke is 100mm and length of each connecting rod is 200mm. The pitch of the cylinder centre lines are 100mm, 100mm, 150mm, 100mm and 100mm respectively. The reciprocating mass per cylinder is 1kg and the engine runs at 3000 rpm. Determine the unbalanced primary and secondary forces and couples, if any. Take central plane of the engine as reference plane. (20 Marks)

Module-3

- 5 a. Derive the expression for speed of a Porter Governor with usual notations, taking friction into account. (08 Marks)

Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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- b. The upper arms of a Porter Governor has lengths 350mm and are pivoted on the axis of rotation. The lower arms have lengths 300mm and are attached to the sleeve at a distance of 40mm from the axis. Each ball has a mass of 4 kg and mass on the sleeve is 45kg. Determine the equilibrium speed for a radius of rotation of 200mm and find the effort and power of governor for 1% speed change. (12 Marks)

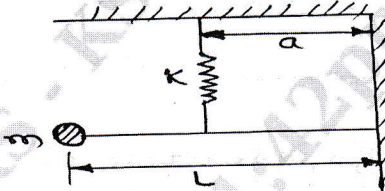
OR

- 6 a. Explain the effect of gyroscopic couple on an Aeroplane. (06 Marks)
 b. The turbine rotor of a ship has a mass of 3500kg. It has a radius of gyration of 0.45m and a speed of 3000 rpm clockwise when looking from stern. Determine the gyroscopic couple and its effect upon the ship.
 i) When the ship is steering to the left on a curve of 100m radius at a speed of 36km/hour.
 ii) When the ship is pitching with SHM the bow falling with its maximum velocity. The period of pitching is 40 sec and the total angular displacement between the two extreme position of pitching is 12° . (14 Marks)

Module-4

- 7 a. Define the following with respect to vibration : i) Degrees of freedom ii) Amplitude iii) Resonance iv) Natural frequency v) Damping factor. (10 Marks)
 b. Determine the natural frequency of the system shown in Fig. Q7(b) by Newton's and Energy method. (10 Marks)

Fig. Q7(b)



OR

- 8 a. Set up the differential equation for a spring mass damper system and obtain complete solution for the critically damped condition. (10 Marks)
 b. A vibrating system having a mass of 3kg, spring stiffness of 100 N/mm and damping coefficient of 3 N-S/m. Determine damping ratio, damped natural frequency, logarithmic decrement, ratio of two consecutive amplitudes and number of cycles after which the original amplitude is reduced to 20%. (10 Marks)

Module-5

- 9 a. Define "Transmissibility". Derive an expression for force transmissibility. (10 Marks)
 b. A 35kg block is connected to a support through a spring of stiffness 1.4×10^6 N/m in parallel with dashpot of damping coefficient 1.8×10^3 N-S/m. The support is given a harmonic displacement of amplitude 10mm at a frequency of 35Hz. Compute the steady state amplitude of the absolute displacement of the block. (10 Marks)

OR

- 10 a. Derive an equation for steady state amplitude for forced vibration with rotating unbalance. (10 Marks)
 b. A rotor has a mass of 12kg and is mounted midway on a 24mm diameter horizontal shaft supported simply at the ends by two bearings. The bearings are 1m apart. The shaft rotates at 2400 rpm. If the centre of mass of the rotor is 0.11mm away from the geometric centre of the rotor due to manufacturing defect, find i) the amplitude of the steady state vibration ii) the dynamic force transmitted to the bearing. Take $E = 200$ GPa. (10 Marks)

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Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Fluid Power Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With a block diagram, explain hydraulic system. (07 Marks)
b. Give the differences between hydraulic system and pneumatic system. (07 Marks)
c. Explain Pascal's law. (06 Marks)

OR

- 2 a. With the help of sketch explain filter position in a hydraulic system. (07 Marks)
b. With a neat sketch, explain water cooled heat exchanger. (07 Marks)
c. Write a note on Seals. (06 Marks)

Module-2

- 3 a. With a neat sketch, explain internal gear pump. (07 Marks)
b. A pump having a displacement volume of 90cm^3 delivers $0.082\text{m}^3/\text{min}$ at 1000rpm and 6.9MPa. If the input torque is 102Nm. Find
i) Overall efficiency of the pump
ii) Theoretical torque required to operate the pump (07 Marks)
c. With a neat sketch, explain diaphragm type gas loaded accumulator. (06 Marks)

