Model Answer: WINTER 2016

Subject: Contracts and Accounts   **Subject Code: 17603**

Important Instructions to examiners:

1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
3) The language errors such as grammatical, spelling errors should not be given more importance. (Not applicable for subject English and Communication Skills.)
4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by the candidate and those in the model answer may vary. The examiner may give credit for any equivalent figure drawn.
5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and the model answer.
6) In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidate's understanding.
7) For programming language papers, credit may be given to any other program based on equivalent concept.

Model Answer

Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.1	**a)**	**Attempt any THREE of the following:**		**12**
	i) **Ans.**	**Define contract. Enlist the objects of the contract.** **Definition:** Contract is an undertaking by person or firm to do work under certain terms and conditions. **Objects of contract :** 1. To execute the work by experienced persons. 2. To execute the work with most competitive rate. 3. To do work as per specification. 4. To use latest machineries and techniques. 5. To have free hand for a supervisor to check the work done by contractor without interference	**1 Mark** **1 Mark each (Any three)**	**4**
	ii) **Ans.**	**State the factors affecting value.** **The factors affecting value of a property are:** i. Forces of demand and supply:. ii. Cost of construction: iii. Increase in population:. iv. Riots, war, flood and other natural calamities: v. Improvement of Public schemes: vi. Interest on Banks: vii. Cost of labour. viii. Inflation. ix. Monopoly of a property in market. x. Location of property. xi. Returns from property. xii. Life and age of building.	**1 Mark each (Any Four)**	**4**

Que. No.	Sub. Que.	Model Answers		Total Marks
Q.1	**iii)**	**Name any four types of contract. Explain lumpsum contract in detail**		
	Ans.	**Types of contract:**		
		i) Lump sum contract.		
		ii) Item rate contract.		
		iii) Percentage rate contract.	**½ Mark each (Any Four)**	
		a) Cost plus percentage rate contract.		
		b) Cost plus fixed fee contract.		
		c) Cost plus variable fee contract.		
		d) Cost plus variable percentage.		
		iv) Labour contract.		
		v) Demolition contract.		
		vi) Fee contract.		
		vii) Target contract.		
		viii) Negotiated contract.		**4**
		ix) Material supply contract.		
		Lumpsum Contract :		
		• In a lumpsum contract, the contractor undertakes to carry out the work as per the drawing, design and specification supplied to him for a fixed lumpsum amount.		
		• Sometimes, the contractor may quote the rate per cubic meter or per square meter of built area or carpet area.		
		• Regarding the payment, the contractor will be paid at regular intervals of 2-3 months as per the progress of work. On the basis of interim certificate issued by the engineer in charge, the payment will be made.	**2 Marks**	
		• A list of schedule of various items of work is provided in the contract. If any additions and alteration are carries over by the department, the contractor will be paid extra as per this schedule of rates.		

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.1	**iv) Ans.**	**Explain earnest money deposit and security deposit.** **Earnest money deposit:** While submitting tender contractor has to deposit certain amount about 1 to 2% of estimated cost with department. This amount is termed as earnest money deposit. It ensures guarantee of the tender, so that contractor may not refuse to accept work or run away when his tender is accepted. **Security deposit:** After acceptance of tender, contractor has to deposit a certain amount with the department or owner is called as security deposit, it varies from5 to 10% of total estimated cost of work.	**2 Marks** **2 Marks**	**4**
	v) Ans.	**What is NMR? Draw its standard format.** **NMR**: The muster roll which is maintained to keep the record of works being done by a labour employed on each day is called as Nominal Muster Roll. **Format of NMR:**	**2 Marks** **2 Marks**	**4**

Form No. 21 – Muster Roll

Cash book voucher No. ...Date

Name of work ...

Part I – Nominal Roll

Category of labour	Sl. No	Name	Father's name	Date ... Month						Total	Rate Rs. P.	Amount Rs. P.	Dated initial of paying officer
				1	2	3	4	5	6				
Daily Total ...													
Initial of person making daily attendance													
Initial of inspecting officer													

Passed for Rs. (Rupees ...)

Signature ...   Rank ...

