# Please check that this question paper contains 9 questions and 3 printed pages

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[Total No. of Questions:09]

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Program: **B. Tech** Semester: **6**<sup>TH</sup>

Name of Subject: Engineering Economics, Estimation and Costing

Subject Code: PCCE-110

Paper ID: 16387

Time Allowed: 03 Hours

Max. Marks: 60

### NOTE:

1) Parts A and B are compulsory

2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice

3) Any missing data may be assumed appropriately

Part - A

[Marks: 02 each]

Q1 a) How is National income calculated?

b) You are reviewing a project and have estimated the following cash flows:

Year 0: CF = -215,000

Year 1: CF = 72,300; NI = 15,700

Year 2: CF = 83,700; NI = 5,900

Year 3: CF = 97,250; NI = 25,800 Average

Book value = 77000

Your required return for asset of this risk level is 12.5%

Will you accept or reject the project based on NPV.

c) What are the limitations of CPI.

d) Perform a rate analysis for earthwork in excavation in trenches for ordinary soils not exceeding 1.5 m in depth with normal lead and lift.

e) Total quantity of R.C.C work for a slab of two room building is calculated as 8cu.m. estimate the quantity of steel required.

f) State the units of measurements and payments for the following items of materials:

(i). Supply of bricks.

(ii). Supply of Sand.

(iii). Supply of Cement.

(iv). Supply of Steel

Part - B

[Marks: 04 each]

Q2. Define GDP. How it is different from GNP. What are the components of GDP and how it is calculated?

Q3. Write short notes on:

(i) Direct and indirect cost

(ii) Depreciation

Q4. Write down the detailed specifications for Water Bound Macadam layer including physical properties of materials and construction process.

Q5. Calculate the cost of transport of 1800 cu.m of stone ballast from a distance of 25 km by truck carrying 3 cu.m per trip. The rate of carriage including loading and unloading being:

1<sup>st</sup> km

Rs. 55 per cu.m

2-5 Km

Rs. 15 per cu.m

6-10 Km

Rs. 10 per cu.m.

11-20 Km

Rs. 8 per cu.m

21-25 Km

Rs. 7 per cu.m

## **EVENING**

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- Q6. Perform the Rate analysis for plain cement concrete 1:1.5:3 including mixing, laying Consolidating and curing.
- Q7. Prepare bar bending schedule for a square column with an isolated footing from the following data:

Size of column = 500 mm x 500 mm

Depth below G.L = 1m

Plinth level = 30 cm above G.L

Height of column = 3.5 m

Column Reinforcement:

Longitudnal bars = 20 mm dia. Bars 8 nos

Lateral ties = 8 mm dia@ 300 mm/c/c (Double Ties)

Footing Details:

Size of footing = 3.0 m X 3.0 m

Thickness of footing at free end = 30 cm

Thickness of footing at free column face = 70 cm

Base reinforcement = 12 mm dia @ 200 mm c/c bothways.

Part - C

[Marks: 12 each]

- Q8. The plan and section of one room building is shown in fig. 1
  - (a) Earthwork in excavation for foundation.

(b)Earthwork in plinth filling

- (c) Cement concrete (1:5:10) in foundation
- (d) First class brickwork in cement mortar (1:6) for foundation and plinth.
- (e) First class brickwork in superstructure.

#### OR

Estimate the quantities of earthwork and turfing for a portion of a road from the following data.

Chainage(m)	0m	30m	60m	90m	120m	150m	180m
R.L of ground	102.00	102.35	102.60	102.80	103.00	102.65	102.20
R.L of			101.80				
formaton					*		
Chainage(m)	210m	240m	270m	300m	330m	360m	
R.L of ground	101.50	101.20	100.65	100.35	100.60	100.75	

The road is in Rising gradient of 1 in 200 upto 180 m and then falling gradient of 1 in 120. Formation width of road is 12 m. Side slopes are 1.5:1 in cutting and 2:1 in banking. Also draw the longitudinal section for this section of proposed road.

- Q9(a) You are chief Engineer of P.W.D (B&R), Publish a tender for construction of a civil hospital building in City of Moga.
- (b) What is Arbitration? Discuss different types of arbitration according to Arbitration Act. What are the main advantages of arbitration over a court decision.

OR

Q9. Write short notes on:

(i) Workmen compensation act

(ii)Break even analysis

- (iii) Contract most favoured in government departments
- (iv) Workcharged Establishment.

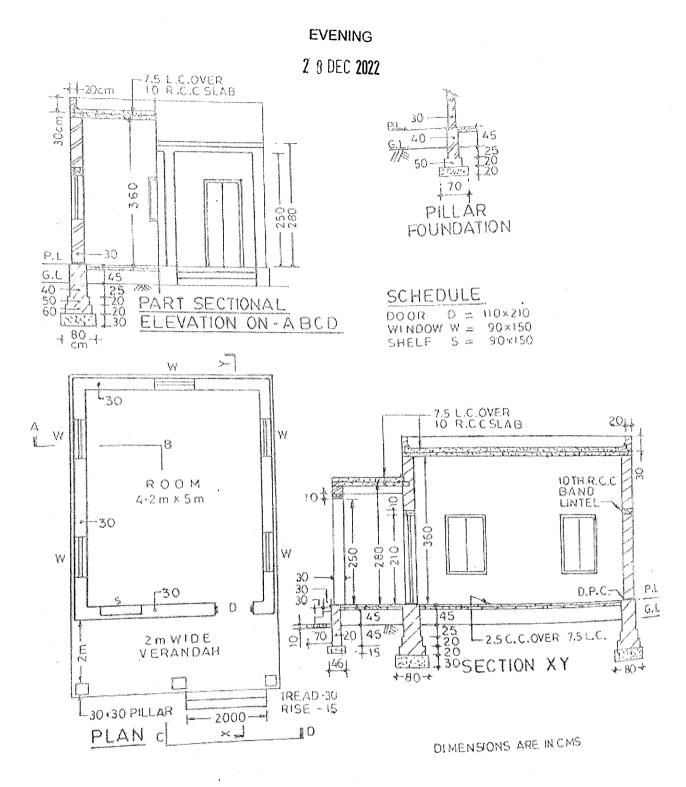


Fig.1