OR

- 4 a. With a neat sketch, explain hydraulic cylinder cushioning. (07 Marks)
b. A hydraulic motor has a 100cm^3 volumetric displacement. If it has a pressure rating of 140 bars receives oil from a $0.001\text{m}^3/\text{s}$ theoretical flow rate pump, find motor
i) Speed
ii) Theoretical torque
iii) Theoretical power (08 Marks)
c. With a neat sketch, explain rotary actuator. (05 Marks)

Module-3

- 5 a. With a sketch, explain 3 position 4 way direction control valve. (08 Marks)
b. Explain working of unloading valve (07 Marks)
c. Explain working of shuttle valve. (05 Marks)

OR

- 6 a. With the help of circuit diagram, explain sequencing of cylinder. (08 Marks)
b. Explain metering in and metering out circuits. (12 Marks)

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Module-4

- 7 a. List the advantages, disadvantages and applications of Pneumatic system. (08 Marks)
b. With a neat sketch, explain F.R.L unit in a pneumatic system. (12 Marks)

OR

- 8 a. With a neat labelled sketch explain parts of pneumatic double acting cylinder. (07 Marks)
b. With a neat sketch, explain quick exhaust valve. (07 Marks)
c. Explain working of reciprocating air compressor. (06 Marks)

Module-5

- 9 a. With circuit diagram, explain indirect control of single acting cylinders. (08 Marks)
b. Explain 'OR' and 'AND' logic gates. (08 Marks)
c. Write a note on pneumatic throttle valve. (04 Marks)

OR

- 10 a. Explain with circuit coordinated cylinder movements. (10 Marks)
b. With a neat sketch, explain solenoid controlled direction control valve. Mention advantages. (10 Marks)

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Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Operations Management

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Operation Management. Explain in brief the functions of operations managements. (10 Marks)
- b. Define Productivity. Explain the factors affecting productivity. (10 Marks)

OR

- 2 a. A glass firm developing a substantial back log of orders is considering three courses of action
 - i) Arrange for sub contracting
 - ii) Begin overtime production construct new facilities

The correct choice depends largely on future demand, which may be low, medium (or) high. By consensus, management ranks the respective probabilities as 0.10, 0.50 and 0.40. A cost analysis reveals the effect on profits as shown below :

Course of action	Profit (in thousand R) if the demand is		
	Low (P = 0.1)	Medium (P = 0.5)	High (P = 0.4)
A. Arrange for sub-constructing	10	50	50
B-Begin over time	-20	60	100
C-construct new facilities	-150	20	200

- (12 Marks)
- b. Explain break-even analysis with necessary equations, graph and assumptions. (08 Marks)

Module-2

- 3 a. A company adopts method of least squares to develop a linear trend equation for the data as shown in the table below :

Year (X)	1	2	3	4	5	6	7	8	9	10	11
Shipment in tons (Y)	2	3	5	10	8	7	12	14	14	18	19

- Calculate the trend forecast for the year 12 and 20. (12 Marks)
- b. Explain the following forecasting methods :
 - i) Exponential smoothing
 - ii) Linear Regression (08 Marks)

OR

- 4 a. What is forecasting? List the steps involved in forecasting process. (10 Marks)
- b. A firm use simple exponential smoothing with $\alpha = 0.1$ to forecast demand. The forecast for the week of February 1 was 500 units, where as actual demand turned out to be 450 units.
 - i) Forecast the demand for the week of February 8
 - ii) Assume that the actual demand during the week of the February 8 turned out to be 505units. Forecast the demand for the week of February 15. Continue on forecasting through March 15, assuming the sub sequent demands were actually 516, 488, 467, 554 and 510 units. (10 Marks)

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Module-3

- 5 a. Explain the various factors that influence the location of plants. (10 Marks)
 b. Define the following :
 i) Design capacity
 ii) System capacity
 iii) Capacity planning
 iv) Facility layout (10 Marks)

OR

- 6 a. Sketch and explain any two types of layouts. (10 Marks)
 b. What is facility layout? What factors determines the types of layout used in an organization. (10 Marks)

Module-4

- 7 a. Define aggregate planning and master scheduling. Explain the pure strategies used for aggregate planning in brief. (10 Marks)
 b. List the common strategies used in aggregate planning. Explain any two. (10 Marks)

OR

- 8 a. What are the objectives and importance of aggregate planning? (10 Marks)
 b. Briefly explain the following with the help of a flow chart.
 i) Aggregate planning
 ii) Master scheduling (10 Marks)