Grand total of muster roll ...   Rs.   P.

Deduct – payment not made as per details   ...   ...

Transferred to register of arrears ...   .

Total amount paid in words rupees   ...   ...

Date .... Signature ... Rank ...

Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.1	**b) i)** **Ans.**	**Attempt any <u>ONE</u> of the following:** **Draw the organization chart of P.W.D. state the functions of any four personnel.** **i. Function of Chief Engineer :** 1. To give administrative approval of work under his control . 2. Acceptance of tender under his control. 3. Sanction deposit work, full powers. 4. Purchase of live stock Rs.30,000/- at only one time. 5. He prepares the budget estimates annually relating to the work under his control. 6. To keep close watch over progress of work and expenditure against it. **ii. Functions of superintending engineer (SE) :** He is responsible for execution of work in his circle. **Functions:** 1.Administrative approval to the work under his control. 2.He should give technical sanction to estimate within his power, 3.Technical sanction under his control. 4.Inspect work in his circle. 5.Arrange payment of store and material. 6.Inspect division in his circle and report to chief engineer. 7.To check progress of work under his circle. 8.Financial control over execution of original repair work. **Function of Executive engineer / Divisional officer (EE) :** i. Inspect sub divisional office once in a year ii.Execution of work under him. iii.Ensures all tools plants and machinery are properly maintained. iv.Invite tender for work valued within his power	**2 Marks** **2 Marks**	**6** **6**

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.1	**i)**	v.Maintenance of accounts.		
		vi.He is responsible for preparation of project design, estimate etc.		
		vii.Keep close watch on expenditure.		
		Functions of Assistant engineer / SDE / SDO :		
		Assistant engineer is responsible to executive engineer for execution of work in sub division.		
		i.Execution of work		
		ii.Check muster roll		
		iii.Physical verification of measurement book and dead stock.		
		iv.To ensure correct accounts, returns submitted punctually to divisional office.		
		v.Submit monthly report to progress of work to divisional officer.		
		Administrative control over office and field staff division		
		Functions of junior engineer (JE).		
		i.Supervision of work in his charge.		
		ii.Maintain attendance of daily worker, labours.		
		iii.Taking measurement of all work in MB.		
		iv.Preparation of bills running and final bills for work in his charge.		
		v.Prepares estimates for all types of works in his section.		
		vi.Carry out field survey for proposed project.		
		vii.Carry out half yearly check of all stores in his charge and submit report to SDO.		
		viii.Report to higher authorities for irregularities in contract, specification,		
		ix.Shortage of supply of department materials or any difficulty during execution.		
		(Note-½ Mark for each personnel. Only one function)		
	ii)	**Explain the procedure of submitting filled tender documents by the contractor.**		
	Ans.	**Following is the procedure of submitting filled tender documents by the contractor:**		
		The contractor is required to submit their tenders on or before the date and time mentioned by department / authority in sealed envelope.	**1 Mark**	
		Tenders are submitted in envelopes marked as 1, 2, 3 and 4.		
		(1) Envelope 1:		
		Envelope 1 contains earnest money deposit in the form indicated in the notice of invitation to tender.	**1 Mark**	**6**
		(2) Envelope 2 : It contains :		
		a. Income tax clearance certificate.		
		b. Solvency certificate from bank.		
		c. Certificate of registration as contractor.		
		d. Details of technical personal as contractor.		
		e. List of work of similar nature and magnitude carried out by tenderer.	**2 Marks**	
		f. Details of plants and machinery available.		
		g. Complete details of work in hand at the time of submission of Tender.		