Module-5

- 9 a. What are the benefits and limitation of MRP? (10 Marks)
 b. State the importance of purchasing and supply management. (10 Marks)

OR

- 10 a. Briefly explain the following :
 i) Vendor Development
 ii) E-procurement
 iii) Concept of tenders
 iv) The procurement process (10 Marks)
 b. Write a note on make or buy decision. (10 Marks)

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CBCS SCHEME

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Question Paper Version : C

Fifth Semester B.E Degree Examination, Jan./Feb. 2023

Environmental Studies

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **hundred** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

-
1. "Minamata Disease" is caused due to
a) Lead b) Arsenic c) Mercury d) Cadmium
 2. Alternative eco-friendly fuel for automobiles is
a) Petrol b) Diesel c) CNG d) Kerosene
 3. Population explosion will cause
a) Biodiversity b) Stress on ecosystem
c) More employment d) None of these
 4. Which of the following is having high population density?
a) India b) China c) USA d) Western Europe
 5. Demography is the study of
a) Animals behaviour b) Population growth
c) River d) None of these
 6. Forest are called as _____.
a) Air purifier b) Earth's lungs c) Oxygen reservoir d) CO₂ absorbers
 7. Which of the following is the facility that the urban people enjoy?
a) Better quality of air b) Better communication access
c) Large land at cheap rates d) None of these
 8. Which of the following is an air pollutant?
a) Carbon dioxide b) Oxygen
c) Nitrogen d) Particulate matter

9. Cyto toxic and expired drugs are disposed of by
a) damping
b) autoclave
c) incineration
d) chemical disinfection
10. The colour code of plastic bag for disposing of microbial laboratory culture waste.
a) Black
b) Red
c) Blue
d) White
11. Among the fresh water available in the earth the percentage of surface water is about
a) 50%
b) 10%
c) 5%
d) less than 1%
12. Hepatitis is caused by
a) Protozoa
b) Virus
c) Bacteria
d) Fungus
13. In India groundwater resources are rich in
a) Plains of river Kaveri and Krishna
b) The Deccan plateau
c) The Gangetic plains
d) The plains of Netravati and Kapila
14. The required iron content in drinking water as specified by BIS is
a) 300 mg/l
b) 30 mg/l
c) 3 mg/l
d) 0.30 mg/l
15. Molasses from sugar industry is used to generate
a) Biodiesel
b) Hydrogen
c) Bioethanol
d) Biomethanol
16. Wind Farms are located in
a) River basin
b) Plain area
c) Hilly area
d) Valley area
17. Biomass consists of
a) Lignin
b) Hemi cellulose
c) Cellulose
d) All of these
18. Natural gas contains
a) Carbon dioxide
b) Hydrogen
c) Methane
d) Nitrogen
19. Anti tobacco day is mentioned on
a) 31st May
b) 30st June
c) 31st July
d) 31st August
20. Population explosion will cause
a) Socio-Economic Problems
b) Food Scarcity
c) Energy crises
d) All of these
21. GIS stands for
a) Geostationary Interact Sector
b) Geographical Information System
c) Geotechnical Information Society
d) Geothermal Investigation Site
22. LPG is a mixture of
a) N₂ and H₂S
b) CO₂ and N₂
c) Propane and butanes
d) Methane and CO₂

23. The Tiger Conservation Project was started in
a) 1973 b) 1975 c) 1981 d) 2000
24. The leader of "Chipko Movement" is
a) Sunderlal Bahuguna b) Medha Patkar
c) Vandana Shiva d) Mahatma Gandhi
25. Which of the following is the source of Fly-ash?
a) Vehicular exhaust b) Sewage
c) Thermal power plant d) All of these
26. The permissible range of pH for drinking water as per the Indian Standard is
a) 6 to 9 b) 6.5 to 8.5
c) 6 to 8.5 d) 6.5 to 7.5
27. Water logging is a phenomena in which
a) Water patterns are rotated
b) Soil root zone becomes saturated due to over irrigation
c) Erosion of soil
d) Soil degradation
28. Carbon content is higher in
a) Living matter b) Soil
c) Water d) Atmosphere
29. Springs means
a) Surface water b) Atmosphere water
c) Both (a) and (b) d) Ground water
30. Bio-remediation means deliberately introducing micro organisms to break pollutants.
a) Soil b) Waste water
c) Ground water d) Both soil and groundwater
31. Which of the following is a possible producer in an ecosystem?
a) Animal b) Plants c) Human beings d) Fish
32. The largest reservoir of nitrogen in our planet is
a) Oceans b) Biosphere c) Atmosphere d) Rivers
33. India has the world's largest share of which of the following
a) Manganese b) Mica c) Copper d) Diamond
34. Identify the non renewable source of energy from the following:
a) Coal b) Fuel cells c) Wind power d) Wave power
35. Which of the following terminologies is not associated with the vertical structure of forest?
a) Canopy b) Understory c) Forest floor d) First floor
36. Which of the following is cause of class of biodiversity?
a) Habitat degradation b) Invasion of non-native species
c) Pollution d) All of these

37. Air pollution from automobiles can be controlled by fitting
a) Electrostatic precipitator b) Cyclone separator
c) Wet collector d) Catalytic converter
38. When the solid waste consists of large amount of organic matter and if the moisture content is high, which of the following methods of treatment will be ideal?
a) Composting b) Palletizing
c) Incineration d) Recycling
39. Chernobyl Nuclear Disaster occurred in the year
a) 1984 b) 1985 c) 1986 d) 1987
40. The primary cause of acid rain around the world is
a) Carbon dioxide b) Sulphur dioxide
c) Carbon monoxide d) Ozone
41. Eutrophication is
a) an improved quality of water in lakes
b) a process in carbon cycle
c) the result to accumulation of plant nutrients in water bodies
d) a water purification technique
42. Primary consumer is
a) Herbivores b) Carnivores
c) Macro consumers d) Omnivores
43. Which among the following is a climatic factor?
a) pressure b) humidity
c) temperature d) all of these
44. Biodiversity can be broadly classified into how many types?
a) 2 b) 5 c) 3 d) 4
45. Hot spot areas have
a) Low density of biodiversity b) Only endangered plants
c) High density of hot springs d) High density of biodiversity
46. About _____ % of the earth's surface is covered by water.
a) 53% b) 19% c) 71% d) 90%
47. Deforestation means
a) preservation of forests b) destruction of forests
c) monocrop cultivation d) agriculture
48. When did National Disaster Management Authority formed?
a) 2000 b) 2005 c) 2010 d) 2015
49. Disaster is an event arising out of
a) result of hazard event b) causes of hazard event
c) causes of disaster event d) all of these
50. The scientific study of earthquake is called
a) seismograph b) seismology
c) both a and b d) none of these

51. World Environmental day is held every year on
a) June 5th b) October 2nd c) April 22nd d) November 1st
52. Ozone layer thickness is measured in _____
a) mm b) cm c) Dobson unit d) Db
53. First of the major environmental protection acts to be promulgated in India was
a) The Water Act b) The Air Act
c) The Environment Act d) Noise Pollution Rules
54. Blue baby syndrome is caused due to _____
a) Manganese b) Ozone c) Silver d) Nitrate
55. World Earth's day is annually celebrated on
a) April 22nd b) June 5th c) January 1st d) May 1st
56. The most important fuel used by nuclear power plant is
a) U-235 b) U-238 c) U-245 d) U-248
57. Which of the following is a biotic component of ecosystem?
a) Fungi b) Solar light
c) Temperature d) Humidity
58. Abiotic component includes
a) Soil b) Temperature
c) Water d) All of these
59. The word "Environment" is derived from
a) Greek b) French
c) Spanish d) English
60. Which of the following is absorbed by green plants from the atmosphere?
a) Carbon dioxide b) Water
c) Nutrients d) All of these
61. The Karnataka State Pollution Control Board (KSPCB) was established in the year.
a) 1974 b) 1982 c) 1973 d) 1983
62. Which of the following is not a part of the hydrological cycle?
a) Precipitation b) Infiltration
c) Transpiration d) Perspiration
63. First International Earth Summit was held at
a) USA b) Russia
c) Rio-de-Janeiro d) Johannesburg
64. Which among the following has highest percentage of calorific value?
a) Anthracite b) Peat
c) Lignite d) Bituminous coal
65. Nitrogen fixing bacteria exists in
a) Leaf b) Stem
c) Roots d) Flower