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.1	**b)**	h. Details about firm. i. Covering letter to tender. **(3) Envelope 3:** This envelop contain the priced tender form **(4) Envelope 4 :** This envelop contains all above three envelopes and it is property sealed and endorsed on outside face tender for name of project.	**1 Mark** **1 Mark**	
Q.2 **a)** **Ans.**		**Attempt any FOUR of the following:** **State the necessity and importance of specification of an item.** **The necessity of specification:** 1. To give the required information for an item of work. 2. To help the contractor in giving necessary quotation for work. 3. To carry out supervision work effectively during construction. 4. For necessary execution of the work. 5. It protects the owner from any damage due to bad workmanship or low quality of material. 6. Witness in the court to settle the disputes. 7. To avoid extra items. **Importance of specification :** 1. The cost of a unit quantity of work is governed by its specification. Specification specifies method of doing work; thus specification serves as a guide to the supervising staff. 2. Contractor is paid only when the work is carried out according to the specification. 3. Any changes in specification changes the tendered rate. 4. Tender paper without specification is incomplete and invalid.	 **1 Mark each (Any Two)** **1 Mark each (Any Two)**	**16** **4**
	b) **Ans.**	**Differentiate between item rate contract and percentage rate contract.**	**1 Mark each**	**4**

Sr. No.	Item rate contract	Percentage rate contract
1	In this contract, the contractor agrees to work as per the rates quoted by him for each item.	In this contract, the contractor agrees to carry out the work at a certain percentage below or above the estimated cost.
2	This is useful when the quality of work is required and also quantities of work to be executed are not known previously.	This is useful for the work of all nature with no item-wise rates.

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.2				

3	Suitable for most of public works executed by government departments.	Suitable for all type of government as well as private.
4	It is difficult to prepare comparative statement.	It is easy to prepare comparative statement.

c)
Ans.
Explain schedule A. Draw its tabular form.
Schedule A: It gives the list of materials to be supplied by the department to the contractor. Departmental materials as mentioned in this schedule are issued to the contractor from time to time as per requirement to keep up the progress of work.

2 Marks

The schedule is usually in the following proforma :
Schedule 'A'

Serial No.	Particular of Materials	Approximate Qty.	Issue Rate	Place of Delivery

2 Marks

4

d)
Ans.
What do you mean by cost, price and value?
Cost: It is the original cost of construction i. e. cost of material and labour.
Price: It is the amount of money paid to the seller by the purchaser of the property.
Value: It is the present market value which may not be necessary same as that of cost of an item. It may be higher or lower than cost.

4 Marks

4

e)
Ans.
State the conditions when lowest tender is rejected.
The following are the conditions when the lowest tender is rejected;
1. When tender is not submitted in particular form sold by department.
2. The lowest tenderer may lack in experience for work.
3. Earnest money is not enclosed along with tender.
4. Unsatisfactory reputation of lowest tender.
5. In adequate finance to execute work.
6. Inadequate connection of fair rates is not received.
7. Tender is not signed by contractor.
8. If any page is removed from document.
9 If contractors is black listed by any department.

1 Mark each (Any Four)

4

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.2	**f)** **Ans.**	**Define arbitration. State qualities of arbitrator.** **Definition:** During execution of work owner and contractor may come across situations where disputes may arise. The process of settling the dispute between owner and contractor is called as arbitration.	**1 Mark**	
		The qualities of arbitrator are as follows: i. The arbitrator should be a person having experience of work. ii. He should have in depth knowledge of work. iii. He should know rules, procedures of law. iv. Main thing is he should be impartial and acceptable to both parties.	**1 Mark each (any three)**	**4**
Q.3		**Attempt any FOUR of the following:**		**16**
	(a)	**Define the terms:** **(i) Administrative approval** **(ii) Technical sanction**		
	Ans.	i. **Administrative approval:** For any work, it is necessary to take formal acceptance with respect to cost and work is called as administrative approval. For this the department sends a proposal to government for taking up the work. After considering all aspects like feasibility of project, financial aspect, government accepts proposal.	**2 Marks**	
				4
		ii. **Technical sanction:** Technical sanction means the sanction of the detailed estimate, design, rates and cost of work. It is sanctioned by competent authority. The work is taken for the execution only after the technical sanction.	**2 Marks**	
	b) **Ans.**	**Define Valuation. Write down its necessity.** **Valuation-** Valuation is a branch of quantity surveying which deals with the art of assessing the present fair value of a property. Valuation of a property such as a land, building, factory etc. is necessary for the following purposes. **Necessity:** i. Buying and selling the property. ii. Taxation. iii. Rent fixation. iv. Security of loans or mortgage. v. Compulsory acquisition. vi. Insurance. vii. Wealth tax and estate duty. viii. Assessment of stamp fees. ix. Gift tax. x. Partition.	**1 Mark** **1 Mark each (any three)**	**4**

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.3	**c)**	**State the advantages and disadvantages of cost plus percentage rate contract.**		
	Ans.	**Advantages of Cost plus percentage rate contract:**		
		i. Extra item is allowed	**1 Mark each (any Two)**	**4**
		ii. Suitable for private work		
		iii. Early completion of work is possible		
		iv. Quality of work is assured		
		Disadvantages of Cost plus percentage rate contract:		
		i. Total cost of work is not known before completion of work.	**1 Mark each (any Two)**	
		ii. Not suitable for government work		
		iii. No incentive for contractor for early completion of work		
		iv. Contractor may produce fictitious bill		
	d)	**Give the meaning of 'defect liability period' and 'liquidated damages'.**		
	Ans.	**(i) Defect liability period:**		
		It is the period during which any defect in the work is noticed, and then contractor has to rectify this defect at his cost up to the satisfaction of site engineer.		
		The period is usually first monsoon season, or six months after the virtual completion of the work later.	**2 Marks**	
		(ii) Liquidated damages:		**4**
		Liquidated damage is an amount of compensation payable to owner by contractor due to delay in construction of work it has no relation with actual damage.		
		The amount of compensation ranges from Rs. 50 to Rs. 400 per day of delay for excess period required for completion of work than specified in contract.		
		liquidated damages are not recovered due to	**2 Marks**	
		(1) Delay in giving possession of land.		
		(2) Time limit is not mentioned in contract.		
		(3) Delay due to extra items of work.		
	e)	**Define 'depreciation'. What are the different methods of calculating depreciation? Explain any one.**		
	Ans.	**Depreciation:** Depreciation may be defined as a loss in value or utility of property. The loss is due to wear and tear, decay, inadequacy and obsolescence.	**1 Mark**	
		Methods of calculating depreciation		**4**
		i. Straight line method	**1 Mark (any Two)**	
		ii. Constant percentage method or declining Balance method		
		iii. Sinking fund method		
		iv. Quantity survey method.		

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.3		**i. Straight line method:** Assumption of this method is that the property loses its value by the same amount every year. A fixed amount of the original cost is deducted every year. So that at the end of utility period only the scrap value is left. Annual depreciation (D) = (Original cost - Scrap value) / (Life in years) $D = (C - S) / N$ **ii. Sinking fund method:** In this method, the depreciation of the property is assumed to be equal to the annual sinking fund plus the interest on the fund for that year, which is supposed to be invested on interest being investment. **iii. Constant percentage method:** In this method it is assumed that the property will lose its value by a constant percentage of its value at the beginning of every year. Depreciated factor (D) = 1 - (S/ C) 1/n **iv. Quantity survey method:** In this method, the property is studied in detail and loss in value due to life, wear and tear, decay, obsolescence etc. is worked out. Each and every step is based on some logical ground without any fixed percentage of the cost of property. Only experienced valuer can work out the amount of depreciation.	**2 Marks (any One)**	
Q.4	**a) i)** **Ans.**	**Attempt any THREE of the following:** **Differentiate between brief specification and detailed specification.**	**1 Mark each**	**12**

Sr. No.	Brief specification	Detailed specification
i.	The specification which gives the brief description of various items of work.	The detailed specification describes the item of work in details.