66. The two major components of ecosystem are
a) Adiabatic and isotropic
b) Ecologic and climatologic
c) Cyclic and biologic
d) Abiotic and biotic
67. Geothermal energy is a
a) Heat energy
b) Wind energy
c) Current energy
d) Solar energy
68. The average life expectancy around the world is currently.
a) Decreasing
b) Increasing
c) Stabilizing
d) Not changing
69. The universal declaration of Human Rights was proclaimed by the UN in the year.
a) 1946
b) 1947
c) 1948
d) 1949
70. The objective of Integrated Child Development Service (ICDS) are
a) Immunization
b) Health check up and referral services
c) Pre-school non formal education
d) All of these
71. South Africa is leading exporter of which mineral?
a) Copper
b) Diamond
c) Silver
d) Gold
72. The word 'sustainable development' came into existence in the year.
a) 1992
b) 1978
c) 1980
d) 1987
73. The other word of landscaping is
a) Reduction
b) Restoration
c) Removing topsoil
d) Restore
74. Cloud seeding with silver iodide is based on the
a) Bergeron process
b) Collision-coalescence process
c) Both a and b
d) None of these
75. Environmental pollution is due to
a) Rapid urbanization
b) Deforestation
c) Afforestation
d) a and b
76. The liquid waste from bathroom and kitchen is called
a) Sullage
b) Domestic sewage
c) Storm water
d) Runoff
77. BOD means
a) Biochemical Oxygen Demand
b) Chemical oxygen demand
c) Biophysical Oxygen Demand
d) All of these
78. Which of the following source is surface water?
a) Springs
b) Streams
c) Deep wells
d) All of these
79. Which of the following is biodegradable?
a) Plastics
b) Domestic sewage
c) Detergents
d) a and c

80. Blaring sounds known to cause
 a) Mental distress
 b) High cholesterol
 c) Neurological problems
 d) All of these
81. In geosynchronous orbit altitude of the satellite is about
 a) 36,000 kms
 b) 10,000 kms
 c) 50,000 kms
 d) None of these
82. The Air (Prevention and Control of Pollution) Act was enacted in the year.
 a) 1987
 b) 1981
 c) 1991
 d) 1988
83. Kudremukh Iron ore mine, Karnataka was closed due to
 a) River pollution and threat to biodiversity
 b) Land encroachment
 c) Radioactive hazards
 d) Serious health hazard
84. On the eve of Gandhi Jayanthi which andolan was launched by our Honorable Prime Minister
 a) Swadeshi
 b) Sarvashikshana Abhiyana
 c) Suvarnagrama
 d) Swach Bharath
85. An international agreement signed in the year 1987, to protect stratospheric ozone is known as
 a) Montreal protocol
 b) Kyoto protocol
 c) Earth summit
 d) None of these
86. The explosion of First Atomic Bomb was done in Hiroshima and Nagasaki in
 a) 1946
 b) 1986
 c) 1945
 d) 1947
87. A dangerous pesticide which has been reported to cause physical deformities to people of Kerala and Karnataka states
 a) Endosulfan
 b) Fluorides
 c) DDT
 d) Dioxygene
88. Visible portion of EMR ranges between
 a) 0.4 - 0.76 μm
 b) 10.5 - 12.5 μm
 c) 8.0 - 14.0 μm
 d) None of these
89. Data representation in Raster data is by
 a) pixel
 b) points, lines and polygon
 c) latitude and longitude
 d) none of these
90. In water treatment, alum is used for
 a) softening
 b) coagulation
 c) filtration
 d) disinfection
91. Which of the following element make e-waste hazardous in nature?
 a) Land
 b) Glass
 c) Plastic
 d) Iron
92. What is the hazardous pollutant released from batteries?
 a) Arsenic
 b) Barium
 c) Cobalt
 d) Cadmium
93. What is the term used for reuse of sewage sludge?
 a) Compost
 b) Solids
 c) Biosolids
 d) Sludge

94. Reduction in brightness of the famous Taj Mahal is due to
a) Global warming
b) Air pollution
c) Ozone depletion
d) Afforestation
95. E.I.A. can be expanded as
a) Environment and Industrial Act
b) Environment of Impact Activities
c) Environmental Impact Assessment
d) Environmentally Important Activity
96. Organic Farming is
a) Farming without using pesticides and chemical fertilizer
b) Enhances biodiversity
c) Promotes soil biological activity
d) All of these
97. Bio-remediation means the removal of contaminants from
a) Soil
b) Wastewater
c) Groundwater
d) Both soil and ground water
98. Plants use _____ gas for photosynthesis.
a) Oxygen
b) Methane
c) Nitrogen
d) Carbon dioxide
99. What is the maximum allowable concentration of fluorides in drinking water?
a) 1.0 mg/l
b) 1.25 mg/l
c) 1.50 mg/l
d) 1.75 mg/l
100. Forest rich area in Karnataka is found in _____.
a) Western Ghats
b) Bandipur
c) Nagarhole
d) Mangalore