Que. No.	Sub. Que.			Model Answers		Marks	Total Marks
Q.4	**a)**		ii	Brief specification specifies the materials, quantities, proportion of materials	The specification in which detailed information of the various quantities of materials, procedure of workmanship to be adopted.		**4**
			iii	It gives general idea about the whole work	It gives nature and class of work in detail.		
			iv	The general specification used for estimating the project is the brief specifications.	The details specification describes the item of work accurately and complete in all respects in relation to the drawings of the work.		
	ii) **Ans.**			**Explain 'secured advance' and 'retention money'.** **(i) Secured Advance**: An advance payment made to the contractor on the basis of the security of materials brought by the contractor to the site of work under constructions called as Secured Advance. The amount of secured advance should not be more than 75% of the cost of materials brought by the contractor to the site. For Lime, surkhi, sand, kankar, etc are considered as perishable materials hence no advance is permissible for these materials. Detailed amount of advance is kept in form 26-A and is attached to R/A bill.		**2 Marks**	**4**
				(ii) Retention money: Some amount is to be hold from the security deposit of contractor by the Engineer-in-charge, when there is any claim for the payment arises out of or under the contract against the contactor is called as "Retention Money". Retention money has no relation with the maintenance period or defect liability period and it can be released after completion of work.		**2 Marks**	
	iii) **Ans.**			**Explain any four situations when the contract is terminated.** **The situations when the contract is terminated:** 1) Contract is terminated by employer due to change in policy, non-availability of work site or any other administrative reasons before the starting of work. 2) The contract can be terminated by competent authority in bankruptcy of the contractor or death of contractor. 3) The contract can be terminated due to conditions beyond the control of contractor to perform work. Example-Earthquake, Flood etc. 4) The contract can be terminated by mutual agreement between owner and contractor and contractor is paid for work done.		**1 Mark each**	**4**

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.4	**iv)**	**Explain 'BOT' projects with one example.**		
	Ans.	**B.O.T**- B.O.T. is a form of project where government grants permission to private firm to construct and administrate certain public infrastructure by financing and authorizing them to pay off loans reclaim investment by allowing them to collect tools, fees, rent as stated in contract and after concession period is over, ownership is transferred back to government. It encourages private investment. It promote foreign investment, techniques and technology in country. **Examples:** i) Mumbai – Pune express highway ii) Baroda – Ahmadabad highway (NH8). iii) Nagpur Express highway (NH50)	**3 Marks** **1 Mark**	**4**
	b) **i)**	**Attempt any ONE of the following:** **Calculate value of a property constructed in 2106. Present cost of construction 10 lacs, monthly rent is Rs. 6000/- outgoing 25%, life 60 years, rate of interest 6%.**		**6**
	Ans.	**Method -1** **Given:** Present cost -Rs1000000/- Monthly rent – Rs. 6000/- Outgoing – 25 % Life of building – 60 years Rate of interest – 6 %		

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks

Q.4	**b)** **Ans.**	1) Total gross Annual income = Monthly rent X 12
		     = 6000 x 12
		     = Rs. 72000/-
		2) Total outgoings = 25 % of Total gross Annual income
		     = (25/100) X 72000
		     = Rs. 18000/-
		3) Total Net Annual income= Total gross Annual income -Total outgoings
		     = 72000-18000= Rs 54000/-
		4) Present Value of annuity = $(1 + (1-i)^{-m})$ / i
		m = life of building – actual used = 60-10 =50
		     = $(1+(1-0.06)^{-50})/0.06$
		     = 15.83
		5) Value= Total Net Annual income X Present Value of annuity
		     = 54000 X 15.83
		     Value = Rs. 854820/-
		
		Method -2
		1) Total gross Annual income = Monthly rent X 12
		     = 6000 x 12
		     = Rs. 72000/-
		2) Total outgoings = 25 % of Total gross Annual income
		     = (25/100) X 72000
		     = Rs. 18000/-
		3) Total Net Annual income= Total gross Annual income - Total outgoings
		     = 72000-18000= Rs. 54000/-
		4) Y.P = 1/i
		     = 1/0.06 = 16.67
		5) Value = Total Net Annual income X Y.P
		     = 54000 X 16.67
		     Value = Rs. 900000/-
			1 Mark
			
			1 Mark
			
			1 Mark
			
			2 Marks
			
			1 Mark
			
			1 Mark
			
			1 Mark
			
			1 Mark
			
			2 Marks
			1 Mark
				6

	ii) **Ans.**	**What do you mean by sinking fund? State its use. State one example.** **Sinking fund:** An amount which has to be kept aside at fixed intervals of time, out of the gross income so that at the end of the useful life of building, the fund should accumulate to the initial cost of the property is called as sinking fund. $$I = Si / (1 + i)^n -1$$ Where, S = amount of sinking fund i = rate of interval in decimal. n = number of years required to create sinking I = annual installment required	**2 Marks**	

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.4	**b)**	**Use of Sinking fund:** 1) Sinking fund will form the amount of replacement at the end of the utility period of the property. 2) Sinking fund is required for payment of loan.	**2 Marks**	
		Example of Sinking fund: Find the amount of annual sinking fund @ 3% to give Re1/- at the end of 10 years. Solution: $\quad I = Si / (1 + i)^n - 1$ $\quad i = $ Rate of interest $= 3\% = 0.03$ $\quad n = $ number of years $= 10$ $\quad I = (1 \times 0.03)/((1+0.03)^{10} - 1)$ $\quad\quad = $ Rs. 0.0872/- **(Example of sinking fund may be vary according to assumed data.)**	**2 Marks**	**6**
Q.5		**Attempt any TWO of the following:**		**16**
	a)	**Draft a tender notice for construction of girl's hostel building at your polytechnic campus costing 90 lakh rupees. Assume suitable data.**		

	Ans.	**Tender Notice**
		    No. : Date :
		
		    Sealed item rate tenders in form 'B$_2$' are invited by Secretary, XYZ Institute Place---------- from registered contractors of appropriate class for following work.
			2 Marks	

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.5	**a)**	<table><tr><td>Sr. No.</td><td>Name of work</td><td>Estimated cost in Rs.</td><td>Earnest money in Rs.</td><td>Security Deposit in Rs.</td><td>Time of completion</td></tr><tr><td>1.</td><td>Construction of Ladies Hostel</td><td>90 lakh</td><td>90,000/-</td><td>4,50,000/-</td><td>18 months (including rainy season)</td></tr></table> Blank tender form at non-refundable cost of Rs. 500/- (Rs. 600/- if required by post) can be obtained from the office of Secretary, XYZ Institute, _____ upto 5.00 p.m. during working hours of all working days. (Except Sundays and holidays) from 10 a.m. to 5.00 p.m. Tenders will be received in office of secretary up to 3.00 pm on …….. and shall be opened on same day at 4.00 pm in presence of contractors who may like to attend. All rights are reserved to reject any or all tenders, without assigning any reasons. Sd/- Secretary XYZ Institute Place	**2 Marks** **3 Marks** **1 Mark**	**8**
	b)	**A building is newly constructed at the cost of Rs. 13,00,000 on a plot of 900 m^2. Fix monthly rent of this property Given:** **(i) Rate of land Rs. 100 per sq. m.** **(ii) Return expected on cost of land and building = 8%** **(iii) Life of building 60 years, Scrap value = 10% of construction cost** **(iv) other outgoings = 30% gross rent**		

Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.5	**Ans.**	Cost of land = 100 × 900 = Rs. 90,000	**1 Mark**	
		Step 1 : To find total net return per annum :		
		Return expected on cost of land and building 8%		
		= (8/100) x 1390000 = Rs. 1,11,200	**2 Marks**	
		Total net return per annum = Rs. 1,11,200/–		
		Step 2 : To find expenditure on outgoing per annum :		
		Expenditure on outgoings per annum		
		(ii) Other outgoings at 30% of		**8**
		Gross rent = 0.3 × x		
		(assuming gross rent as x)		
		Gross rent = Net return + outgoings.	**4 Marks**	
		x = 111200 + (0.3x)		
		x = 111200 + 0.3x		
		∴ 0.7x = 111200		
		∴ x = Rs. 158857		
		Step 3 : To find rent per month :		
		∴ Rent per month = 158857/12	**1 Mark**	
		= Rs.13238.08 ≈ Rs.13240		
	c) i) Ans.	**Explain the requirements of valid contract.**		
		1. Contract in writing :		
		Contract should be in writing and should be signed by both the parties i.e. owner and contractor and incase of government the person authorized should sign contract on behalf of department		
		2. Subject matter :		
		The subject matter of agreement must be legal and definite. It should be easy to understand not to complex to understand and execute.		
		3. Can be enforced in court of law :	**1 Mark each (any Four)**	**4**
		All terms, conditions words should be according to law. So that if situation arises the parties signing should not escape from their responsibilities.		
		4. Parties must be competent :		
		The parties signing the contract should be competent enough to carry out work.		
		5. Free consent of parties :		
		Both parties must give their free consent to do the work as per agreement contract.		
		6. Attested by witness :		
		Contract should be attested by responsible person or officer.		

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.5	**C) ii)**	**List the documents to be submitted at the time of registration as a contractor.**		
	Ans.	The applicant has to submit the following documents along with his application.		
		i. Latest income tax clearance certificate.		
		ii. Proof of financial status.		
		iii. Solvency certificate		
		iv. List of machinery with their condition.	**1 Mark each (any Four)**	**4**
		v. List of technical staff employed along with qualification and experience.		
		vi. Professional capacity and experience certificate		
		vii. Attested copies of partnership deed if any		
		viii. Registration fee		
		ix. Purpose for which valuation is done for the property.		
		x. Inflation of property		
		xi. Returns from the property.		
		xii. Facilities and amenities available (such as water supply line, drainage line, electric supply, market, etc.)		
Q.6		**Attempt any <u>FOUR</u> of the following.**		**16**
	a)	**State factors affecting value.**		
		The factors affecting value of a property are:		
	Ans.	i. Forces of demand and supply		
		ii. Cost of construction		
		iii. Increase in population		
		iv. Riots, war, flood and other natural calamities		
		v. Improvement of Public schemes	**1 Mark each (Any Four)**	**4**
		vi. Interest on Banks		
		vii. Cost of labour		
		viii. Inflation		
		ix. Monopoly of a property in market		
		x. Location of property		
		xi. Returns from property		
		xii. Life and age of building		
	b)	**Draft detailed specification for P.C.C. Assume suitable mix.**		
	Ans.	Specification of cement concrete for PCC work includes		
		(i) Materials :		
		(a) Course aggregate :		
		i. Coarse aggregate shall be from hard broken stone of compact basalt or granite or similar stone and shall be free from dust, dirt, oil and other foreign matters.		
		ii. Size of stone shall be 20 mm and down and all sizes of stones shall be retained in a 5 mm square mesh and well graded.		
		iii. Size of stone aggregate depends upon the thickness of concrete and nature of work.		

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Q.6	**b)**	**b) Fine aggregate :**
		  i. Fine aggregate shall have coarse sand consisting of hard, sharp and angular grains.
		  ii. Sand shall be as per the standard specification.
		  iii. Sand shall be clean and free from dust, dirt, oil and other organic matter.
		c) Cement :
		  Cement shall be fresh, not old & as per the standard I.S. specification and shall have required compressive strength and fineness.
		(d) Water :
		  Water shall be clean water, free from any impurities and free from alkaline and acid matters; water shall be suitable for drinking purpose.
		(ii) Proportion :
		  • The proportion of concrete shall be 1:2:4 of cement, sand and course aggregate by volume unless otherwise specified.
		  • For 7 days, the minimum compressive strength of cement concrete (1:2:4) shall be 14 N/mm^2.
		  • All ingredients shall be dry. Bulking of sand allowance shall be made for wet sand.
		Machine Mixing :
		  • Cement, sand and coarse aggregate shall be taken into the machine mixer in required proportion.
		  • For concrete of proportion 1:2:4 consist of one bag of cement, two boxes of sand and four boxes of coarse aggregate shall be taken into mixer.
		  • Mixed concrete shall be discharge on a masonry platform or on a flat iron sheet.
		Hand Mixing :
		  • Hand mixing is allowed for small work only. Mixing of ingredients shall be done on masonry platform or flat iron sheet.
		  • For concrete of 1:2:4/1:4:8 proportion, one bag of cement, first two boxes of sand shall be mixed dry thoroughly making the material turning up and down by spade and then this homogeneous dry mix shall be placed over a spreaded stack of 4 boxes of coarse aggregate & the complete mixed dry turn up and down with spade at least three times so as to obtain uniform mix. Then water shall be added slowly and gradually and then turning the mix up and down at least three times by spade till to obtain a plastic mix of the required workability and water – cement ratio.
		  • Water quantity shall be of 25 to 30 liters per bag of cement.
			1 Mark
			
			½ Mark
				4

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.6	**b)**	**(iv) Form work :** • Form work and centering shall be used as per the standard specifications' • Internal surface of formwork shall be applied by oil so as to avoid sticking of concrete during removal of the formwork.	½ Mark	
		(v) Laying of concrete : • Concrete shall be laid gently in layers not exceeding 150 mm and compacted with rods & tamping with wooden tampers or with mechanical vibrating machine until a dense concrete is obtained. • Immersion type vibrators or needle vibrators shall be used for thick concrete or mass concrete. Surface vibrators or form vibrators shall be used for thin concrete. There shall not be over – vibration. • Concrete shall be laid continuously. If laying of concrete is suspended for rest or on next day the end of concrete shall be slope with an angle of 30° and its surface shall be made rough for proper joining. • If the concreting work is resumed, the previous sloped portion shall be made rough, clean, watered and a grout of neat cement shall be applied and fresh concrete shall be laid in successive layer in such way that the upper layer shall be laid before the lower layer is set.	1 Mark	
		(vi) Curing : • When concrete is on the point of hardening, after and about two hours laying, then it shall be kept wet by covering with wet gummy bags for 24 hours and then cured by flooding with water. Making mud wall 75 mm high or by covering with wet sand continuously for 15 days.	½ Mark	
		vii) Measurement : The measurement shall be taken as per the drawing or as per instruction of the engineer.	½ Mark	
	c) **Ans.**	**Define the terms;** **i) Advance payment** The payment made on a running account to a contractor for work done but not measured is called as advance payment	1 Mark	

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Que. No.	Sub. Que.	Model Answers	Marks	Total Marks
Q.6	**c)**	**ii) Payment at reduced rate** The payment which may grant by the engineer with the reduce rate when contractor completes an item or work not as per the specifications, drawings given in contracts terms and conditions is called as "Reduced Rate Payment". **OR** The work or an item which is not done as per the specifications. Drawings given in the prescribed terms of conditions of contract by the contractor, then in such case the engineer may pay the amount with reduced rate making the remark as the work is structurally sound. **iii) Petty advance** A small amount given in advance to the engineer in charge in case of emergency needs is called as "Petty Advance". **iv) Mobilization advance** Mobilization advance is the amount of money given to the contractor for establishment purpose. Establishment charges may consist of the following work to be done on site under construction. approach roads, site office, godown for storage of building material, water tank, electric connection and other facilities which ensure the safety on projects and smooth working.	**1 Mark** **1 Mark** **1 Mark**	**4**

	d) Ans.	**State the points to be observed in filling the tender.**
		Following points shall be observed by contractor before filling the tender form :
		(1) Careful study of tender documents which includes drawing, specification, condition of contract, time limit, earnest money security deposit etc.
		(2) Contractor then should visit the site and should collect information regarding.
		    (1) Approach roads
		    (2) Materials, labours available nearby site.
		    (3) Types of soil, depth of water table.
		(3) Probable time of completion for calculating establishment charges.
		(4) Contractor should work out the probable cost of un-remunerative work such as construction of approach road, construction of temporary office, store shed, electricity etc.
		(5) After considering above factors he should quote finally considering overhead charges and profit.
			1 Mark Each (any Four)	**4**

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Q.6	**e)**	**Give the meaning of negotiated contract. State the situation where it is used.**		
	Ans.	In this contract work is awarded to contractor by mutual negotiation between parties without calling tender but within selected contractor after studying their previous experience and reputation. These contracts are not suitable for PWD work.		
		As contract is given to selected person by mutual negotiation chances of disputes will be less. And quality of work is assured also reliable and efficient contractor is selected for work the disadvantages of these contract are Choice of contractor is not free and fair, Healthy competition is not possible and Contractor may demand higher rates for extra items.	**2 Marks**	**4**
		This type of contract is suitable for work where time is important and work has to complete at short notice.	**2 Marks**	